

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.54) – JANUARY 2023**

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

| Date | Reference No. | Prepared By | Certified By |
|------------------|-------------------------|---|---|
| 14 February 2023 | TCS00881/18/600/R0714v2 |  |  |
| | | Nicola Hon (Environmental Consultant) | Tam Tak Wing (Environmental Team Leader) |

| Version | Date | Remarks |
|----------------|------------------|--|
| 1 | 9 February 2023 | First Submission |
| 2 | 14 February 2023 | Amended according to the IEC's comment |
| | | |
| | | |

Our Ref: TCS00881/18/300/L0717

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

Attn: Mr. SHUM Ngai Hung, Steven

13 February 2023
By e-mail

Dear Sirs,

**Re: Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
Monthly Environmental Monitoring & Audit Report (No.54) – January 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.

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



T. W. Tam
Environmental Team Leader
TW/nh

cc

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

Our Ref.: PL-202302017

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 February 2023

Dear Sir,

**Site Formation and Associated Infrastructural Works for Development of Columbarium at
Sandy Ridge Cemetery
Monthly Environmental Monitoring and Audit Report (No. 54) January 2023**

I refer to the email of the ET regarding the captioned Monthly Report. According to Section 3.4 of the EP-534/2017/A and the FEP-01/534/2017/A, I hereby verify the Monthly EM&A Report for January 2023 (Version 2) with Ref. No. TCS00881/18/600/R0714v2.

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 **54th** Monthly Environmental Monitoring and Audit (EM&A) Report summarizing the monitoring results and inspection findings under the Project for the period from **1st to 31st January 2023** (the Reporting Month).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

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

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

| Issues | Environmental Monitoring Parameters / Inspection | Monitoring Locations | | Total Occasions/dates |
|--------------------|--|---|---|---------------------------|
| | | CV/2016/10 | CV/2017/02 | |
| Air Quality | 1-hour TSP | ASR-1 | ASR-2 | 54 |
| | 24-hour TSP | | ASR-3 | 15 |
| Construction Noise | L _{eq} (30min) Daytime | CN-1 CN-2 | CN-3 CN-4 | 20 |
| Water Quality | In-situ measurement and Water sampling | M3 | M1, M2 and M4 | 12 |
| Ecology | Sensitive Habitat | Transect within site area of CV/2016/10 | Transect within site area of CV/2017/02 | 10 th Jan 2023 |
| Landscape & Visual | Site Inspection | Site area of CV/2016/10 | Site area of CV/2017/02 | 31 st Jan 2023 |
| Inspection & Audit | Environmental Team (ET) Regular Environmental Site Inspection | Site area of CV/2016/10 | Site area of CV/2017/02 | 4 |
| | Independent Environmental Checker (IEC) Monthly Environmental Site Audit | | | 1 |

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.03. In the Reporting Month, no exceedance of air quality and water quality monitoring was recorded. No noise complaint (which triggered Action Level) was received and Limit Level exceedance for noise monitoring exceedance was recorded. The statistics of environmental exceedance, Notification 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 _{eq30min} Daytime | 0 | 0 | - | - |
| Water Quality | DO | 0 | 0 | - | - |
| | Turbidity | 0 | 0 | - | - |
| | Suspended Solids (SS) | 0 | 0 | | |

ES.04. Monthly ecological monitoring for sensitive habitat for area of Contract 1 and Contract 2 were undertaken on **10th January 2023**. After analysing survey results in January from 2019 to 2023, there was no significant drop in species richness and abundance for wetland and non-wetland habitat for area of both Contract 1 and 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. 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.05. There was no precautionary check for the presence of nesting birds conducted outside the concerned breeding season (February to July).
- ES.06. Landscape and visual inspection at both Contracts were undertaken on *31st January 2023*. The Contractor was reminded to prevent the construction material pile within Tree Protection Zone and ensure no works is allowed within the TPZ.

ENVIRONMENTAL COMPLAINT

- ES.07. 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-3 Environmental Complaint Summaries in the Reporting Month

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

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- ES.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 st – 31 st January 2023 | Contract 1 | 0 | 0 | NA |
| | Contract 2 | 0 | 0 | NA |

Table ES-5 Environmental Prosecution Summaries in the Reporting Month

| Reporting Month | | Environmental Prosecution Statistics | | |
|---|------------|--------------------------------------|------------|--------------------|
| | | Frequency | Cumulative | Prosecution Nature |
| 1 st – 31 st January 2023 | 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 *5th, 12th, 19th and 27th January 2023*. Moreover, joint site inspections for Contract 2 by the RE, ET and the Contractor of Contract 2 were carried out on *5th, 12th, 19th and 27th January 2023*. IEC attended joint site inspection for both Contracts on *19th January 2023*. No non-compliance was noted during the site inspections.

FUTURE KEY ISSUES

- ES.012. During dry season, the Contractors are reminded to pay special attention on the air quality mitigation measures such as wheel wash facilities, watering of haul roads, loose soil construction surface and covering of dusty materials with tarpaulin sheet should be implemented as far as practicable.
- ES.013. Water quality mitigation measures as recommended in the EM&A Manual should be fully implemented, in particular to prevent surface runoff and other pollutants from flowing to local stream and Conservation Area.
- ES.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

| | |
|--|-----------|
| 1. INTRODUCTION | 1 |
| 1.1 PROJECT BACKGROUND | 1 |
| 1.2 REPORT STRUCTURE | 2 |
| 2. PROJECT ORGANIZATION AND CONSTRUCTION PROGRESS | 4 |
| 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 |
| 3. SUMMARY OF IMPACT MONITORING REQUIREMENT | 7 |
| 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 |
| 4. AIR QUALITY | 14 |
| 4.1 MONITORING RESULTS | 14 |
| 4.2 AIR MONITORING EXCEEDANCE | 14 |
| 5. CONSTRUCTION NOISE | 15 |
| 5.1 MONITORING RESULTS | 15 |
| 5.2 NOISE MONITORING EXCEEDANCE | 15 |
| 6. WATER QUALITY | 16 |
| 6.1 MONITORING RESULTS | 16 |
| 6.2 WATER QUALITY MONITORING EXCEEDANCE | 17 |
| 7. ECOLOGY MONITORING | 18 |
| 7.1 REQUIREMENT | 18 |
| 7.2 METHODOLOGY | 18 |
| 7.3 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 1) | 19 |
| 7.4 ECOLOGICAL MONITORING SURVEY FINDINGS (CONTRACT 2) | 21 |
| 7.5 MONITORING OF FLORA SPECIES OF CONSERVATION INTEREST | 22 |
| 7.6 MEASURE FOR PROTECTION OF NESTING BIRD | 22 |
| 8. LANDSCAPE AND VISUAL | 23 |
| 8.1 REQUIREMENT | 23 |
| 8.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH | 23 |
| 9. WASTE MANAGEMENT | 24 |
| 9.1 GENERAL WASTE MANAGEMENT | 24 |
| 9.2 RECORDS OF WASTE QUANTITIES | 24 |
| 10. SITE INSPECTION | 25 |
| 10.1 REQUIREMENT | 25 |
| 10.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH | 25 |
| 11. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE | 26 |
| 11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION | 26 |
| 12. IMPLEMENTATION STATUS OF MITIGATION MEASURES | 27 |
| 12.1 GENERAL REQUIREMENTS | 27 |
| 12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH | 28 |
| 12.3 KEY ISSUES FOR THE COMING MONTH | 28 |
| 13. CONCLUSIONS AND RECOMMENDATIONS | 30 |
| 13.1 CONCLUSIONS | 30 |
| 13.2 RECOMMENDATIONS | 30 |

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 |
| APPENDIX O | IMPLEMENTATION SCHEDULE FOR ENVIRONMENTAL MITIGATION MEASURES (ISEMM) |
| APPENDIX P | ILLUSTRATIONS OF SITE ACTIVITIES |

1. INTRODUCTION

1.1 PROJECT BACKGROUND

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

Designated Works under EP-534/2017/A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.1.10 This is the 54th Monthly EM&A Report summarizing the monitoring results and inspection findings for the period from 1st to 31st January 2023.

1.2 REPORT STRUCTURE

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

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

- Section 11** *Environmental Complaints and Non-Compliance*
- Section 12** *Implementation Status of Mitigation Measures*
- Section 13** *Conclusions and Recommendation*

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.

Contract 1 (CV/2016/10)

- Installation of Type 2 railing and street lighting
- Paving block installation works
- Compaction work at footpath
- Laying bitumen works

Contract 2 (CV/2017/02)

- Construction of footpath at Lin Ma Hang Road
- Watermain pipe and sewer installation at Man Kam To Road North Slow Lane
- Construction of road works at Sandy Ridge

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 | Sa Ling Road (Sandy Ridge) | Valid |

| Item | Description | License/ Permit ref no. | License/ Permit Status |
|------|--|--|------------------------|
| | | Acknowledged by EPD on 14/12/2018 Ridge Cemetery) | |
| | | 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 |

2.4 SUMMARY OF SUBMISSION UNDER THE ENVIRONMENTAL PERMIT REQUIREMENTS

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

Table 2-3 Status of Submission as under FEP

| Item | EP and / or FEP Stipulation | Description | Status |
|------|-------------------------------|---|--|
| 1 | Condition 2.10 of FEP | Management organization of : i) the main construction companies; ii) ET; and iii) IEC and the supporting team | Submitted and no approval is required. |
| 2 | Condition 2.11 of FEP | i) Detailed phasing programme of all construction works; and ii) Location plan of all construction works | Submitted and no approval is required. |
| 3 | Condition 2.12 of FEP | Contamination Assessment Plan (CAP) | Approved by EPD on 27 May 2019 |
| 4 | Condition 2.13 of FEP | Grassland Reinstatement Plan | 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, | Approved by EPD on 25 |

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

Table 2-4 Status of Submission as under EP

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

3. SUMMARY OF IMPACT MONITORING REQUIREMENT

3.1 GENERAL

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

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

3.2 MONITORING PARAMETERS

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

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

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

Table 3-1 Summary of EM&A Requirements

| Environmental Issue | Parameters |
|---------------------|---|
| Air Quality | <ul style="list-style-type: none"> • 1-hour TSP; • 24-hour TSP |
| Noise | <ul style="list-style-type: none"> • Leq_(30min) during normal working hours.; and • Leq_(15min) during the construction works undertaken in Restricted Hours |
| Water Quality | In-situ Measurements <ul style="list-style-type: none"> • Dissolved Oxygen Concentration (mg/L) & Saturation (%); • Temperature (°C); • Turbidity (NTU); • Salinity (ppm) • pH unit; • Water depth (m); and • Stream Flow Velocity (m/sec). |
| | Laboratory Analysis <ul style="list-style-type: none"> • Suspended Solids (mg/L) |
| Ecology | Ecologically sensitive habitats (wetland habitats and non-wetland habitats) |

3.3 MONITORING LOCATIONS

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

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

Air Quality

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

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

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

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

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

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

Construction Noise

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

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

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

Water Quality

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

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

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

3.4 MONITORING FREQUENCY AND PERIOD

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

Air Quality Monitoring

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

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

Noise Monitoring

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

Water Quality Monitoring

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

3.5 MONITORING EQUIPMENT

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

Air Quality Monitoring

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

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

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

Table 3-5 Air Quality Monitoring Equipment

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

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

Wind Data Monitoring Equipment

- 3.5.5 According to the approved EM&A Manual, wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the IEC. For installation and operation of wind data monitoring equipment, the following points shall be observed:
- 1) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
 - 2) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
 - 3) The wind data monitoring equipment should be re-calibrated at least once every six months.
 - 4) Wind direction should be divided into 16 sectors of 22.5 degrees each.
- 3.5.6 ET has liaised with the premises owners/ landlords to grant the permission for the HVS installation. However, they rejected to set up wind data monitoring equipment installation in their premises.
- 3.5.7 Under this situation, the ET proposed to obtain representative wind data from the Hong Kong Observatory Ta Kwu Ling Weather Station. Ta Kwu Ling Station is located near the Project site which situated at the sea level above 15mPD and the wind data monitoring equipment is installed 10 m above the existing ground.

Noise Monitoring

- 3.5.8 Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. The sound level meter shall be checked using an acoustic calibrator. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in ms^{-1} before each noise monitoring event. Noise measurements should not be made in fog, rain, wind with a steady speed exceeding 5 m s^{-1} or wind with gusts exceeding 10 m s^{-1} .
- 3.5.9 Noise monitoring equipment used for impact monitoring is listed in **Table 3-6**.

Table 3-6 Noise Monitoring Equipment

| Equipment | Model |
|-------------------------------|--|
| Integrating Sound Level Meter | Rion NL-52 Sound Level Meter /Rion NL-31 Sound Level Meter |
| Calibrator | Rion NC-73 Acoustical Calibrator |
| Portable Wind Speed Indicator | Testo Anemometer |

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

Water Quality Monitoring

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

Dissolved Oxygen and Temperature Measurement

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

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

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

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

Turbidity Measurement

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

Salinity Measurement

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

pH Measurement

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

Water Depth Measurement

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

Stream Flow Velocity Equipment

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

Water Sampling Equipment

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

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

Sample Containers and Storage

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

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

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

Table 3-7 Water Quality Monitoring Equipment

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

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

3.6 EQUIPMENT CALIBRATION

- 3.6.1 The HVAS is operated and calibrated on a regular basis in accordance with the manufacturer’s instruction using Tisch Calibration Kit Model TE-5025A. Calibration would carry out at fortnightly interval. The calibration data are properly documented and the records are maintained by ET for future reference. Furthermore, Tisch Calibration Kit will be calibrated by the manufacturer in yearly basis.
- 3.6.2 The 1-hour TSP meter calibrated by a local HOKLAS-accredited laboratory would be undertaken in yearly basis. Zero response of the equipment was checked before and after each monitoring event.
- 3.6.3 The sound level meter and acoustic calibrator are calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme at yearly basis.
- 3.6.4 The multi-parameter Water Quality Monitoring System is calibrated by HOKLAS accredited laboratory of three month intervals.
- 3.6.5 All updated calibration certificates of the monitoring equipment used for the impact monitoring program in this Reporting Month are attached in [Appendix E](#).

3.7 DATA MANAGEMENT AND DATA QA/QC CONTROL

- 3.7.1 The impact monitoring data are handled by the ET’s systematic data recording and management, which complies with in-house Quality Management System. Standard Field Data Sheets (FDS) are used in the impact monitoring program.
- 3.7.2 The monitoring data recorded in the equipment e.g. 1-hour TSP meter, noise meter and Multi-parameter Water Quality Monitoring System are downloaded directly from the equipment at the end of each monitoring day. The downloaded monitoring data are input into a computerized database properly maintained by the ET. The laboratory results are input directly into the computerized database and QA/QC checked by personnel other than those who input the data. For monitoring activities require laboratory analysis, the local laboratory follows the QA/QC requirements as set out under the HOKLAS scheme for all laboratory testing.

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

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

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

| Monitoring Station | Action Level (µg /m ³) | | Limit Level (µg/m ³) | |
|--------------------|------------------------------------|-------------|----------------------------------|-------------|
| | 1-hour TSP | 24-hour TSP | 1-hour TSP | 24-hour TSP |
| | | | | |

| 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 |
| 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 18 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 (µg/m ³) | 1-hour TSP (µg/m ³) | | | | |
|-----------------|----------------------------------|---------------------------------|------------|-------------------------------|-------------------------------|-------------------------------|
| | | Date | Start Time | 1 st hour measured | 2 nd hour measured | 3 rd hour measured |
| 4-Jan-23 | 83 | 5-Jan-23 | 9:13 | 70 | 72 | 76 |
| 10-Jan-23 | 52 | 11-Jan-23 | 9:00 | 75 | 79 | 76 |
| 16-Jan-23 | 71 | 17-Jan-23 | 13:00 | 67 | 88 | 85 |
| 21-Jan-23 | 44 | 20-Jan-23 | 13:00 | 76 | 71 | 63 |
| 27-Jan-23 | 47 | 26-Jan-23 | 9:25 | 78 | 71 | 76 |
| | | 31-Jan-23 | 9:30 | 77 | 79 | 74 |
| Average (Range) | 50 (44 – 83) | Average (Range) | | 75 (63 – 88) | | |

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

| Date | 24-hour TSP (µg/m ³) | 1-hour TSP (µg/m ³) | | | | |
|-----------------|----------------------------------|---------------------------------|------------|-------------------------------|-------------------------------|-------------------------------|
| | | Date | Start Time | 1 st hour measured | 2 nd hour measured | 3 rd hour measured |
| 4-Jan-23 | 65 | 5-Jan-23 | 9:21 | 76 | 82 | 85 |
| 10-Jan-23 | 23 | 11-Jan-23 | 10:25 | 80 | 81 | 78 |
| 16-Jan-23 | 40 | 17-Jan-23 | 13:03 | 84 | 90 | 83 |
| 21-Jan-23 | 54 | 20-Jan-23 | 13:04 | 72 | 78 | 69 |
| 27-Jan-23 | 108 | 26-Jan-23 | 9:35 | 79 | 85 | 80 |
| | | 31-Jan-23 | 9:34 | 80 | 85 | 79 |
| Average (Range) | 58 (23 – 108) | Average (Range) | | 80 (69 – 90) | | |

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

| Date | 24-hour TSP (µg/m ³) | 1-hour TSP (µg/m ³) | | | | |
|-----------------|----------------------------------|---------------------------------|------------|-------------------------------|-------------------------------|-------------------------------|
| | | Date | Start Time | 1 st hour measured | 2 nd hour measured | 3 rd hour measured |
| 4-Jan-23 | 44 | 5-Jan-23 | 9:30 | 68 | 65 | 72 |
| 10-Jan-23 | 48 | 11-Jan-23 | 13:00 | 71 | 66 | 65 |
| 16-Jan-23 | 26 | 17-Jan-23 | 13:08 | 87 | 81 | 92 |
| 21-Jan-23 | 25 | 20-Jan-23 | 13:08 | 80 | 72 | 76 |
| 27-Jan-23 | 45 | 26-Jan-23 | 9:35 | 79 | 85 | 80 |
| | | 31-Jan-23 | 9:38 | 82 | 79 | 75 |
| Average (Range) | 38 (25 – 48) | Average (Range) | | 76 (65 – 92) | | |

4.2 AIR MONITORING EXCEEDANCE

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

5. CONSTRUCTION NOISE

5.1 MONITORING RESULTS

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

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

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

| Construction Noise Level ($L_{eq30min}$), dB(A) | | | | |
|---|-----------------|--------|------------|--------|
| Date | Start Time | CN1(*) | Start Time | CN2(*) |
| 5-Jan-23 | 10:42 | 65 | 11:35 | 69 |
| 11-Jan-23 | 9:05 | 65 | 9:40 | 68 |
| 17-Jan-23 | 13:01 | 66 | 13:35 | 71 |
| 26-Jan-23 | 9:27 | 64 | 10:10 | 68 |
| 31-Jan-23 | 9:30 | 69 | 10:10 | 65 |
| Limit Level | 75 dB(A) | | | |

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

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

| Construction Noise Level ($L_{eq30min}$), dB(A) | | | | |
|---|-----------------|---------|------------|-----|
| Date | Start Time | CN3 (*) | Start Time | CN4 |
| 5-Jan-23 | 13:17 | 65 | 13:55 | 59 |
| 11-Jan-23 | 10:26 | 63 | 13:15 | 62 |
| 17-Jan-23 | 14:10 | 58 | 14:45 | 66 |
| 26-Jan-23 | 10:45 | 60 | 11:25 | 64 |
| 31-Jan-23 | 10:46 | 59 | 11:20 | 63 |
| Limit Level | 75 dB(A) | | | |

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

5.1.3 Prior and after noise monitoring, the accuracy of the sound level meter has been checked by an acoustic calibrator to ensure the measurement within acceptance range of ± 0.5 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 m s^{-1} or wind with gusts exceeding 10 m s^{-1} .

5.2 NOISE MONITORING EXCEEDANCE

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

6. WATER QUALITY

6.1 MONITORING RESULTS

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

6.1.2 In the Reporting Month, a total of **12** monitoring days were carried out for water quality impact monitoring. The monitoring result of key parameters including Dissolved Oxygen, Turbidity and Suspended Solids are summarized in [Tables 6-1](#) and [6-2](#). Detailed monitoring results including in-situ measurements and laboratory analysis data are shown in [Appendix H](#) and graphical plots for monitoring result are shown in [Appendix I](#).

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

| Date | Parameters | | |
|-----------|-------------------------|-------------------------------|---------------------------------------|
| | DO (Averaged) (mg/L) | Turbidity (Averaged) (NTU) | Suspended Solids (Averaged) (mg/L) |
| 3-Jan-23 | 8.90 | 2.8 | 4.5 |
| 5-Jan-23 | 8.23 | 3.0 | 7.0 |
| 7-Jan-23 | 8.10 | 2.2 | 3.0 |
| 10-Jan-23 | 8.05 | 1.8 | 3.5 |
| 12-Jan-23 | 8.08 | 1.8 | 3.5 |
| 14-Jan-23 | 8.08 | 2.6 | 3.5 |
| 17-Jan-23 | 8.61 | 2.2 | 3.5 |
| 19-Jan-23 | 8.59 | 1.9 | 3.0 |
| 21-Jan-23 | 8.47 | 2.6 | 3.0 |
| 26-Jan-23 | 8.80 | 0.1 | 3.5 |
| 28-Jan-23 | 8.72 | 0.3 | 3.5 |
| 30-Jan-23 | 8.59 | 0.2 | 2.5 |

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 |
| 3-Jan-23 | 8.40 | 8.59 | 8.78 | 6.6 | 1.4 | 3.7 | 5.0 | 2.0 | 4.0 |
| 5-Jan-23 | 8.33 | 8.58 | 8.57 | 6.2 | 1.4 | 3.5 | 8.0 | 2.0 | 4.0 |
| 7-Jan-23 | 8.09 | 8.21 | 8.37 | 5.4 | 1.2 | 1.6 | 7.5 | 2.0 | <2 |
| 10-Jan-23 | 7.98 | 8.27 | 8.21 | 3.4 | 1.2 | 1.9 | 5.0 | <2 | 4.5 |
| 12-Jan-23 | 7.99 | 8.12 | 8.17 | 2.0 | 1.4 | 1.6 | 2.5 | <2 | <2 |
| 14-Jan-23 | 7.97 | 8.10 | 8.24 | 2.3 | 1.4 | 1.4 | 4.5 | <2 | <2 |
| 17-Jan-23 | 8.30 | 8.85 | 8.29 | 2.3 | 1.5 | 2.3 | 3.5 | <2 | 2.5 |
| 19-Jan-23 | 8.17 | 8.66 | 8.40 | 2.3 | 1.5 | 2.3 | 3.0 | 3.0 | 4.5 |
| 21-Jan-23 | 8.34 | 8.50 | 8.57 | 3.2 | 1.2 | 1.7 | 4.5 | 2.0 | 2.5 |
| 26-Jan-23 | 9.00 | 9.07 | 9.01 | 0.3 | 0.6 | 0.4 | 2.0 | 2.0 | 2.0 |
| 28-Jan-23 | 8.91 | 9.00 | 8.37 | 1.1 | 0.7 | 0.1 | 2.5 | <2 | 2.5 |
| 30-Jan-23 | 8.96 | 8.99 | 8.33 | 0.3 | 0.2 | 0.4 | 5.5 | <2 | 2.5 |

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

Table 6-3 Summary of Field Measurements for Water Quality

| Monitoring Location | Parameters of field measurements | | | | | | | |
|---------------------|----------------------------------|-----|------------------------------|------|-------------------------|------|--------------------------------|------|
| | pH (Averaged) (unit) | | Salinity (Averaged) (ppt) | | Temp (Averaged) (°C) | | Water Flow (Averaged) (m/s) | |
| | min | max | min | max | min | max | min | max |
| M1 | 7.1 | 7.7 | 0.04 | 0.07 | 11.4 | 20.9 | <0.1 | <0.1 |

| 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 |
| M2 | 7.0 | 7.6 | 0.04 | 0.09 | 11.8 | 20.9 | <0.1 | <0.1 |
| M3 | 7.1 | 7.8 | 0.01 | 0.04 | 12.4 | 21.2 | <0.1 | <0.1 |
| M4 | 7.0 | 7.6 | 0.04 | 0.09 | 12.6 | 21.4 | <0.1 | <0.1 |

6.2 WATER QUALITY MONITORING EXCEEDANCE

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

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

| Station | DO | | Turbidity | | SS | | Total Exceedance | | Project Related exceedance | |
|---------|--------|-------|-----------|-------|--------|-------|------------------|-------|----------------------------|-------|
| | Action | Limit | Action | Limit | Action | Limit | Action | Limit | Action | Limit |
| M1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| M4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

6.2.1 Notification of Exceedance and the investigation for exceedance in the Reporting Month is summarized in [Table 6-5](#).

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

| Date of Exceedance | Exceeded Location | Exceeded Parameter | Cause of Water Quality Exceedance |
|--------------------|-------------------|--------------------|-----------------------------------|
| -- | -- | -- | -- |

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 **10th January 2023**, 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 19 bird individuals from 10 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey.

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 3 butterfly individuals from 2 species recorded in the monitoring area.

Dragonfly

7.3.6 There was no odonate recorded in the monitoring area.

Aquatic Fauna Survey (Freshwater communities)

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

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

Table 7-4 Result of Faunal Survey under Contract 1

| Scientific Name | Common / Engineer Name | Chinese Name | Conservation Status | Non-wetland | | Wetland | | |
|--------------------------------|-------------------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | UG | WL | MA | WW | WC |
| Mammal Survey | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Avifauna Survey | | | | | | | | |
| <i>Spilopelia chinensis</i> | Spotted Dove | 珠頸斑鳩 | | | | | 1 | |
| <i>Pycnonotus jocosus</i> | Red-whiskered Bulbul | 紅耳鶇 | | | | | 3 | |
| <i>Turdus hortolorum</i> | Grey-backed Thrush | 灰背鶇 | | | 1 | | | |
| <i>Phylloscopus fuscatus</i> | Dusky Warbler | 褐柳鶇 | | | | | 2 | |
| <i>Phylloscopus inornatus</i> | Yellow-browed Warbler | 黃眉柳鶇 | | 1 | | | | |
| <i>Prinia flaviventris</i> | Yellow-bellied Prinia | 黃腹鶇 | | 2 | | | 1 | |
| <i>Orthotomus sutorius</i> | Common Tailorbird | 長尾縫葉鶇 | | 1 | | | | |
| <i>Garrulax perspicillatus</i> | Masked Laughingthrush | 黑臉噪鶇 | | | | | 4 | |
| <i>Sitta frontalis</i> | Velvet-fronted Nuthatch | 絨額鶇 | | | | | 2 | |
| <i>Phoenicurus aureus</i> | Dauaian Redstart | 北紅尾鶇 | | | | | 1 | |
| Reptile Survey | | | | | | | | |
| N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Amphibian Survey | | | | | | | | |
| N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Butterfly Survey | | | | | | | | |
| <i>Mycalesis mineus</i> | Dark Brand Bush Brown | 小眉眼蝶 | | | | | 1 | |
| <i>Abisara echerius</i> | Plum Judy | 蛇目褐蛺蝶 | | 2 | | | | |
| Odonate Survey | | | | | | | | |
| N/A | -- | -- | -- | -- | -- | -- | -- | -- |

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

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

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

Discussion

7.3.9 After analysing survey results in January from 2019 to 2023, 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. 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 **10th January 2023**, a sunny day. The day and night survey covered wetland and non-wetland areas. The survey was conducted by transect and at fixed point. All species seen would be identified and counted as accurately as possible. Results of the monitoring survey are presented below:

Monitoring Result for Contract 2

Mammal

7.4.2 There was no mammal recorded in the monitoring area

Birds

7.4.3 There were a total of 4 bird individuals from 3 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey. One species of conservation interests was recorded in this survey: Cinnamon Bittern (*Ixobrychus cinnamomeus*) 栗葦鴉.

Herpetofauna

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

Butterfly

7.4.5 There was no butterfly individual recorded in the monitoring area.

Dragonfly

7.4.6 There was no odonate individual 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>Ixobrychus cinnamomeus</i> | Cinnamon Bittern | 栗葦鴉 | Fellowes et al. (2002): LC | | | 1 | | |
| <i>Amaurornis phoenicurus</i> | White-breasted Waterhen | 白胸苦惡鳥 | | | | 1 | | |
| <i>Garrulax perspicillatus</i> | Masked Laughingthrush | 黑臉噪鵲 | | 2 | | | | |
| Reptile Survey | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Amphibian Survey | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Butterfly Survey | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Odonate Survey | | | | | | | | |
| -- | -- | -- | -- | -- | -- | -- | -- | -- |

*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 | 五線無鬚鯰 | | | | | | + |

*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 January 2019 to 2023, there was a no significant drop 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. 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 (February 2023) is scheduled on **11th February 2023**.

7.5 MONITORING OF FLORA SPECIES OF CONSERVATION INTEREST UNDER CONTRACT 1

- 7.5.1 According to the approved vegetation survey report and transplantation proposal under FEP-01/534/2017/A, an individual of flora species of conservation interest (the transplanted T-2928) was identified and transplanted to the receptor site.
- 7.5.2 According to approved vegetation survey report and transplantation proposal, post-transplantation monitoring was conducted once per week in the first three months after the transplantation in Oct 2018 and once in each of the following month in the remaining establishment period for 12 month. During the remaining construction phase of the project, the transplanted T-2928 would be monitored on quarterly basis.
- 7.5.3 A landscape sub-contractor was employed by the Contractor to monitor the health condition of transplanted species and provide advice on necessary weeding, fertilizing and pest control. The monitoring records were submitted to ET and IEC for review and record. Moreover, inspection of the transplanted T-2928 was undertaken by ET as part of the weekly site inspection. No construction activity and disturbance were observed at the location of the transplanted T-2928. The health condition of the transplanted T-2928 was fair with normal foliage color and density.

7.6 MEASURE FOR PROTECTION OF NESTING BIRD

- 7.6.1 Pursuant to FEP-01/534/2017/A condition 2.19 and EP-534/2017/A condition 2.20, precautionary checks for the presence of nesting birds shall be carried out in the breeding season (February to July) before vegetation clearance.
- 7.6.2 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 transplanted and compensatory planting should be carried out as early as possible in the Project with transplanted carried out prior to construction starting in any particular area.
- 8.1.4 During construction phase, Landscape & Visual Monitoring of the contractor’s operations should be conducted monthly and reported by ET, and countersigned by IEC.

8.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH

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

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

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

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

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

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

9. WASTE MANAGEMENT

9.1 GENERAL WASTE MANAGEMENT

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

9.2 RECORDS OF WASTE QUANTITIES

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

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

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

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

| Type of Waste | Contract 1 | | Contract 2 | |
|---|------------|-------------------|-------------|-------------------|
| | Quantity | Disposal Location | Quantity | Disposal Location |
| Total generated C&D Materials (Inert) ('000m ³) | 0.490 | -- | 191.800 (#) | -- |
| Reused in this Contract (Inert) ('000m ³) | 0.100 | -- | 0 | -- |
| Reused in other Projects (Inert) ('000m ³) | 0 | -- | 0 | -- |
| Disposal as Public Fill (Inert) ('000m ³) | 0.340 | Tuen Mun Area 38 | 191.800 (#) | Tuen Mun Area 38 |

Remark: the unit is '000kg

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

| Type of Waste | Contract 1 | | Contract 2 | |
|---|------------|-------------------|------------|-------------------|
| | Quantity | Disposal Location | Quantity | Disposal Location |
| Recycled Metal ('000kg) | 0 | -- | 0 | -- |
| Recycled Paper / Cardboard Packing ('000kg) | 0 | -- | 0 | -- |
| Recycled Plastic ('000kg) | 0 | -- | 0 | -- |
| Chemical Wastes ('000kg) | 0 | -- | 0 | -- |
| General Refuses ('000m ³) | 0.050 | NENT Landfill | 5.800 (#) | NENT Landfill |

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

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

10. SITE INSPECTION

10.1 REQUIREMENT

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

10.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH

Contract 1

10.2.1 In the Reporting Month, joint site inspections for Contract 1 to evaluate the site environmental performance were carried out by the RE, ET and the Contractor on *5th, 12th, 19th and 27th January 2023* and IEC attended joint site inspection on *19th January 2023*. No non-compliance was noted in the Reporting Month. The findings / deficiencies that observed during the weekly site inspection are listed in *Table 10-1*.

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

| Date | Findings / Deficiencies | Follow-Up Status |
|-------------------------------|--|------------------|
| 5 th January 2023 | <ul style="list-style-type: none"> The Contactor was reminded to spray water at exposed area regularly to minimise fugitive dust. | N/A |
| 12 th January 2023 | <ul style="list-style-type: none"> No adverse environmental issue was observed. | N/A |
| 19 th January 2023 | <ul style="list-style-type: none"> The Contactor was reminded to cover the dusty stockpile after use. | N/A |
| 27 th January 2023 | <ul style="list-style-type: none"> No adverse environmental issue was observed. | N/A |

Contract 2

10.2.2 In the Reporting Month, joint site inspections for Contract 2 to evaluate the site environmental performance carried out by the RE, ET and the Contractor was on *5th, 12th, 19th and 27th January 2023* and IEC attended joint site inspection on *19th January 2023*. No non-compliance was noted in the Reporting Month. The findings / deficiencies that observed during the weekly site inspection are listed in *Table 10-2*.

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

| Date | Findings / Deficiencies | Follow-Up Status |
|-------------------------------|--|------------------|
| 5 th January 2023 | <ul style="list-style-type: none"> No adverse environmental issue was observed. | N/A |
| 12 th January 2023 | <ul style="list-style-type: none"> No adverse environmental issue was observed. | N/A |
| 19 th January 2023 | <ul style="list-style-type: none"> No adverse environmental issue was observed. | N/A |
| 27 th January 2023 | <ul style="list-style-type: none"> No adverse environmental issue was observed. | N/A |

11. ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

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

Table 11-1 Statistical Summary of Environmental Complaints

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

Table 11-2 Statistical Summary of Environmental Summons

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

Table 11-3 Statistical Summary of Environmental Prosecution

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

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

12. IMPLEMENTATION STATUS OF MITIGATION MEASURES

12.1 GENERAL REQUIREMENTS

- 12.1.1 The environmental mitigation measures that recommended in the Implementation Schedule for Environmental Mitigation Measures (ISEMM) in the approved EM&A Manual covered the issues of dust, noise, water and waste.
- 12.1.2 The Works of Contract 1 and Contract 2 under the Project shall be implementing the required environmental mitigation measures according to the approved EM&A Manual subject to the site condition. Environmental mitigation measures implemented in this Reporting Month is summarized in **Table 12-1**. The status of the Environmental mitigation measures are presented in **Appendix O**.

Table 12-1 Environmental Mitigation Measures

| Issues | Environmental Mitigation Measures |
|-------------------------------|--|
| Water Quality | <ul style="list-style-type: none"> • Provided efficient silt removal facilities to reduce SS level before effluent discharge. • Provided ditches, earth bunds or sand bag barriers to minimize polluted runoff. • Temporary drainage was provided to prevent runoff going through site surface and minimize polluted runoff. • Provided perimeter cut-off drains at site boundaries to intercept storm runoff from crossing the site. • Exposed slopes surface were compacted and covered with tarpaulin or similar means. • Provided portable chemical toilets on site. |
| Air Quality | <ul style="list-style-type: none"> • Maintain damp / wet surface on access road. • Maintain low vehicular speed within the works areas. • Provided vehicle wheel washing facilities at each construction site exit; • Provided water spraying every hour for all active works area. • Stockpiles of dusty material were covered with impervious sheeting. • Provided workers to clear dusty materials at the vehicle entrance or exit regularly. • Stockpile more than 20 bags of cement or dry pulverized fuel ash (PFA) has been covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. |
| Noise | <ul style="list-style-type: none"> • Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants. • Placed noisy plants away from residence and school. • Provided noise barriers or hoarding to enclose the noisy plants or works. • Shut down the plants when not in used. |
| Waste and Chemical Management | <ul style="list-style-type: none"> • Provided on-site sorting prior to disposal. • Followed requirements and procedures of the “Trip-ticket System” • Predicted required quantity of concrete accurately. • Collected the unused fresh concrete at designated locations in the sites for subsequent disposal. |
| Ecology | <ul style="list-style-type: none"> • Implementing water control measures (ETWB TCW No. 5/2005) to avoid direct or indirect impacts any watercourses and impact to any aquatic fauna during the construction phase. • Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic. • The construction work and site formation have been phased in order to reduce overall noise disturbance impacts in particular areas. • Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas. |
| General | <ul style="list-style-type: none"> • The site was generally kept tidy and clean. • Environmental Permit was displayed at site entrance. |

12.2 TENTATIVE CONSTRUCTION ACTIVITIES IN THE COMING MONTH

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

- Paving block installation works
- Compaction works at footpath
- Laying bitumen works
- U-channel construction works near Fill Slope FS14
- Installation of Type 2 Railing

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

- Construction of footpath at Lin Ma Hang Road
- Watermain pipe and sewer installation work at Man Kam To Road
- Planting works at Sandy Ridge and Lin Ma Hang Road

12.3 KEY ISSUES FOR THE COMING MONTH

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

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

| Description of Construction Activities | Used on PME | Environmental Mitigation Measures |
|---|--|--|
| Paving block installation works | <ul style="list-style-type: none"> • Crane lorry • Compaction roller | <ul style="list-style-type: none"> • Provided efficient silt removal facilities to reduce SS level before effluent discharge. • Exposed slopes surface were compacted and covered with tarpaulin or similar means. • Maintain damp / wet surface on access road. • Maintain low vehicular speed within the works areas. • Provided vehicle wheel washing facilities at each construction site exit; • Stockpiles of dusty material were covered with impervious sheeting. • Provided workers to clear dusty materials at the vehicle entrance or exit regularly. • Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants. • Provided noise barriers or hoarding to enclose the noisy plants or works. • Shut down the plants when not in used. • Provided on-site sorting prior to disposal. • Followed requirements and procedures of the “Trip-ticket System” • Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas. • The site was generally kept tidy and clean. |
| Compaction works at footway at Sha Ling Road near Man Kam To Road | <ul style="list-style-type: none"> • Excavator • Compaction roller | |
| Laying bitumen works | <ul style="list-style-type: none"> • Excavator • Compaction roller | |
| Installation of Type 2 Railing | <ul style="list-style-type: none"> • Crane lorry | |

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

| Construction Activities | Used on PME | Environmental Mitigation Measures |
|--|---|--|
| Construction of footpath at Lin Ma Hang Road | <ul style="list-style-type: none"> • Dump truck • Excavator | <ul style="list-style-type: none"> • Provided efficient silt removal facilities to reduce SS level before effluent discharge. • Exposed slopes surface were compacted and covered with |

| Construction Activities | Used on PME | Environmental Mitigation Measures |
|--|---|--|
| Watermain pipe and sewer installation works at Man Kam To Road | <ul style="list-style-type: none"> ● Excavator | tarpaulin or similar means. <ul style="list-style-type: none"> ● Maintain damp / wet surface on access road. ● Maintain low vehicular speed within the works areas. ● Provided vehicle wheel washing facilities at each construction site exit. |
| Planting works at Sandy Ridge and Lin Ma Hang Road | <ul style="list-style-type: none"> ● Excavator ● Roller ● Dump truck | <ul style="list-style-type: none"> ● Provided water spraying for all active works area, in particular for the soil nail works. ● Stockpiles of dusty material were covered with impervious sheeting. ● Provided workers to clear dusty materials at the vehicle entrance or exit regularly. ● Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. ● Keep good maintenance of plants. ● Placed noisy plants away from residence and school. ● Provided noise barriers or hoarding to enclose the noisy plants or works. ● Shut down the plants when not in used. ● Provided on-site sorting prior to disposal. ● Followed requirements and procedures of the “Trip-ticket System” ● Predicted required quantity of concrete accurately. ● Collected the unused fresh concrete at designated locations in the sites for subsequent disposal. ● Demarcation fencing has been erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic. ● Works have been restricted to daytime and any construction lighting was designed and positioned as to not impact on adjacent ecologically sensitive areas. ● The site was generally kept tidy and clean. |

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

13. CONCLUSIONS AND RECOMMENTATIONS

13.1 CONCLUSIONS

- 13.1.1 This is the **54th** Monthly EM&A Report presenting the monitoring results and inspection findings for the period of **1st to 31st January 2023**.
- 13.1.2 In the Reporting Month, no 24-hour or 1-hour TSP monitoring result that triggered the Action or Limit Levels was recorded. No NOEs or the associated corrective action was therefore required.
- 13.1.3 In the Reporting Month, no noise complaint (which triggered Action Level) was received and no Limit Level exceedance for noise monitoring exceedance was recorded.
- 13.1.4 In the Reporting Month, no water quality monitoring exceedance was recorded.
- 13.1.5 Monthly ecological monitoring for sensitive habitat for area of Contract 1 and Contract 2 were undertaken on **10th January 2023**. After analysing survey results in January from 2019 to 2023, there was no significant drop in species richness and abundance for wetland and non-wetland habitat for area of both Contract 1 and 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 **31st January 2023**. The Contractor was reminded to prevent the construction material pile within Tree Protection Zone and ensure no works is allowed within the TPZ.
- 13.1.8 In the Reporting Month, no environmental complaints, summons and prosecution were received. In addition, no complaints received and emergency events relating to violation of environmental legislation for illegal dumping and landfilling were received.
- 13.1.9 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 **5th, 12th, 19th and 27th January 2023**. Moreover, joint site inspections for Contract 2 by the RE, ET and the Contractor of Contract 2 were carried out on **5th, 12th, 19th and 27th January 2023**. IEC attended the both Contract joint site inspection on **19th January 2023**. No non-compliance was noted during the site inspections.

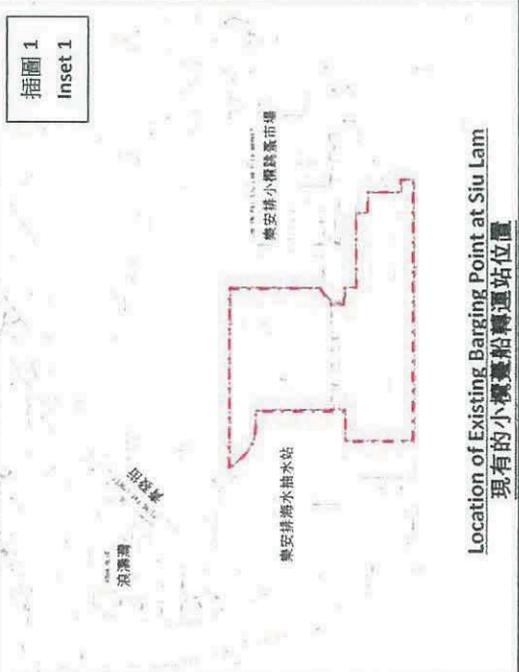
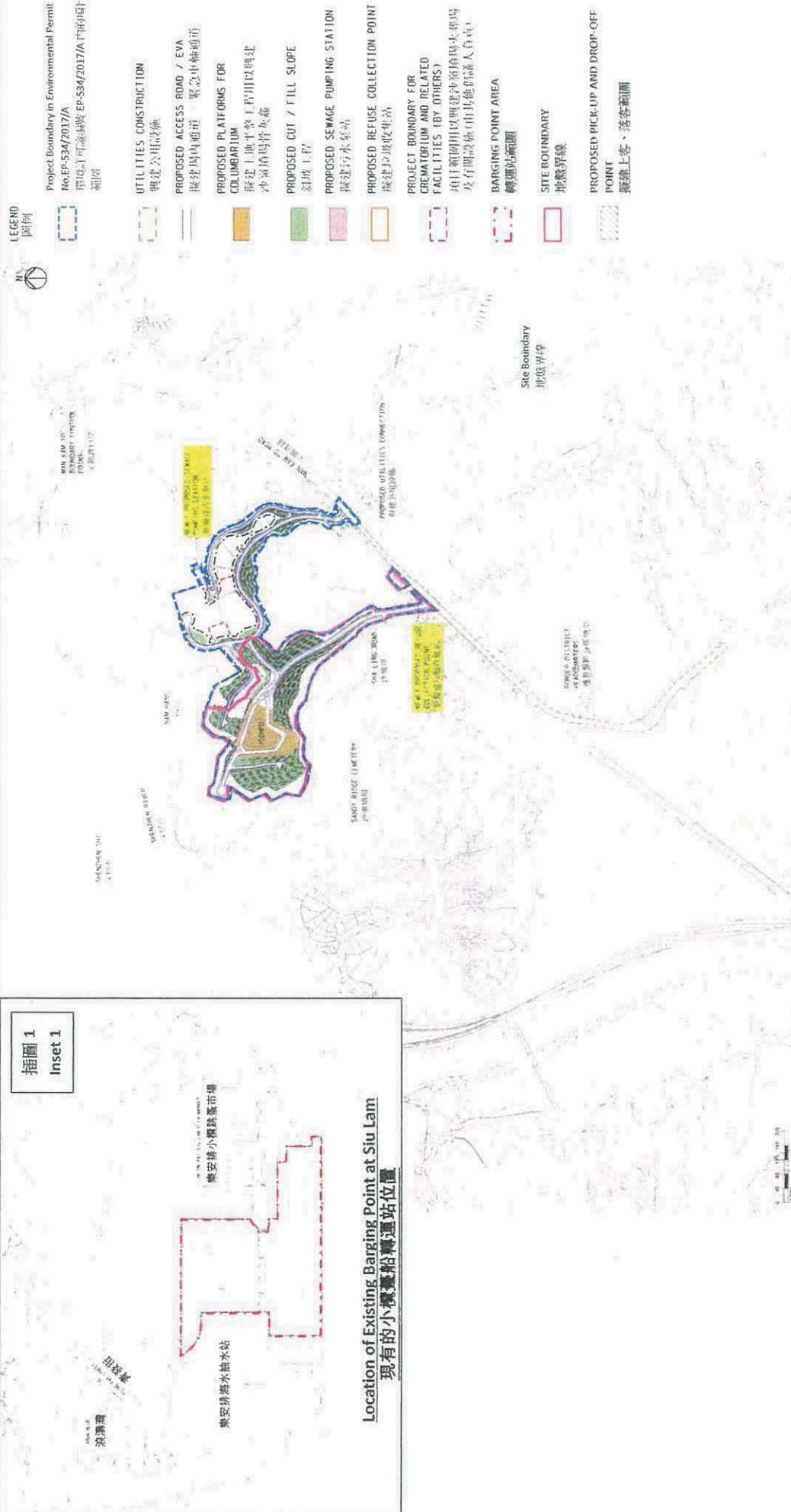
13.2 RECOMMENDATIONS

- 13.2.1 During dry season, the Contractors are reminded to pay special attention on the air quality mitigation measures such as wheel wash facilities, watering of haul roads, loose soil construction surface and covering of dusty materials with tarpaulin sheet should be implemented as far as practicable.
- 13.2.2 Water quality mitigation measures as recommended in the EM&A Manual should be fully implemented, in particular to prevent surface runoff and other pollutants from flowing to local stream and Conservation Area.
- 13.2.3 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



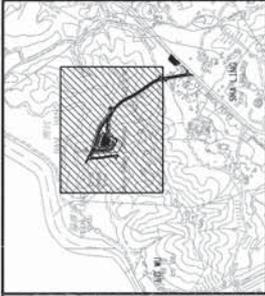
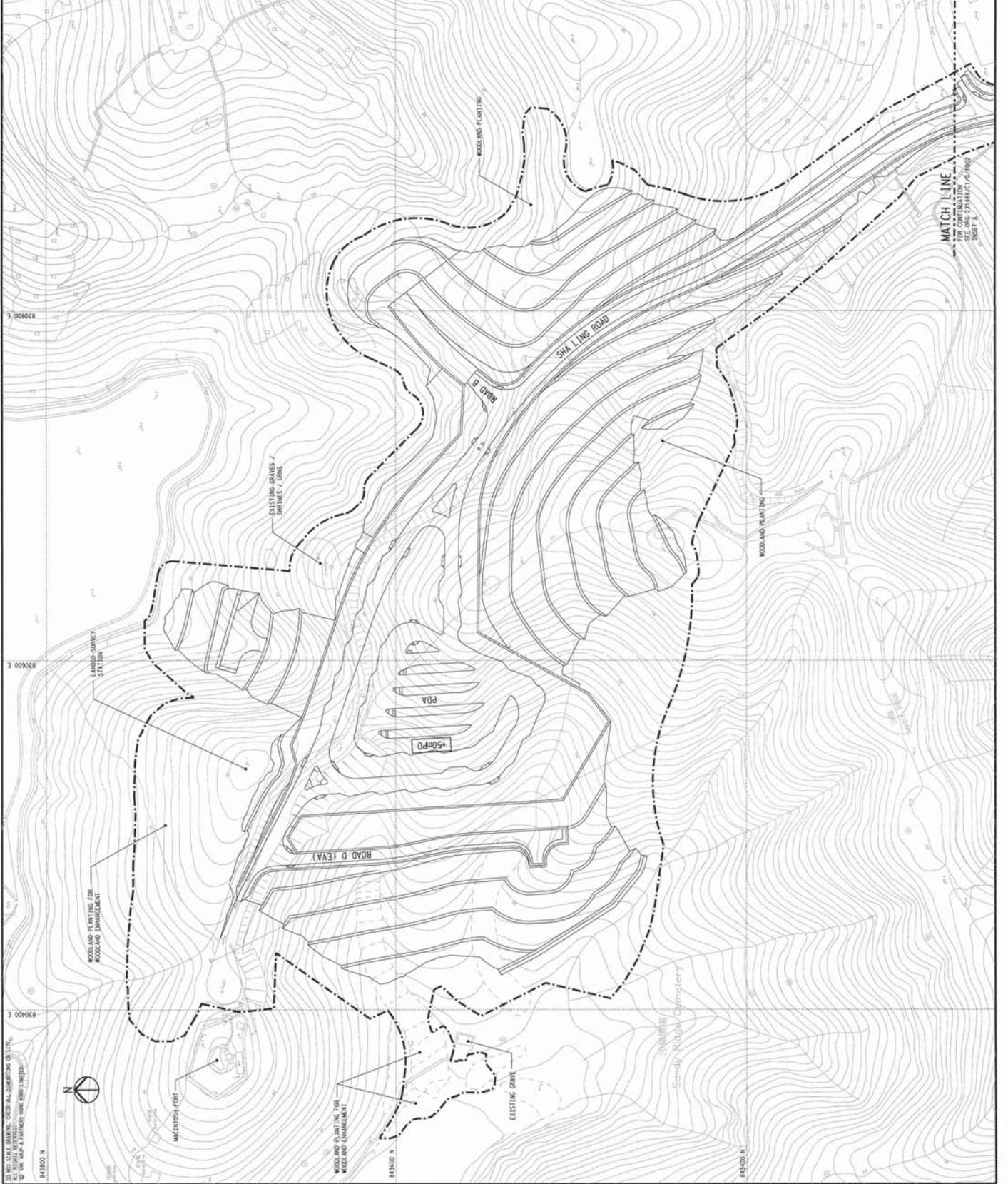
Project Title: Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
工程名稱: 沙嶺墳場興建骨灰龕的工地平整及相關基建工程

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





KEY PLAN

LEGEND:

- PROPOSED WORKS SITE
- SITE FORMATION LEVEL
- +50mPD

| Rev. | Description | By | Date |
|------|-------------|----|------|
| | | | |
| | | | |
| | | | |
| | | | |

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)

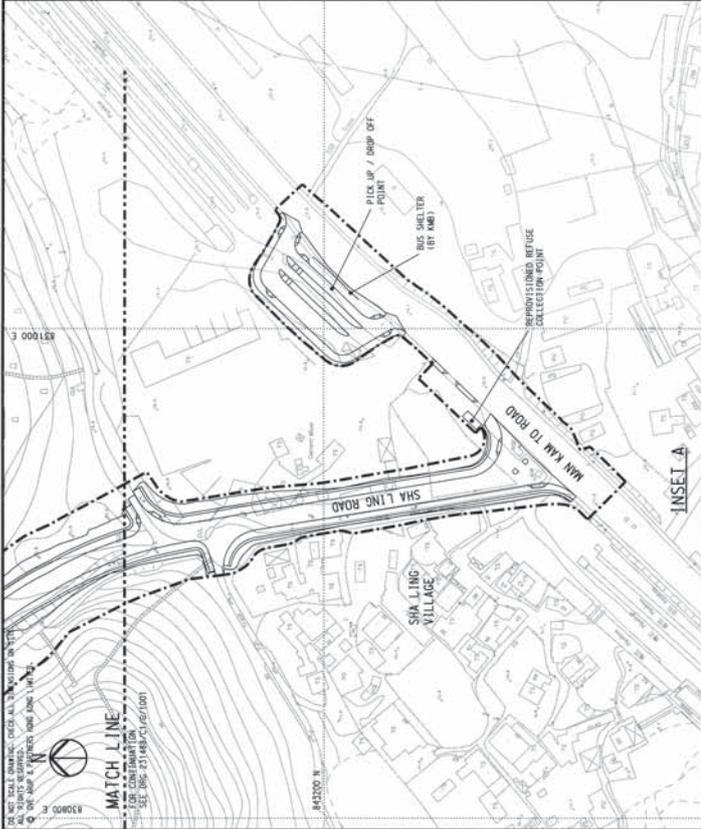
| Drawing No. | Rev. | Date |
|------------------|------|------|
| 231448/C1/G/1001 | | |
| | | |
| | | |
| | | |

Scale: 1:1000 A4
Contract: CONTRACT
Copyright Reserved

CEDD
土木 工程 拓 展 署
Civil Engineering and
Development Department

THIS DRAWING IS THE PROPERTY OF CEDD AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC, MECHANICAL, PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEMS, WITHOUT THE WRITTEN PERMISSION OF CEDD. ANY REPRODUCTION OR TRANSMISSION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF CEDD IS STRICTLY PROHIBITED.

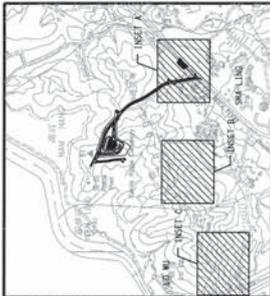
MATCH LINE
 SEE DRAWING NO. 231448/C1/G/1001
 SEE SHEET 231448/C1/G/1002



INSET A



INSET B



KEY PLAN

LEGEND:
 - - - - - PROPOSED WORKS SITE

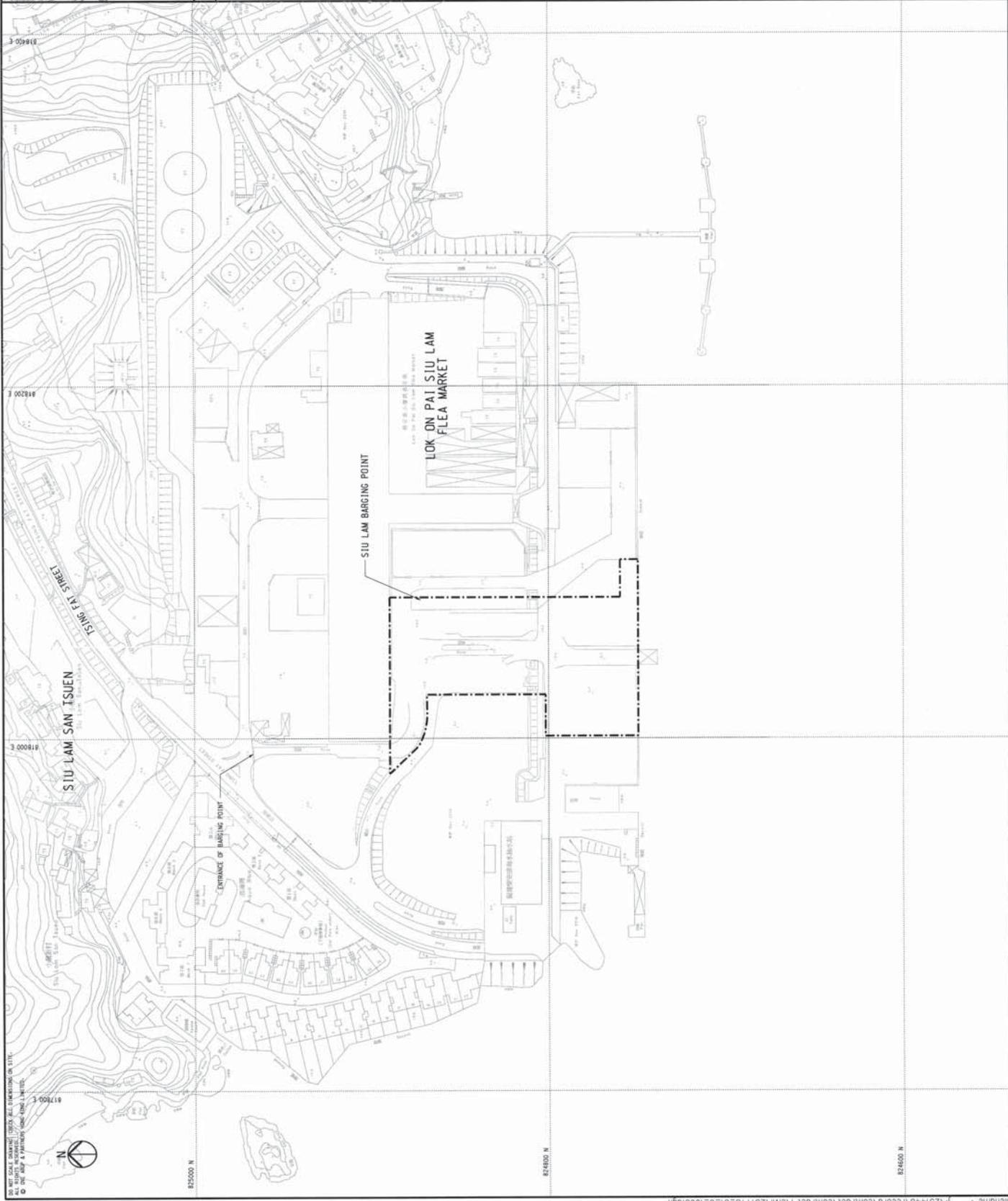
PROPOSED WORKS SITE

| | | |
|---|-------------------------------|-------------|
| Contract No. and Title | ARUP | |
| Contract No. | CV/2016/10 | |
| Site Formation and Associated Infrastructure Works for Development of Columbarium at Sandy Ridge Cemetery | | |
| Drawing Title | GENERAL LAYOUT (SHEET 2 OF 3) | |
| Drawn By | Checked By | Approved By |
| Date | 12/16 | |
| Scale | 1:11000 MAT | CONTRACT |
| COPYRIGHT RESERVED | | |



土木工程師
 Civil Engineers and
 Development Department

DO NOT SCALE DRAWINGS UNLESS ALL DIMENSIONS ON SITE.
 DIMENSIONS SHALL BE IN METERS UNLESS OTHERWISE SPECIFIED.
 ALL DIMENSIONS SHALL BE TO FACE UNLESS OTHERWISE SPECIFIED.



KEY PLAN

LEGEND:
 - - - - - PROPOSED WORKS SITE

| Rev | Description | By | Date |
|-----|-------------|----|------|
| | | | |
| | | | |
| | | | |

ARUP
 Contract No. CV2016/10
 Site Formation and Associated
 Infrastructural Works for
 Development of Columbarium at
 Sandy Ridge Cemetery

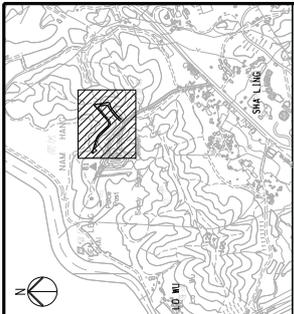
Drawing Title
**GENERAL LAYOUT
 (SHEET 3 OF 3)**

| | | | |
|-------------|------------------|----------|----------|
| Drawing No. | 231448/C1/G/1003 | Rev. | |
| Town | | Date | 12/16 |
| Scale | 1:1000 (M1) | Contract | CONTRACT |

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

Copyright Reserved

Layout Plan of Contract CV/2017/02



KEY PLAN

LEGEND:

--- SITE BOUNDARY

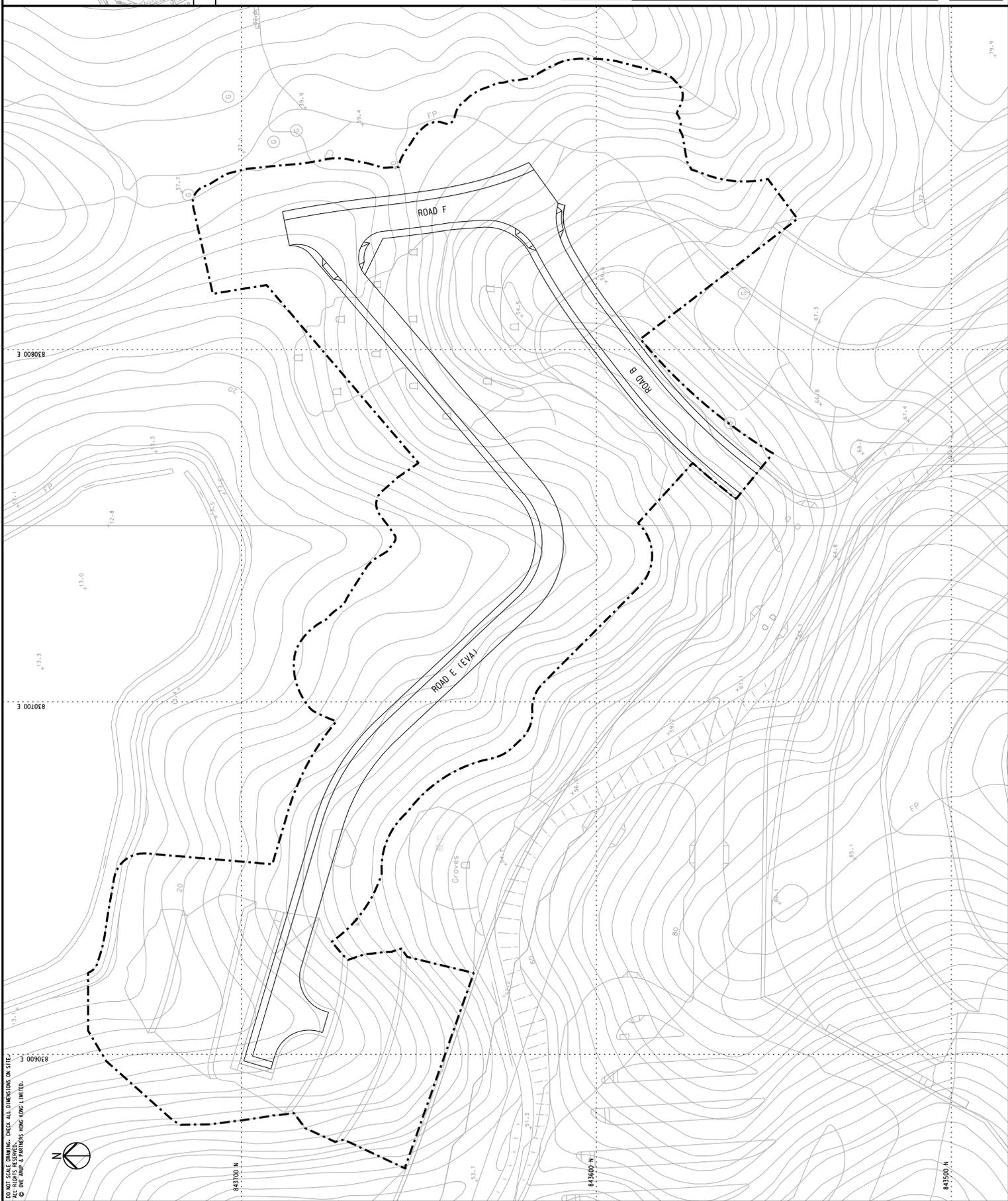
| Rev | Description | By | Date |
|-----|----------------|----|-------|
| 1 | TENDER DRAWING | AM | 11/17 |

ARUP

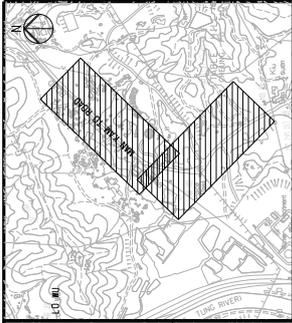
Contract No. and Title
Contract No. CV/2017/02
Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

Drawing Title
GENERAL LAYOUT
(SHEET 1 OF 5)

| | | | |
|-------------|------------------|----------|--------|
| Drawing No. | 231448/C2/C/1001 | Rev. | --- |
| Drawn | AM | Checked | --- |
| Date | 10/17 | Approved | --- |
| Scale | 1:500 (A1) | Status | TENDER |



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © YUE JUNG & PARTNERS ARCHITECTS LIMITED.



KEY PLAN

LEGEND:

--- SITE BOUNDARY

| Rev | Description | By | Date |
|-----|----------------|----|-------|
| 1 | TENDER DRAWING | AM | 11/17 |

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)**

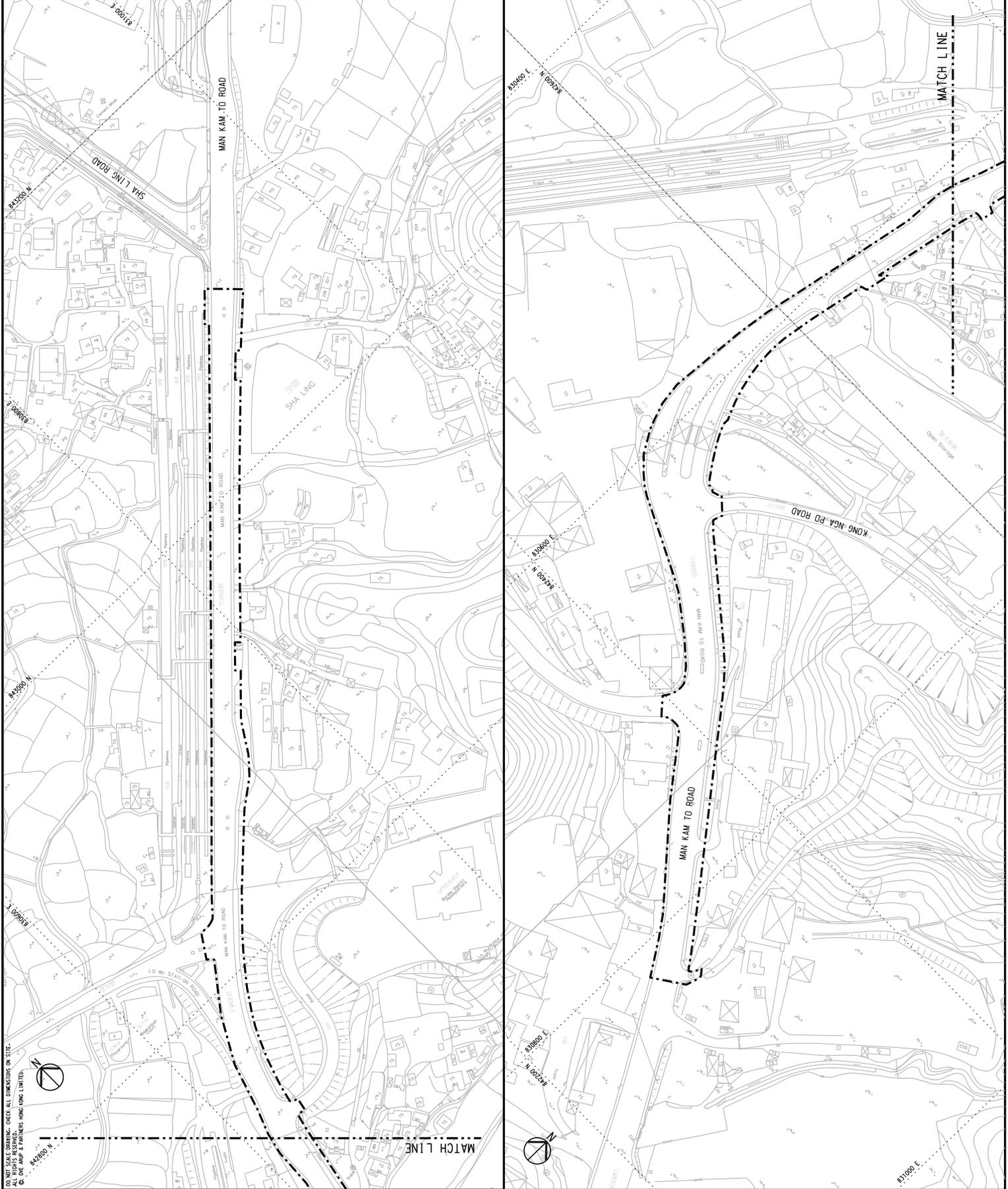
| Rev. | By | Date | Checked | Approved |
|------|----|-------|---------|----------|
| 1 | AM | 10/17 | AL | AL |

Scale: 1:1000 (A1)
Status: TENDER



土木工程拓展署
Civil Engineering and
Development Department

COPYRIGHT RESERVED



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
ALL RIGHTS RESERVED.
© THE ARUP & PARTNERS (HK) LIMITED
12/27/2017



KEY PLAN

LEGEND:

--- SITE BOUNDARY

| Rev | Description | By | Date |
|-----|----------------|----|-------|
| 1 | TENDER DRAWING | AM | 11/17 |

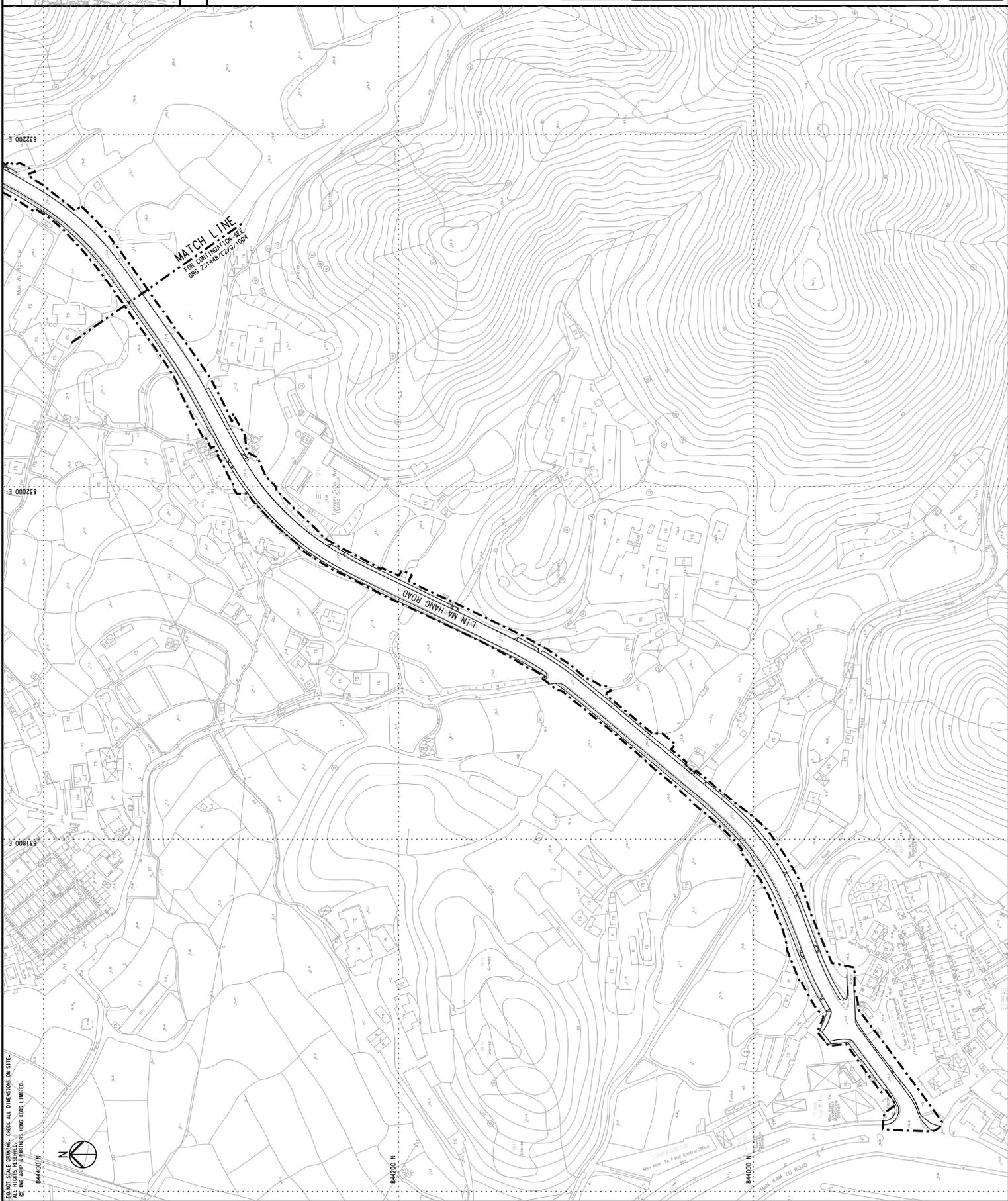
ARUP

Contract No. CV/2017/02
 Development of Columbarium
 at Sandy Ridge Cemetery -
 Infrastructural Works at
 Man Kam To Road and
 Lin Ma Hang Road

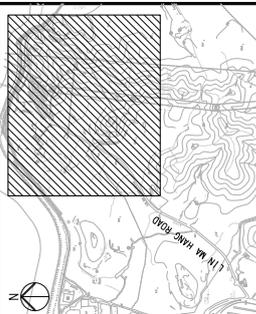
| | | | |
|-------------|------------------|----------|--------|
| Drawing No. | 231448/C2/G/1003 | Rev. | 1 |
| Drawn | 10/17 | Checked | AL |
| Date | 10/17 | Approved | AL |
| Scale | 1:1000 (A1) | Status | TENDER |

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.
 © 2017 ARUP STANTEC CIVIL ENGINEERING LIMITED.
 844400 N



KEY PLAN

LEGEND:
 --- SITE BOUNDARY

| Rev | Description | By | Date |
|-----|----------------|----|-------|
| 1 | TENDER DRAWING | AM | 11/17 |

ARUP

Contract No. and Title
Contract No. CV/2017/02
Development of Columbarium at Sandy Ridge Cemetery - Infrastructural Works at Man Kam To Road and Lin Ma Hang Road

Drawing Title
GENERAL LAYOUT (SHEET 4 OF 5)

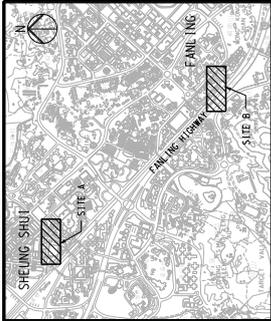
| Drawing No. | Rev. |
|-------------------------|------|
| 231448/C2/C/1004 | 1 |


 土木工程拓展署
 Civil Engineering and Development Department



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © UIC AND P PARTNERS (ONG LING) LIMITED.

MATCH LINE
 FOR CONTINUATION SEE
 DRG. 231448/C2/C/1004



KEY PLAN

LEGEND:

--- SITE BOUNDARY

| | | | |
|-----|----------------|----|-------|
| Rev | Description | By | Date |
| 1 | TENDER DRAWING | AM | 11/17 |

ARUP

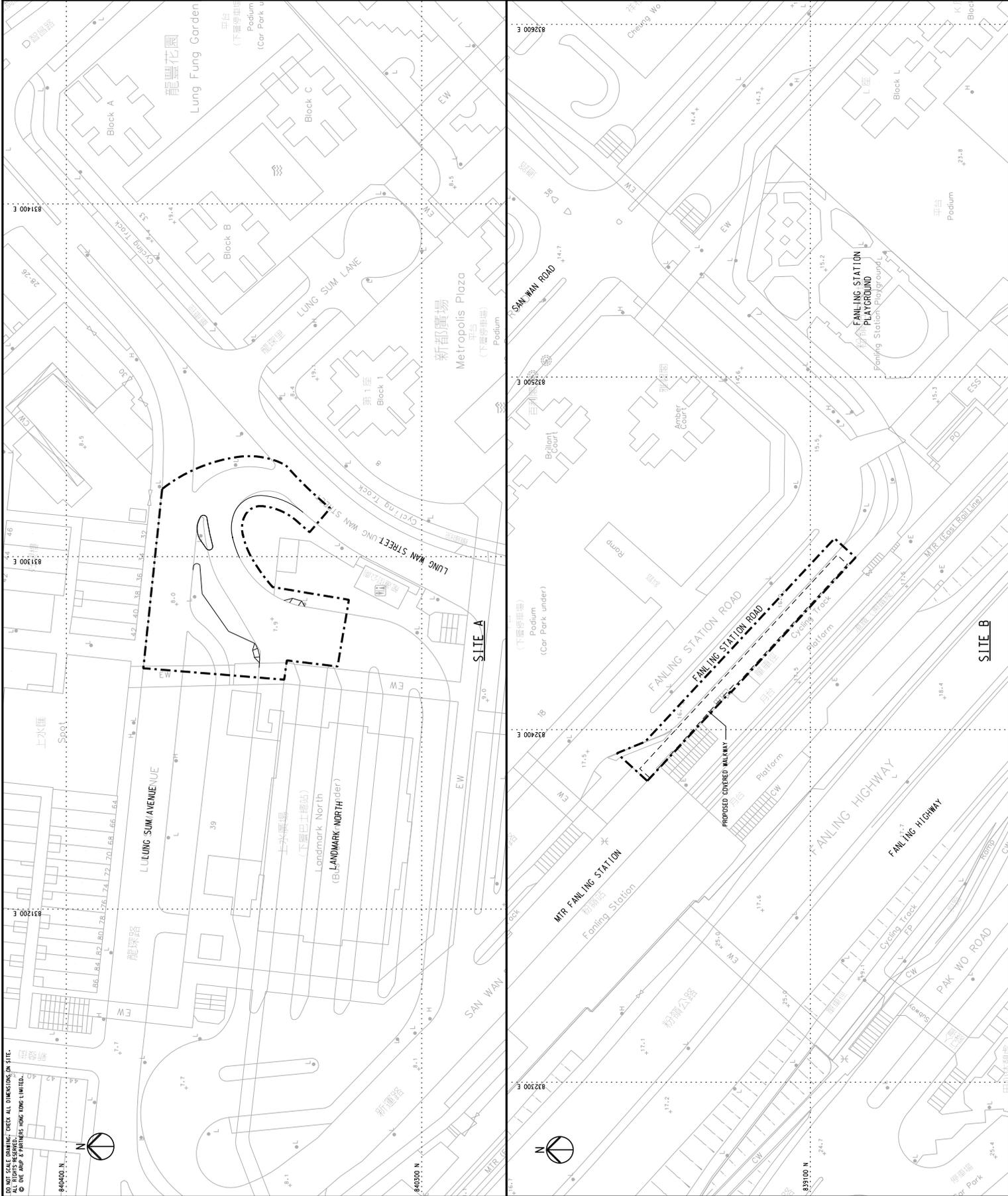
Contract No. and Title

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. | 231448/C2/C/1005 | Rev. | --- |
| Drawn | 10/17/17 | Checked | AL |
| Date | 10/17/17 | Approved | AL |
| Scale | 1:500 (A1) | Status | TENDER |

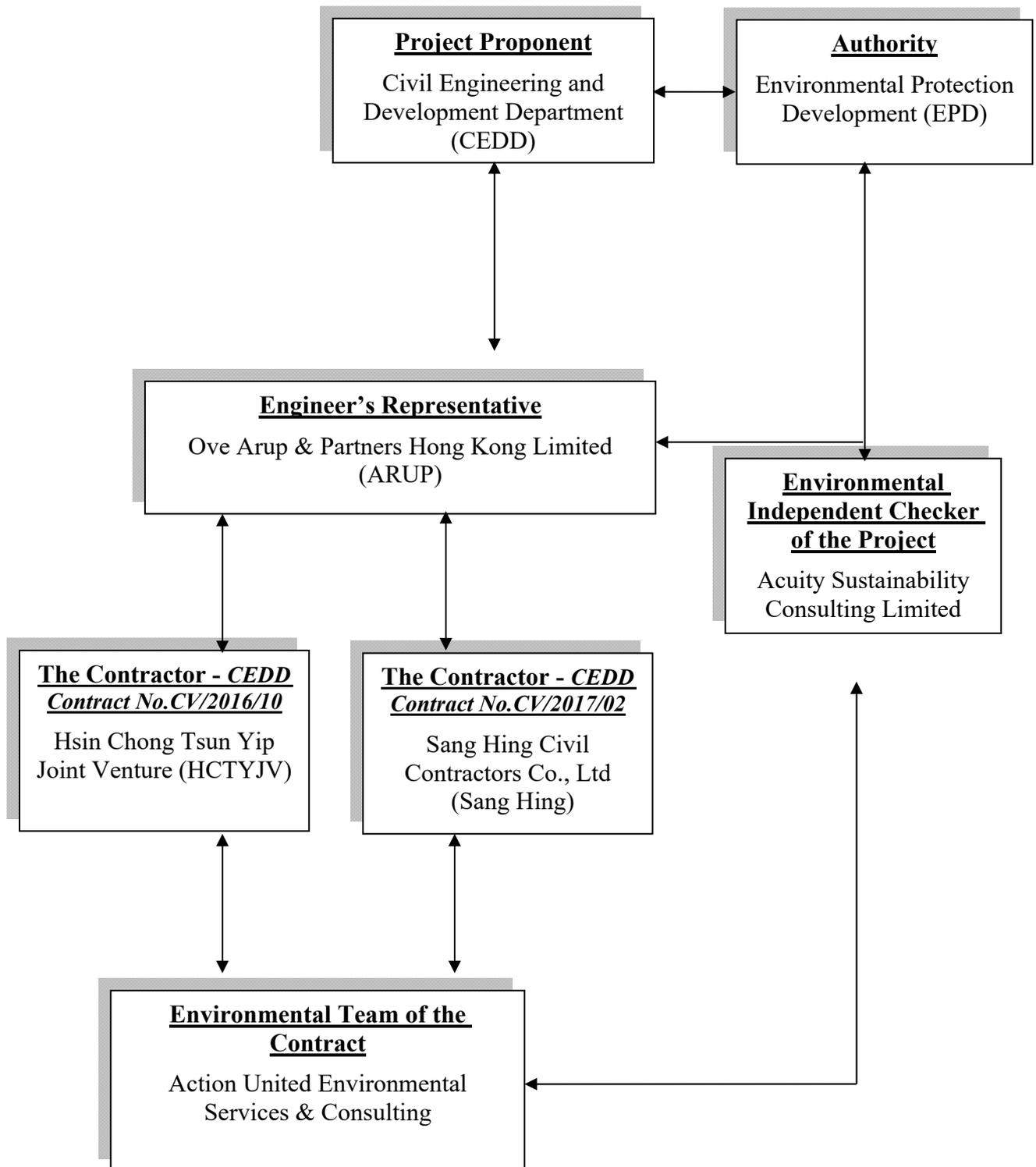


DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © UIC AND PARTNERS HONG KONG LIMITED.

Appendix B

Organization Structure and Contact Details of Relevant Parties

The Contract’s Environmental Management Organization



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

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

Legend:

CEDD (Employer) – Civil Engineering and Development Department

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

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

ACUITY (IEC) – Acuity Sustainability Consulting Limited

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

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

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

Legend:

CEDD (Employer) – Civil Engineering and Development Department

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

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

ACUITY (IEC) – Acuity Sustainability Consulting Limited

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

Appendix C

Three Months Rolling Programme

**Three Months Rolling Programme of
Contract CV/2016/10**

3 Month Rolling Programme (Jan 2023 to March 2023)

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|----|--|------------------|---------------------|----|---|---|---|---|---|---|------|
| 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 Summary Progress Inactive Milestone Manual Task Manual Summary Rollup Start-only Manual Progress
 Milestone Critical Inactive Task Inactive Summary Duration-only Manual Summary Finish-only

3 Month Rolling Programme (Jan 2023 to March 2023)

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|-----|--|------------------|---------------------|----|---|---|---|---|---|---|------|
| 77 | Filling (Rolling by Pass)(~7.5m, 0.5m per day) | 130 days | Sat 14/3/20 | | | | | | | | |
| 78 | Filling in 3m Zone | 133 days | Sat 22/8/20 | | | | | | | | |
| 79 | Benching Works for Rolling by Pass Surface | 3 days | Sat 22/8/20 | | | | | | | | |
| 80 | Lay Rockfill Layer (7.5m/1m per 5 day) | 130 days | Wed 26/8/20 | | | | | | | | |
| 81 | Drainage and Maintenance Access (at and below +35 mpD) | 20 days | Mon 1/2/21 | | | | | | | | |
| 82 | FS1 middle Filling Stage 4 (~7.5m height, +35 to +42.5mPD) | 241 days | Sat 22/8/20 | | | | | | | | |
| 83 | Filling (Rolling by Pass)(~7.5m, 0.5m per day) | 15 days | Sat 22/8/20 | | | | | | | | |
| 84 | Filling in 3m Zone | 41 days | Sat 27/2/21 | | | | | | | | |
| 85 | Benching Works for Rolling by Pass Surface | 3 days | Sat 27/2/21 | | | | | | | | |
| 86 | Lay Rockfill Layer (7.5/1m per 5 days) | 38 days | Wed 3/3/21 | | | | | | | | |
| 87 | Drainage and Maintenance Access (+35 to +42.5mpD) | 35 days | Tue 20/4/21 | | | | | | | | |
| 88 | FS1 middle Filling Stage 5 below +42.5mPD and +50mPD) | 30 days | Tue 20/4/21 | | | | | | | | |
| 89 | Filling (Rolling by Pass)(~15m, 0.5m per day) | 30 days | Tue 20/4/21 | | | | | | | | |
| 90 | Slope Surface forming/ Drainage and Maintenance Access | 20 days | Tue 20/4/21 | | | | | | | | |
| 91 | Fill Slope FS1 North (Section 14 at Drawing C1/GE/1030) | 900 days | Wed 11/7/18 | | | | | | | | |
| 92 | CE16 | 264 days | Wed 11/7/18 | | | | | | | | |
| 93 | FS1 North Filling Works Stage 1 (+15 to+19.7mPD) | 204 days | Sat 1/6/19 | | | | | | | | |
| 94 | Drainage and Maintenance Access (+15 to +20 mpD) | 28 days | Sat 25/1/20 | | | | | | | | |
| 95 | Construction of Outfall CP2X | 14 days | Thu 27/2/20 | | | | | | | | |
| 96 | FS1North , Filling (Rolling by Pass) (+19.7 to +22.4mPD) | 20 days | Sat 14/3/20 | | | | | | | | |
| 97 | FS1 North Filling Stage 2 (+20 to +27.5 mPD) | 100 days | Tue 7/4/20 | | | | | | | | |
| 98 | Drainage and Maintenance Access (+20 to +27.5 mpD) | 65 days | Sat 1/8/20 | | | | | | | | |
| 99 | Filling in 3m Zone (below +27.5mPD) | 58 days | Mon 9/3/20 | | | | | | | | |
| 100 | Benching Works for Rolling by Pass Surface | 3 days | Mon 9/3/20 | | | | | | | | |
| 101 | Lay Filter Layer | 5 days | Thu 12/3/20 | | | | | | | | |
| 102 | Filling by SRT (7.5m/ 3 day per 5 day) | 50 days | Wed 18/3/20 | | | | | | | | |
| 103 | Filling in 3m Zone (below +27.5mPD) (Rockfill) | 23 days | Mon 9/3/20 | | | | | | | | |
| 104 | Benching Works for Rolling by Pass Surface | 3 days | Mon 9/3/20 | | | | | | | | |
| 105 | Lay Rockfill Layer (7.5m/1m per 5 day) | 20 days | Thu 12/3/20 | | | | | | | | |
| 106 | Drainage and Maintenance Access | 22 days | Sat 2/5/20 | | | | | | | | |
| 107 | FS1 North Filling Stage 3 (+27 to +35 mPD) | 171 days | Tue 26/11/19 | | | | | | | | |
| 108 | Filling (Rolling by Pass)(~3m, 0.5m per day) | 6 days | Tue 26/11/19 | | | | | | | | |
| 109 | Drainage and Maintenance Access (+27.5 to +35 mpD) | 30 days | Fri 8/5/20 | | | | | | | | |
| 110 | FS1 North Filling Stage 4 (+35 to +42.5 mPD), Upgrading of Existing Slope Feature 3NW-C/F37 | 229 days | Fri 12/6/20 | | | | | | | | |
| 111 | Filling (Rolling by Pass)(~3m, 0.5m per day) | 20 days | Fri 12/6/20 | | | | | | | | |
| 112 | Drainage and Maintenance Access (+35 to +42.5 mpD) | 30 days | Sat 30/1/21 | | | | | | | | |
| 113 | FS1 North Filling Stage 5 (+42.5 to +50mPD), Upgrading of Existing Slope Feature 3NW-C/F37 | 62 days | Wed 12/5/21 | | | | | | | | |
| 114 | Filling (Rolling by Pass)(~3m, 0.5m per day) | 30 days | Wed 12/5/21 | | | | | | | | |
| 115 | Drainage and Maintenance Access (+42.5 to +50 mpD) | 30 days | Fri 18/6/21 | | | | | | | | |
| 116 | Civil Works for Pick-up/Drop-off area (Part A1, M011 CH020 to CH140) | 162 days | Sat 6/3/21 | | | | | | | | |
| 117 | Waterworks / Drainage / Sewerage/ Utilities Works | 131 days | Sat 6/3/21 | | | | | | | | |
| 118 | Sewerage Works / Drainage Works | 90 days | Sat 6/3/21 | | | | | | | | |
| 119 | Watermain FW1a (CH29-100) | 20 days | Wed 31/3/21 | | | | | | | | |
| 120 | Road Lighting Civil Works Provision | 20 days | Thu 22/7/21 | | | | | | | | |
| 121 | Utilities (by others) | 10 days | Wed 31/3/21 | | | | | | | | |
| 122 | Carriageway and Footway | 72 days | Sat 26/6/21 | | | | | | | | |
| 123 | Backfilling to Formation Level | 30 days | Sat 26/6/21 | | | | | | | | |
| 124 | Carriageway | 30 days | Mon 2/8/21 | | | | | | | | |
| 125 | Footpath, Road Marking and Street Furniture | 12 days | Mon 6/9/21 | | | | | | | | |
| 126 | Landscape Works | 172 days | Sat 6/3/21 | | | | | | | | |
| 127 | Shrubs Planting at RW1 | 30 days | Wed 18/8/21 | | | | | | | | |
| 128 | Woodland Planting at Site 3 | 10 days | Wed 18/8/21 | | | | | | | | |
| 129 | Hydroseeding at Fill Slope | 80 days | Sat 6/3/21 | | | | | | | | |
| 130 | Shrubs Planting at Pick-up/ Drop Off | 10 days | Fri 23/7/21 | | | | | | | | |
| 131 | Irrigation System and Water Points (Except Water Connection) | 24 days | Mon 2/8/21 | | | | | | | | |
| 132 | Tree Planting Works | 10 days | Mon 20/9/21 | | | | | | | | |
| 133 | Section 2 of the Works (Parts B1, B2, C, D, F, G1 & G2) | 1232 days | Fri 15/12/17 | | | | | | | | |
| 134 | Part B1 | 1103 days | Sat 28/4/18 | | | | | | | | |
| 135 | Ground Investigation and Geotechnical instrumentation for Commencement of Slopework | 96 days | Sat 28/4/18 | | | | | | | | |
| 136 | Verification Drillholes (10 Nos., VDH3, 6, 10-15,19-20) and Preliminary Results Submission | 95 days | Sat 28/4/18 | | | | | | | | |
| 137 | Design Review | 36 days | Thu 12/7/18 | | | | | | | | |
| 138 | Cut Slopes CS1 & CS2 | 170 days | Fri 12/10/18 | | | | | | | | |
| 139 | Excavation (crest to +55mPD) | 4 days | Fri 12/10/18 | | | | | | | | |
| 140 | Excavation (+55 to+50mPD) | 11 days | Fri 12/10/18 | | | | | | | | |
| 141 | Drainage and Maintenance Access (at +55mPD berm) | 55 days | Tue 16/10/18 | | | | | | | | |
| 142 | Drainage and Maintenance Access (+55 to +50 slope surface) | 180 days | Tue 16/10/18 | | | | | | | | |
| 143 | Cut Slope CS3 | 251 days | Wed 4/11/20 | | | | | | | | |
| 144 | Excavation (crest to toe) | 15 days | Wed 4/11/20 | | | | | | | | |
| 145 | Drainage and Maintenance Access | 29 days | Sat 21/11/20 | | | | | | | | |
| 146 | Southern End of CS13 | 95 days | Mon 17/5/21 | | | | | | | | |
| 147 | Slope Cutting and Soil Nail | 60 days | Mon 17/5/21 | | | | | | | | |
| 148 | Construction of toe wall (5 bays, approx. 66m) (4 days/ bay) | 20 days | Thu 29/7/21 | | | | | | | | |
| 149 | Backfilling and drainage | 15 days | Sat 21/8/21 | | | | | | | | |
| 150 | Cut Slopes CS11 , CS12 and CS13 | 880 days | Thu 23/8/18 | | | | | | | | |
| 151 | Slope Cutting (crest to+94.5mPD) | 31 days | Thu 23/8/18 | | | | | | | | |
| 152 | Drainage and Maintenance Access (at crest) | 29 days | Tue 2/10/18 | | | | | | | | |
| 153 | Slope Cutting and Soil Nail (+94.5 to +87mPD, 59 nos. of Soil Nail) | 40 days | Sat 6/10/18 | | | | | | | | |

Task Summary Progress Inactive Milestone Manual Task Manual Summary Rollup Start-only Manual Progress
 Milestone Critical Inactive Task Inactive Summary Duration-only Manual Summary Finish-only

3 Month Rolling Programme (Jan 2023 to March 2023)

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|-----|--|-----------------|---------------------|----|---|---|---|---|---|---|------|
| 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 mPD to 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 Summary Progress Inactive Milestone Manual Task Manual Summary Rollup Start-only Manual Progress
 Milestone Critical Inactive Task Inactive Summary Duration-only Manual Summary Finish-only

3 Month Rolling Programme (Jan 2023 to March 2023)

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|-----|---|-------------------|---------------------|----|---|---|---|---|---|---|------|
| 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 CH480-610, 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 (Permanment 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 Summary Progress Inactive Milestone Manual Task Manual Summary Rollup Start-only Manual Progress
 Milestone Critical Inactive Task Inactive Summary Duration-only Manual Summary Finish-only

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|-----|--|------------------|---------------------|----|---|---|---|---|---|---|------|
| 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 | <i>Objection from Local Village (EW16 & 18)</i> | <i>355 days</i> | <i>Tue 21/5/19</i> | | | | | | | | |
| 309 | Application for Road Closure / Road Divertion | 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 | <i>Works Area Handing Over to WSD as Request</i> | <i>198 days</i> | <i>Mon 15/4/19</i> | | | | | | | | |
| 347 | <i>Interface Issue with C2 (As request by Arup to delay XP application) (Including Temp. Road Diversion)</i> | <i>290 days</i> | <i>Tue 28/5/19</i> | | | | | | | | |
| 348 | TTA and XP Application at Man Kam To Road | 14 days | Wed 20/5/20 | | | | | | | | |
| 349 | <i>Works Area Handling to WSD for DongJiang Watermain Works</i> | <i>37 days</i> | <i>Wed 25/11/20</i> | | | | | | | | |
| 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 | <i>Works Area Handing Over to WSD as Request</i> | <i>120 days</i> | <i>Mon 6/5/19</i> | | | | | | | | |
| 363 | <i>Work Area Handling to Sang Hing for Turn Around</i> | <i>190 days</i> | <i>Mon 6/4/20</i> | | | | | | | | |
| 364 | <i>Works Area Handling to WSD for DongJiang Watermain Works</i> | <i>41 days</i> | <i>Wed 25/11/20</i> | | | | | | | | |
| 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 Summary Progress Inactive Milestone Manual Task Manual Summary Rollup Start-only Manual Progress
 Milestone Critical Inactive Task Inactive Summary Duration-only Manual Summary Finish-only

3 Month Rolling Programme (Jan 2023 to March 2023)

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|-----|--|-----------------|---------------------|----|---|---|---|---|---|---|------|
| 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 Watermains | 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 reinstatent | 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 (+27.6 to 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 | | | | | | | | |

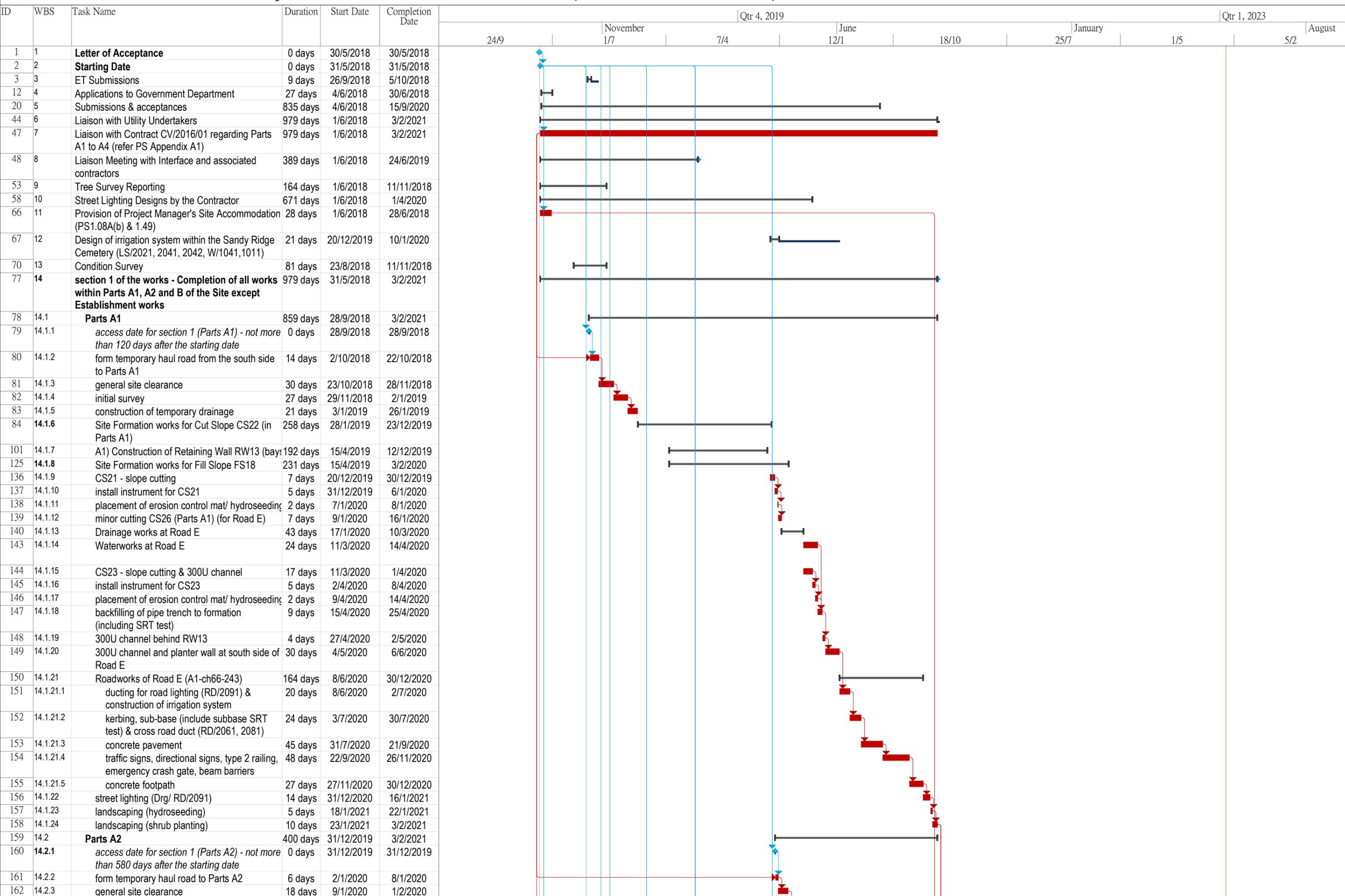
Task Summary Progress Inactive Milestone Manual Task Manual Summary Rollup Start-only Manual Progress
 Milestone Critical Inactive Task Inactive Summary Duration-only Manual Summary Finish-only

3 Month Rolling Programme (Jan 2023 to March 2023)

| ID | Task Name | Duration | Start | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 2023 |
|-----|-------------------------|----------------|--------------------|----|---|---|---|---|---|---|------|
| 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 | | | | | | | | |

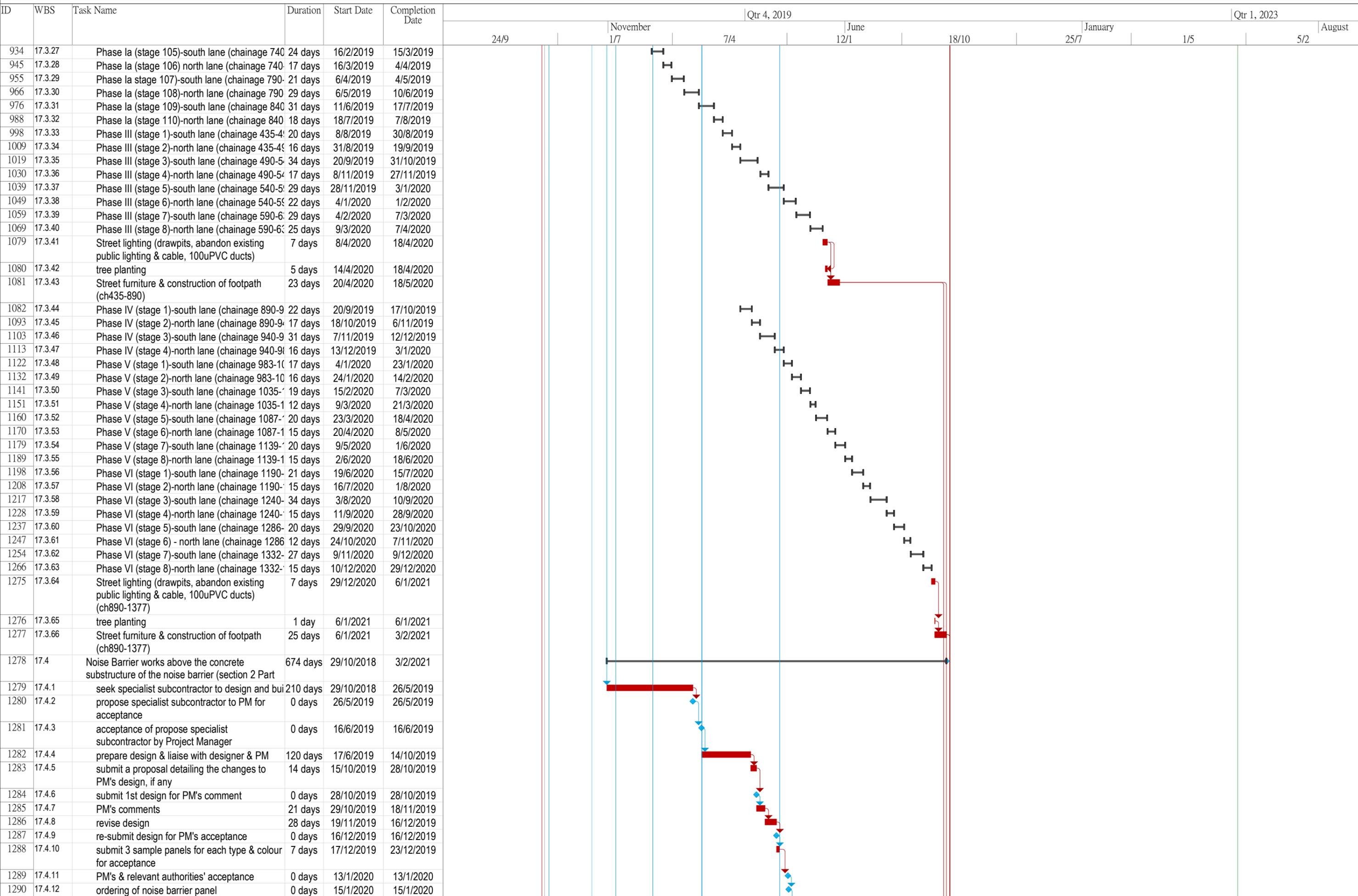
| | | | | | | | | | | | | | | | |
|-----------|---|----------|---|---------------|---|--------------------|---|---------------|---|-----------------------|---|-------------|---|-----------------|---|
| Task |  | Summary |  | Progress |  | Inactive Milestone |  | Manual Task |  | Manual Summary Rollup |  | Start-only |  | Manual Progress |  |
| Milestone |  | Critical |  | Inactive Task |  | Inactive Summary |  | Duration-only |  | Manual Summary |  | Finish-only |  | | |

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



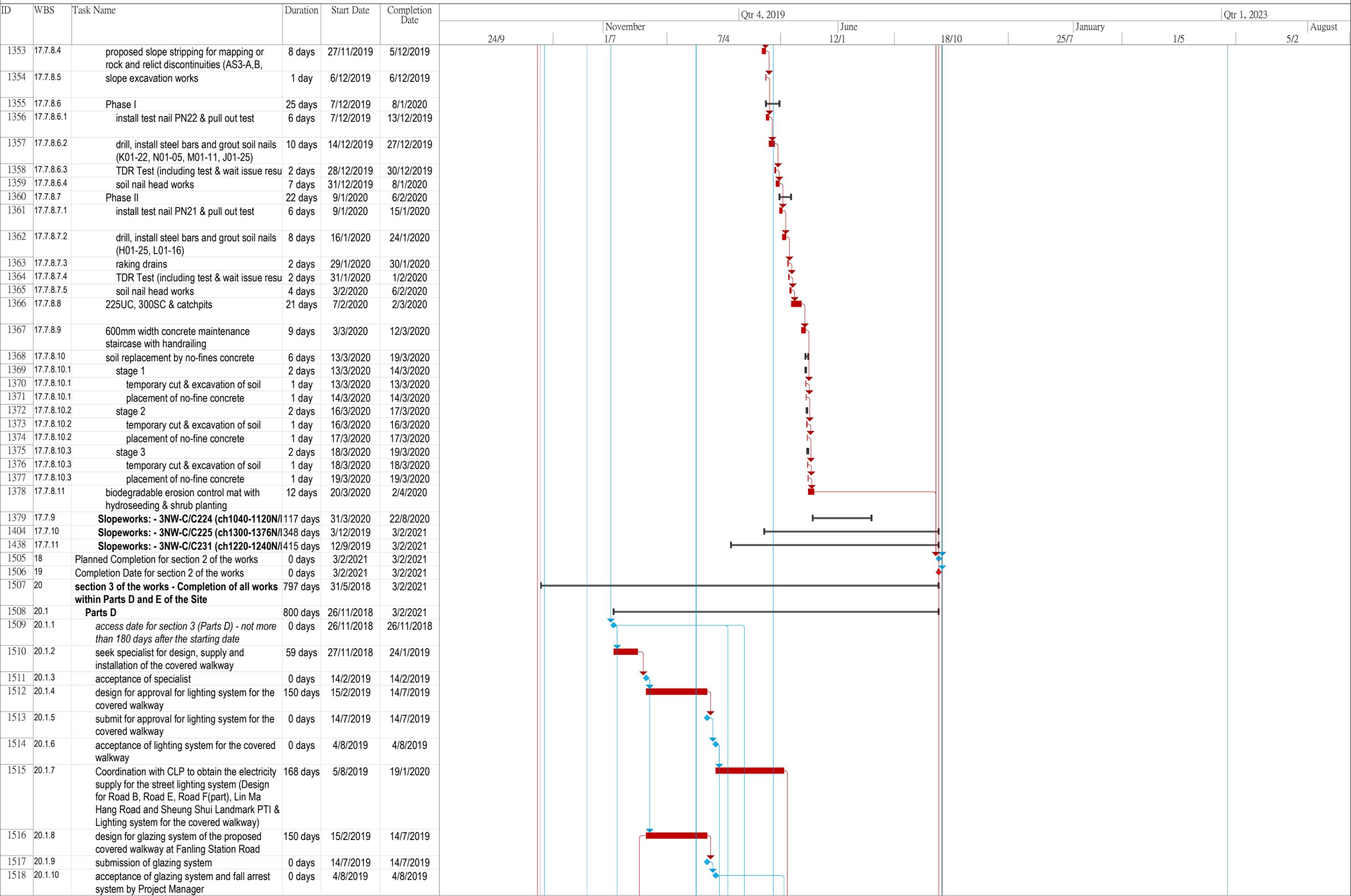
| ID | WBS | Task Name | Duration | Start Date | Completion Date | Qtr 4, 2019 | | | | | Qtr 1, 2023 | |
|-----|-----------|--|----------|------------|-----------------|-------------|--------------|-----|-----------|-------|--------------|-----|
| | | | | | | 24/9 | November 1/7 | 7/4 | June 12/1 | 18/10 | January 25/7 | 1/5 |
| 163 | 14.2.4 | initial survey | 12 days | 3/2/2020 | 15/2/2020 | | | | | | | |
| 164 | 14.2.5 | construction of temporary drainage | 20 days | 17/2/2020 | 10/3/2020 | | | | | | | |
| 165 | 14.2.6 | Site Formation works for Cut Slope CS22 (in P) | 15 days | 11/3/2020 | 30/3/2020 | | | | | | | |
| 174 | 14.2.7 | Construction of Retaining Wall RW13 Bay 6 to | 107 days | 27/3/2020 | 10/8/2020 | | | | | | | |
| 199 | 14.2.8 | (west) drainage works at Road E (ch250 to 300) | 16 days | 8/8/2020 | 26/8/2020 | | | | | | | |
| 200 | 14.2.9 | (west) waterworks at Road E (ch250 to 300) | 15 days | 27/8/2020 | 12/9/2020 | | | | | | | |
| 201 | 14.2.10 | construction of Irrigation System | 5 days | 12/9/2020 | 17/9/2020 | | | | | | | |
| 202 | 14.2.11 | U channel for Road E | 3 days | 17/9/2020 | 19/9/2020 | | | | | | | |
| 203 | 14.2.12 | Roadworks of Road E (A2-ch243-300) | 42 days | 19/9/2020 | 17/11/2020 | | | | | | | |
| 209 | 14.2.13 | street lighting for Road E (Drg/ RD/2091) | 9 days | 17/11/2020 | 26/11/2020 | | | | | | | |
| 210 | 14.2.14 | landscaping (shrub planting) | 4 days | 27/11/2020 | 1/12/2020 | | | | | | | |
| 211 | 14.2.15 | site formation works for Cut Slope CS26 (A2) | 24 days | 8/8/2020 | 4/9/2020 | | | | | | | |
| 212 | 14.2.16 | site formation works for Cut Slope CS25 (A2) | 12 days | 5/9/2020 | 18/9/2020 | | | | | | | |
| 213 | 14.2.17 | placement of erosion control mat/ hydroseeding | 2 days | 19/9/2020 | 21/9/2020 | | | | | | | |
| 214 | 14.2.18 | drainage works at Road B & sewerage works at Road B | 28 days | 19/9/2020 | 28/10/2020 | | | | | | | |
| 215 | 14.2.19 | waterworks at Road B | 25 days | 29/10/2020 | 30/11/2020 | | | | | | | |
| 216 | 14.2.20 | backfill formation for Road B | 3 days | 1/12/2020 | 3/12/2020 | | | | | | | |
| 217 | 14.2.21 | street lighting ducts and drawpits at Road B | 9 days | 1/12/2020 | 10/12/2020 | | | | | | | |
| 218 | 14.2.22 | arrange Town Gas to lay cables (NOT YET AGREED) | 5 days | 11/12/2020 | 16/12/2020 | | | | | | | |
| 219 | 14.2.23 | planter wall for Road B | 5 days | 17/12/2020 | 22/12/2020 | | | | | | | |
| 220 | 14.2.24 | arrange HKT to lay PCCW cables (NOT YET AGREED) | 5 days | 23/12/2020 | 30/12/2020 | | | | | | | |
| 221 | 14.2.25 | Roadworks of Road B (A2-ch28.5-90) | 19 days | 31/12/2020 | 22/1/2021 | | | | | | | |
| 222 | 14.2.25.1 | kerbing & sub-base (include sub-base SRT t | 8 days | 31/12/2020 | 9/1/2021 | | | | | | | |
| 223 | 14.2.25.2 | DBM (Roadbase) | 2 days | 11/1/2021 | 12/1/2021 | | | | | | | |
| 224 | 14.2.25.3 | base course and wearing course | 2 days | 13/1/2021 | 14/1/2021 | | | | | | | |
| 225 | 14.2.25.4 | directional sign, roadmarkings & footpath | 7 days | 15/1/2021 | 22/1/2021 | | | | | | | |
| 226 | 14.2.26 | landscaping (hydroseeding) | 17 days | 13/1/2021 | 1/2/2021 | | | | | | | |
| 227 | 14.2.27 | landscaping (shrub planting) | 3 days | 1/2/2021 | 3/2/2021 | | | | | | | |
| 228 | 14.3 | Parts B - refer Appendix MKTR01A & Appendix MKTR01B | 979 days | 31/5/2018 | 3/2/2021 | | | | | | | |
| 229 | 14.3.1 | access date for section 1 (Parts B) - the starting date | 0 days | 31/5/2018 | 31/5/2018 | | | | | | | |
| 230 | 14.3.2 | Initial Survey | 104 days | 1/6/2018 | 4/10/2018 | | | | | | | |
| 231 | 14.3.3 | utility detection and submit reports | 30 days | 5/10/2018 | 9/11/2018 | | | | | | | |
| 232 | 14.3.4 | Temporary Traffic Arrangement (TTA) Scheme for Man Kam Road | 134 days | 1/6/2018 | 9/11/2018 | | | | | | | |
| 236 | 14.3.5 | Construction of Fresh Water Mains (DN400)-refer to Drawings No. MKTR | 352 days | 10/11/2018 | 17/1/2020 | | | | | | | |
| 237 | 14.3.5.1 | Phase 1: TTA 1s | 52 days | 10/11/2018 | 12/1/2019 | | | | | | | |
| 246 | 14.3.5.2 | Phase 1: TTA 8s | 49 days | 14/11/2018 | 12/1/2019 | | | | | | | |
| 255 | 14.3.5.3 | Phase 1: TTA 15s | 44 days | 20/11/2018 | 12/1/2019 | | | | | | | |
| 264 | 14.3.5.4 | Phase 2: TTA 2s | 39 days | 15/1/2019 | 4/3/2019 | | | | | | | |
| 273 | 14.3.5.5 | Phase 2: TTA 9s | 39 days | 15/1/2019 | 4/3/2019 | | | | | | | |
| 282 | 14.3.5.6 | Phase 2: TTA 16s | 40 days | 14/1/2019 | 4/3/2019 | | | | | | | |
| 291 | 14.3.5.7 | Phase 3: TTA3s | 39 days | 5/3/2019 | 23/4/2019 | | | | | | | |
| 300 | 14.3.5.8 | Phase 3: TTA10s | 39 days | 5/3/2019 | 23/4/2019 | | | | | | | |
| 309 | 14.3.5.9 | Phase 3: TTA17s | 39 days | 5/3/2019 | 23/4/2019 | | | | | | | |
| 318 | 14.3.5.10 | Phase 4: TTA4s | 38 days | 29/4/2019 | 14/6/2019 | | | | | | | |
| 327 | 14.3.5.11 | Phase 4: TTA11s | 38 days | 29/4/2019 | 14/6/2019 | | | | | | | |
| 336 | 14.3.5.12 | Phase 4: TTA18s | 42 days | 24/4/2019 | 14/6/2019 | | | | | | | |
| 345 | 14.3.5.13 | Phase 5: TTA5s | 42 days | 19/6/2019 | 7/8/2019 | | | | | | | |
| 354 | 14.3.5.14 | Phase 5: TTA12s | 45 days | 15/6/2019 | 7/8/2019 | | | | | | | |
| 363 | 14.3.5.15 | Phase 5: TTA19s | 45 days | 15/6/2019 | 7/8/2019 | | | | | | | |
| 372 | 14.3.5.16 | Phase 6: TTA6s | 46 days | 9/8/2019 | 3/10/2019 | | | | | | | |
| 381 | 14.3.5.17 | Phase 6: TTA13s | 42 days | 14/8/2019 | 3/10/2019 | | | | | | | |
| 390 | 14.3.5.18 | Phase 6: TTA20s | 47 days | 8/8/2019 | 3/10/2019 | | | | | | | |
| 399 | 14.3.5.19 | Phase 7: TTA7s | 44 days | 8/10/2019 | 27/11/2019 | | | | | | | |

| ID | WBS | Task Name | Duration | Start Date | Completion Date | Qtr 4, 2019 | | | | | Qtr 1, 2023 | | | | | |
|-----|-----------|---|----------|------------|-----------------|-------------|-----|-----|------|-------|-------------|-----|-----|--------|--|--|
| | | | | | | November | | | | | January | | | | | |
| | | | | | | 24/9 | 1/7 | 7/4 | 12/1 | 18/10 | 25/7 | 1/5 | 5/2 | August | | |
| 408 | 14.3.5.20 | Phase 7: TTA14s | 46 days | 4/10/2019 | 27/11/2019 | | | | | | | | | | | |
| 417 | 14.3.5.21 | Phase 7: additional TTA21s | 29 days | 24/10/2019 | 27/11/2019 | | | | | | | | | | | |
| 427 | 14.3.5.22 | additional Phase 8: additional TTA 0s | 41 days | 27/11/2019 | 17/1/2020 | | | | | | | | | | | |
| 437 | 14.3.6 | Construction of Sewerage (DN630) - refer to Drawing No. MKTR Programme/DR/001 | 311 days | 18/1/2020 | 3/2/2021 | | | | | | | | | | | |
| 438 | 14.3.6.1 | Phase A: TTA 1n | 50 days | 21/1/2020 | 21/3/2020 | | | | | | | | | | | |
| 447 | 14.3.6.2 | Phase A: TTA 7n | 52 days | 18/1/2020 | 21/3/2020 | | | | | | | | | | | |
| 456 | 14.3.6.3 | Phase B: TTA 2n | 52 days | 23/3/2020 | 28/5/2020 | | | | | | | | | | | |
| 465 | 14.3.6.4 | Phase B: TTA 8n | 52 days | 23/3/2020 | 28/5/2020 | | | | | | | | | | | |
| 474 | 14.3.6.5 | Phase C: TTA 3n | 52 days | 29/5/2020 | 30/7/2020 | | | | | | | | | | | |
| 483 | 14.3.6.6 | Phase C: TTA 9n | 52 days | 29/5/2020 | 30/7/2020 | | | | | | | | | | | |
| 492 | 14.3.6.7 | Phase D: TTA 4n | 52 days | 31/7/2020 | 29/9/2020 | | | | | | | | | | | |
| 501 | 14.3.6.8 | Phase D: TTA 10n | 52 days | 31/7/2020 | 29/9/2020 | | | | | | | | | | | |
| 510 | 14.3.6.9 | Phase E: TTA 5n | 52 days | 30/9/2020 | 2/12/2020 | | | | | | | | | | | |
| 519 | 14.3.6.10 | Phase E: TTA 11n | 52 days | 30/9/2020 | 2/12/2020 | | | | | | | | | | | |
| 528 | 14.3.6.11 | Phase F: TTA 6n | 51 days | 3/12/2020 | 3/2/2021 | | | | | | | | | | | |
| 537 | 14.3.6.12 | Phase F: additional TTA 12s | 38 days | 18/12/2020 | 3/2/2021 | | | | | | | | | | | |
| 546 | 14.3.6.13 | Phase F: additional TTA 0n | 38 days | 18/12/2020 | 3/2/2021 | | | | | | | | | | | |
| 555 | 15 | Planned Completion for section 1 of the works | 0 days | 3/2/2021 | 3/2/2021 | | | | | | | | | | | |
| 556 | 16 | Completion Date for section 1 of the works | 0 days | 3/2/2021 | 3/2/2021 | | | | | | | | | | | |
| 557 | 17 | section 2 of the works - Completion of all works within Parts C1 and C2 of the Site except Establishment works | 979 days | 31/5/2018 | 3/2/2021 | | | | | | | | | | | |
| 558 | 17.1 | access date for section 2 (Part C1) | 0 days | 31/5/2018 | 31/5/2018 | | | | | | | | | | | |
| 559 | 17.2 | Temporary Traffic Arrangement (TTA) Scheme for Lin Ma Hang Road | 162 days | 1/6/2018 | 9/11/2018 | | | | | | | | | | | |
| 565 | 17.3 | works at Lin Ma Hang Road (section 2 Part C1) refer Appendice LMHR01a to d | 817 days | 10/11/2018 | 3/2/2021 | | | | | | | | | | | |
| 566 | 17.3.1 | Phase I (stage 1)-south lane (chainage 240-283) | 23 days | 10/11/2018 | 6/12/2018 | | | | | | | | | | | |
| 577 | 17.3.2 | Phase I (stage 2)-north lane (chainage 240-283) | 16 days | 7/12/2018 | 27/12/2018 | | | | | | | | | | | |
| 587 | 17.3.3 | Phase I (stage 3)-south lane (chainage 283-333) | 26 days | 28/12/2018 | 28/1/2019 | | | | | | | | | | | |
| 598 | 17.3.4 | Phase I (stage 4)-north lane (chainage 283-333) | 17 days | 29/1/2019 | 20/2/2019 | | | | | | | | | | | |
| 608 | 17.3.5 | Phase I (stage 5)-south lane (chainage 335-380) | 18 days | 21/2/2019 | 13/3/2019 | | | | | | | | | | | |
| 618 | 17.3.6 | Phase I (stage 6)-north lane (chainage 335-380) | 16 days | 14/3/2019 | 1/4/2019 | | | | | | | | | | | |
| 627 | 17.3.7 | Phase I (stage 7)-south lane (chainage 380-432) | 23 days | 2/4/2019 | 3/5/2019 | | | | | | | | | | | |
| 638 | 17.3.8 | Phase I (stage 8)-north lane (chainage 380-432) | 15 days | 4/5/2019 | 22/5/2019 | | | | | | | | | | | |
| 648 | 17.3.9 | Phase I (stage 9)-south lane (chainage 190-241) | 18 days | 23/5/2019 | 13/6/2019 | | | | | | | | | | | |
| 659 | 17.3.10 | Phase I (stage 10)-north lane (chainage 190-241) | 16 days | 14/6/2019 | 3/7/2019 | | | | | | | | | | | |
| 669 | 17.3.11 | Phase II (stage 1)-south lane (chainage 32-85)-Noise Barrier MM6 (bays 1-3) & MM7 (bays 1-2) | 95 days | 4/7/2019 | 25/10/2019 | | | | | | | | | | | |
| 703 | 17.3.12 | Phase II (stage 2)-north lane (chainage 32-85)-Noise Barrier MM9 (bays 1-4) | 84 days | 26/10/2019 | 7/2/2020 | | | | | | | | | | | |
| 735 | 17.3.13 | Phase II (stage 3)-south lane (chainage 85-138) | 38 days | 8/2/2020 | 23/3/2020 | | | | | | | | | | | |
| 746 | 17.3.14 | Phase II (stage 4)-north lane (chainage 85-138)-Noise Barrier MM10 (bays 1-4) | 68 days | 24/3/2020 | 17/6/2020 | | | | | | | | | | | |
| 776 | 17.3.15 | Phase II (stage 5)-south lane (chainage 138-190) | 36 days | 18/6/2020 | 31/7/2020 | | | | | | | | | | | |
| 787 | 17.3.16 | Phase II (stage 6)-north lane (chainage 138-190)-Noise Barrier MM10 (bays 5-9) | 85 days | 1/8/2020 | 11/11/2020 | | | | | | | | | | | |
| 818 | 17.3.17 | Phase II (stage 7)-south lane (chainage 0-32)-Noise Barrier MM5 (bays 1-2) | 53 days | 12/11/2020 | 15/1/2021 | | | | | | | | | | | |
| 851 | 17.3.18 | Phase II (stage 8)-north lane (chainage 0-32) | 16 days | 16/1/2021 | 3/2/2021 | | | | | | | | | | | |
| 862 | 17.3.19 | Noise Barrier MM8 (bays 1-3) | 140 days | 1/8/2020 | 18/1/2021 | | | | | | | | | | | |
| 891 | 17.3.20 | Street lighting (drawpits, abandon existing public lighting & cable, 100uPVC ducts) (ch0-435) | 21 days | 14/12/2020 | 9/1/2021 | | | | | | | | | | | |
| 892 | 17.3.21 | tree planting | 3 days | 11/1/2021 | 13/1/2021 | | | | | | | | | | | |
| 893 | 17.3.22 | Street furniture & construction of footpath (ch0-435) | 22 days | 9/1/2021 | 3/2/2021 | | | | | | | | | | | |
| 894 | 17.3.23 | Phase Ia (stage 101)-south lane (chainage 633-685) | 20 days | 10/11/2018 | 3/12/2018 | | | | | | | | | | | |
| 904 | 17.3.24 | Phase Ia (stage 102)-north lane (chainage 633-685) | 16 days | 4/12/2018 | 21/12/2018 | | | | | | | | | | | |
| 914 | 17.3.25 | Phase Ia (stage 103)-south lane (chainage 685-740) | 25 days | 22/12/2018 | 23/1/2019 | | | | | | | | | | | |
| 925 | 17.3.26 | Phase Ia (stage 104)-north lane (chainage 685-740) | 17 days | 24/1/2019 | 15/2/2019 | | | | | | | | | | | |

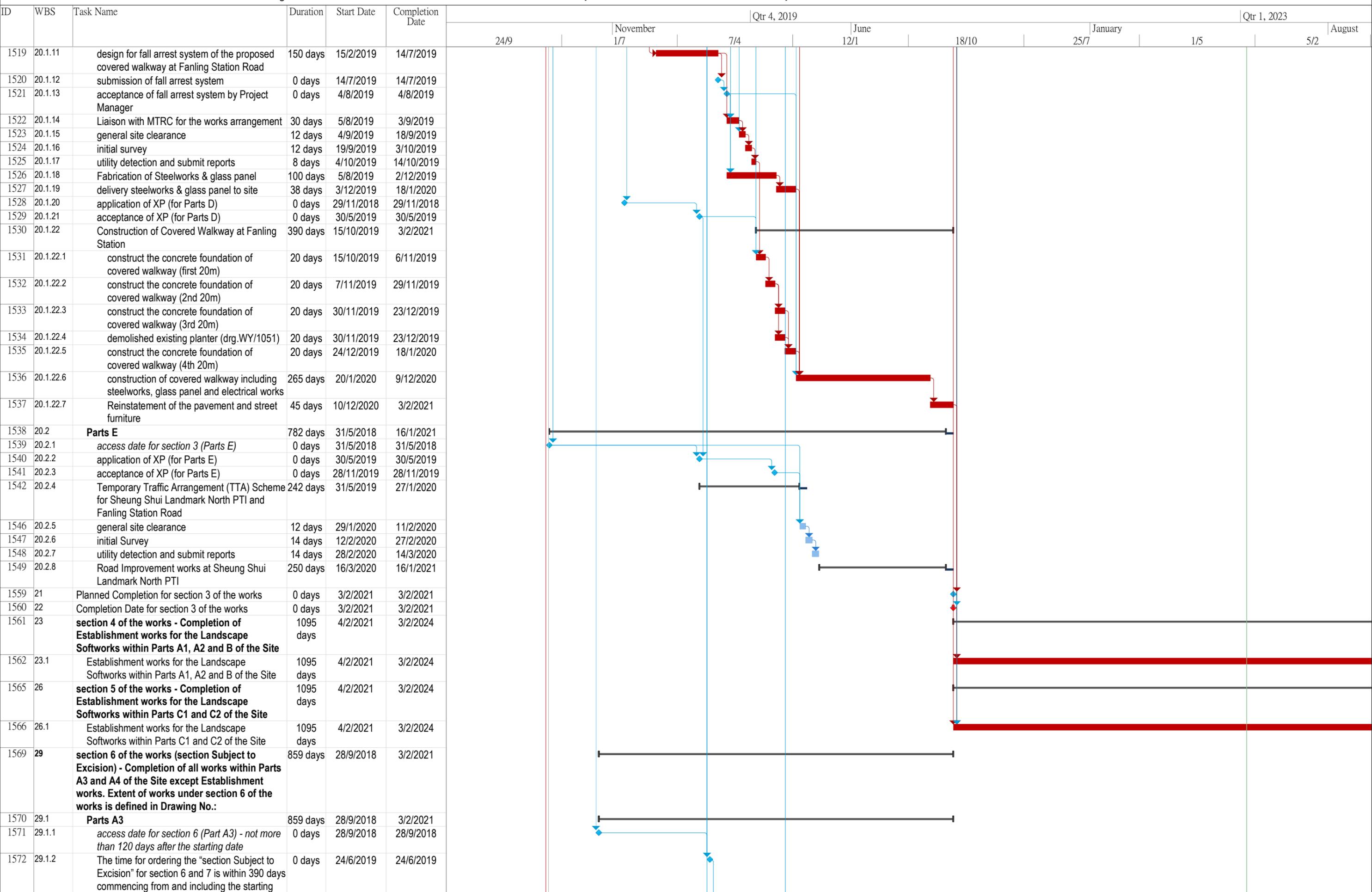


| ID | WBS | Task Name | Duration | Start Date | Completion Date | Qtr 4, 2019 | | | | | | | | | | | | Qtr 1, 2023 | |
|------|------------|--|----------|------------|-----------------|-------------|-----|-----|----------|-------|------|---------|-----|--|----------|--|--|-------------|-------|
| | | | | | | November | | | December | | | January | | | February | | | March | April |
| | | | | | | 24/9 | 1/7 | 7/4 | 12/1 | 18/10 | 25/7 | 1/5 | 5/2 | | | | | | |
| 1291 | 17.4.13 | fabricating of panel and steelworks | 180 days | 16/1/2020 | 13/7/2020 | | | | | | | | | | | | | | |
| 1292 | 17.4.14 | delivery of panel and steelworks on site | 76 days | 14/7/2020 | 27/9/2020 | | | | | | | | | | | | | | |
| 1293 | 17.4.15 | completion of concrete curing of substructure of Nosie Barriers | 463 days | 14/10/2019 | 19/1/2021 | | | | | | | | | | | | | | |
| 1301 | 17.4.16 | construction works above the concrete substructure of the noise barrier MM6, MM7 & | 48 days | 28/9/2020 | 25/11/2020 | | | | | | | | | | | | | | |
| 1308 | 17.4.17 | construction works above the concrete substructure of the noise barrier MM10 (app. | 54 days | 26/11/2020 | 30/1/2021 | | | | | | | | | | | | | | |
| 1315 | 17.4.18 | construction works above the concrete substructure of the noise barrier MM5 & MM8 | 10 days | 20/1/2021 | 30/1/2021 | | | | | | | | | | | | | | |
| 1322 | 17.4.19 | submit as-built drawings & design calculation & 2 sets of velographs for noise barrier works | 0 days | 3/2/2021 | 3/2/2021 | | | | | | | | | | | | | | |
| 1323 | 17.5 | access date for section 2 (Part C2) | 0 days | 24/2/2019 | 24/2/2019 | | | | | | | | | | | | | | |
| 1324 | 17.6 | additional site possession for areas outside site boundary {for 3NW-C/C470 (existing D-DH7), C224 (existing D-DH11) & C225 new drillholes DHA1,A2 & A3 } | 0 days | 24/2/2019 | 24/2/2019 | | | | | | | | | | | | | | |
| 1325 | 17.7 | Slope Upgrading works (section 2 Part C2) | 578 days | 25/2/2019 | 3/2/2021 | | | | | | | | | | | | | | |
| 1326 | 17.7.1 | general site clearance | 45 days | 25/2/2019 | 18/4/2019 | | | | | | | | | | | | | | |
| 1327 | 17.7.2 | Initial topographic survey | 45 days | 11/4/2019 | 8/6/2019 | | | | | | | | | | | | | | |
| 1328 | 17.7.3 | utility detection and submit reports | 21 days | 22/5/2019 | 15/6/2019 | | | | | | | | | | | | | | |
| 1329 | 17.7.4 | drilling of verification boreholes DHA1,A2 & A3 | 21 days | 17/6/2019 | 11/7/2019 | | | | | | | | | | | | | | |
| 1330 | 17.7.5 | baseline monitoring for 3NW-C/C230 (DH15 & 16) & C225 (DH3 & 17) on existing drillholes & 3NW-C/C470 (existing D-DH7), C224 (existing D-DH11) & C225 proposed verification drillholes DHA1,A2 & A3 | 30 days | 12/7/2019 | 15/8/2019 | | | | | | | | | | | | | | |
| 1331 | 17.7.6 | submit 4 sets of initial readings of baseline monitoring and preliminary logs to the Project Manager to the Project Manager | 0 days | 15/8/2019 | 15/8/2019 | | | | | | | | | | | | | | |
| 1332 | 17.7.7 | Slopeworks: 3NW-C/C470 (ch490-540S/B) | 59 days | 16/8/2019 | 26/10/2019 | | | | | | | | | | | | | | |
| 1333 | 17.7.7.1 | removal of existing trees | 10 days | 16/8/2019 | 27/8/2019 | | | | | | | | | | | | | | |
| 1334 | 17.7.7.2 | hoarding & fencing | 6 days | 28/8/2019 | 3/9/2019 | | | | | | | | | | | | | | |
| 1335 | 17.7.7.3 | slope excavation works | 1 day | 4/9/2019 | 4/9/2019 | | | | | | | | | | | | | | |
| 1336 | 17.7.7.4 | temporary scaffolding | 5 days | 5/9/2019 | 10/9/2019 | | | | | | | | | | | | | | |
| 1337 | 17.7.7.5 | proposed slope stripping for mapping or rock and relict discontinuities (AS5-A,B, | 8 days | 11/9/2019 | 20/9/2019 | | | | | | | | | | | | | | |
| 1338 | 17.7.7.6 | Phase I | 8 days | 21/9/2019 | 30/9/2019 | | | | | | | | | | | | | | |
| 1339 | 17.7.7.6.1 | install test nail PN02 & pull out test | 6 days | 21/9/2019 | 27/9/2019 | | | | | | | | | | | | | | |
| 1340 | 17.7.7.6.2 | drill, install steel bars and grout soil nails (B01-12) | 2 days | 28/9/2019 | 30/9/2019 | | | | | | | | | | | | | | |
| 1341 | 17.7.7.7 | Phase II | 8 days | 2/10/2019 | 11/10/2019 | | | | | | | | | | | | | | |
| 1342 | 17.7.7.7.1 | install test nail PN01 & pull out test | 6 days | 2/10/2019 | 9/10/2019 | | | | | | | | | | | | | | |
| 1343 | 17.7.7.7.2 | drill, install steel bars and grout soil nails (A01-17) | 2 days | 10/10/2019 | 11/10/2019 | | | | | | | | | | | | | | |
| 1344 | 17.7.7.8 | raking drains | 1 day | 12/10/2019 | 12/10/2019 | | | | | | | | | | | | | | |
| 1345 | 17.7.7.9 | TDR Test (including test & wait issue result) | 2 days | 14/10/2019 | 15/10/2019 | | | | | | | | | | | | | | |
| 1346 | 17.7.7.10 | soil nail head works | 3 days | 16/10/2019 | 18/10/2019 | | | | | | | | | | | | | | |
| 1347 | 17.7.7.11 | UC & catchpit (38m & 1 nr) | 5 days | 19/10/2019 | 24/10/2019 | | | | | | | | | | | | | | |
| 1348 | 17.7.7.12 | biodegradable erosion control mat with hydroseeding | 2 days | 25/10/2019 | 26/10/2019 | | | | | | | | | | | | | | |
| 1349 | 17.7.8 | Slopeworks: - 3NW-C/C230 (ch1240-1330S/I | 130 days | 28/10/2019 | 2/4/2020 | | | | | | | | | | | | | | |
| 1350 | 17.7.8.1 | removal of existing trees | 10 days | 28/10/2019 | 7/11/2019 | | | | | | | | | | | | | | |
| 1351 | 17.7.8.2 | hoarding & fencing | 9 days | 8/11/2019 | 18/11/2019 | | | | | | | | | | | | | | |
| 1352 | 17.7.8.3 | temporary scaffolding | 7 days | 19/11/2019 | 26/11/2019 | | | | | | | | | | | | | | |

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



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



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

| ID | WBS | Task Name | Duration | Start Date | Completion Date | Qtr 4, 2019 | | | | | Qtr 1, 2023 | | |
|------|-----------|---|----------|------------|-----------------|-------------|--------------|-----|-----------|-------|-------------|-------------|------------|
| | | | | | | 24/9 | November 1/7 | 7/4 | June 12/1 | 18/10 | 25/7 | January 1/5 | August 5/2 |
| 1573 | 29.1.3 | form temporary haul road from the south side to Parts A3 | 5 days | 25/6/2019 | 29/6/2019 | | | | | | | | |
| 1574 | 29.1.4 | general site clearance & tree felling | 12 days | 2/7/2019 | 15/7/2019 | | | | | | | | |
| 1575 | 29.1.5 | initial survey | 12 days | 2/7/2019 | 15/7/2019 | | | | | | | | |
| 1576 | 29.1.6 | construction of temporary drainage | 14 days | 15/7/2019 | 30/7/2019 | | | | | | | | |
| 1577 | 29.1.7 | Construction of Retaining Wall RW14 (Bay 1-Bay 6) | 312 days | 26/7/2019 | 22/8/2020 | | | | | | | | |
| 1602 | 29.1.8 | backfilling works behind Retaining Wall RW14 (bay1 to 6) (include SRT tests) | 90 days | 22/8/2020 | 15/12/2020 | | | | | | | | |
| 1603 | 29.1.9 | Construction of Retaining Wall RW14 Bay 7 | 27 days | 30/9/2020 | 9/11/2020 | | | | | | | | |
| 1613 | 29.1.10 | backfilling works behind RW14 (bay 7) (include SRT tests) | 30 days | 10/11/2020 | 15/12/2020 | | | | | | | | |
| 1614 | 29.1.11 | install instrument for RW14 | 5 days | 11/12/2020 | 16/12/2020 | | | | | | | | |
| 1615 | 29.1.12 | construct 300U channel & catchpit in front of R | 8 days | 11/12/2020 | 19/12/2020 | | | | | | | | |
| 1616 | 29.1.13 | site formation works for fill slope FS19 and FS20 (including in "backfilling works behind Retaining Wall RW14 (bay1 to 6)") | 90 days | 22/8/2020 | 15/12/2020 | | | | | | | | |
| 1617 | 29.1.14 | 300U channel & stepped channel for FS19 & 2 | 3 days | 16/12/2020 | 18/12/2020 | | | | | | | | |
| 1618 | 29.1.15 | install instrument for FS19 & FS20 | 5 days | 16/12/2020 | 21/12/2020 | | | | | | | | |
| 1619 | 29.1.16 | minor site formation works for cut slope CS25 | 1 day | 16/12/2020 | 16/12/2020 | | | | | | | | |
| 1620 | 29.1.17 | minor site formation works for cut slope CS26 | 3 days | 17/12/2020 | 19/12/2020 | | | | | | | | |
| 1621 | 29.1.18 | install instruments for CS25 & CS26 | 5 days | 21/12/2020 | 28/12/2020 | | | | | | | | |
| 1622 | 29.1.19 | waterworks at Road E | 12 days | 21/12/2020 | 6/1/2021 | | | | | | | | |
| 1623 | 29.1.20 | drainage works at Road E | 10 days | 31/12/2020 | 12/1/2021 | | | | | | | | |
| 1624 | 29.1.21 | U channels at Road E | 7 days | 5/1/2021 | 12/1/2021 | | | | | | | | |
| 1625 | 29.1.22 | Roadworks of Road E (ch20-60) | 19 days | 13/1/2021 | 3/2/2021 | | | | | | | | |
| 1631 | 29.1.23 | Site Formation works for Cut Slope CS24 (include temporary cutting from top of RW12 to toe of CS24) (for RW12 bays 1-3) | 4 days | 17/9/2019 | 20/9/2019 | | | | | | | | |
| 1632 | 29.1.24 | install instrument for CS24 | 5 days | 23/9/2019 | 27/9/2019 | | | | | | | | |
| 1633 | 29.1.25 | temporary soil nails between CS20 & RW12 (for RW12 bays 1-3) | 30 days | 23/9/2019 | 4/11/2019 | | | | | | | | |
| 1634 | 29.1.26 | Construction of Retaining Wall RW12 CH 0-20 | 67 days | 5/11/2019 | 24/1/2020 | | | | | | | | |
| 1657 | 29.1.27 | backfilling along Retaining Wall RW12 | 40 days | 4/6/2020 | 22/7/2020 | | | | | | | | |
| 1658 | 29.1.28 | Completion of Site Formation works for Cut Slope 25 | 2 days | 21/7/2020 | 22/7/2020 | | | | | | | | |
| 1659 | 29.1.29 | Waterworks at Road F | 24 days | 23/7/2020 | 19/8/2020 | | | | | | | | |
| 1660 | 29.1.30 | Drainage works at Road F | 25 days | 20/8/2020 | 17/9/2020 | | | | | | | | |
| 1661 | 29.1.31 | planter wall for Road E and Road F in Parts A3 | 12 days | 18/9/2020 | 3/10/2020 | | | | | | | | |
| 1662 | 29.1.32 | UU-Arrange Town Gas & PCCW to lay across Road F (not yet agree) | 14 days | 5/10/2020 | 22/10/2020 | | | | | | | | |
| 1663 | 29.1.33 | Roadworks of Road F (60m) | 55 days | 23/10/2020 | 4/1/2021 | | | | | | | | |
| 1664 | 29.1.33.1 | kerbing and cross road duct (RD/2061, 2081) | 10 days | 23/10/2020 | 6/11/2020 | | | | | | | | |
| 1665 | 29.1.33.2 | ducting for road lighting & construction of irrigation system | 12 days | 9/11/2020 | 23/11/2020 | | | | | | | | |
| 1666 | 29.1.33.3 | bituminous pavement | 12 days | 24/11/2020 | 7/12/2020 | | | | | | | | |
| 1667 | 29.1.33.4 | traffic signs, directional signs, type 2 railing & footpath | 21 days | 8/12/2020 | 4/1/2021 | | | | | | | | |
| 1668 | 29.1.34 | street lighting (Drg/ RD/2091) | 6 days | 5/1/2021 | 11/1/2021 | | | | | | | | |
| 1669 | 29.1.35 | landscaping (hydroseeding) | 9 days | 12/1/2021 | 21/1/2021 | | | | | | | | |
| 1670 | 29.1.36 | landscaping (shrub planting) | 11 days | 22/1/2021 | 3/2/2021 | | | | | | | | |
| 1671 | 29.2 | Parts A4 | 590 days | 24/6/2019 | 3/2/2021 | | | | | | | | |
| 1672 | 29.2.1 | access date for section 6 (Parts A4) - not more than 580 days after the starting date | 0 days | 31/12/2019 | 31/12/2019 | | | | | | | | |
| 1673 | 29.2.2 | The time for ordering the "section Subject to Excision" for section 6 and 7 is within 390 days commencing from and including the starting | 0 days | 24/6/2019 | 24/6/2019 | | | | | | | | |

| ID | WBS | Task Name | Duration | Start Date | Completion Date | Qtr 4, 2019 | | | | | | | | | | | | Qtr 1, 2023 | | | | | | | | | | | |
|------|---------|---|-----------|------------|-----------------|-------------|--|--|----------|--|--|---------|--|--|----------|--|--|-------------|--|--|-------|--|--|-----|--|--|------|--|--|
| | | | | | | November | | | December | | | January | | | February | | | March | | | April | | | May | | | June | | |
| 1674 | 29.2.3 | general site clearance | 15 days | 2/1/2020 | 18/1/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1675 | 29.2.4 | initial survey | 11 days | 11/1/2020 | 23/1/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1676 | 29.2.5 | construction of temporary drainage | 15 days | 16/1/2020 | 5/2/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1677 | 29.2.6 | Site Formation works for Cut Slope CS24 (include temporary cutting from top of RW12 to toe of CS24) (for RW12 bays 4-6) | 7 days | 29/1/2020 | 5/2/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1678 | 29.2.7 | install instrument for CS24 | 3 days | 6/2/2020 | 8/2/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1679 | 29.2.8 | temporary soil nails between CS20 & RW12 (for RW12 bays 4-6) | 35 days | 6/2/2020 | 17/3/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1680 | 29.2.9 | Construction of Retaining Wall RW12 CH 21-40 | 58 days | 18/3/2020 | 3/6/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1703 | 29.2.10 | Site Formation works for Cut Slope CS20 | 125 days | 1/6/2020 | 3/11/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1737 | 29.2.11 | Site Formation works for Cut Slope CS26 (A4) | 8 days | 13/10/2020 | 22/10/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1738 | 29.2.12 | Site Formation works for Cut Slope CS25 (A4) | 9 days | 23/10/2020 | 5/11/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1739 | 29.2.13 | complete the construction of U channel at CS 25 and 26 | 15 days | 4/11/2020 | 23/11/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1740 | 29.2.14 | planter wall | 10 days | 18/11/2020 | 28/11/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1741 | 29.2.15 | Waterworks at Road B | 8 days | 24/11/2020 | 2/12/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1742 | 29.2.16 | Sewerage works at Road B | 7 days | 27/11/2020 | 4/12/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1743 | 29.2.17 | Drainage works at Road B | 7 days | 30/11/2020 | 7/12/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1744 | 29.2.18 | UU - Arrange Town Gas & PCCW to lay cables (not agreed yet) | 14 days | 8/12/2020 | 23/12/2020 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1745 | 29.2.19 | Roadworks of Road B (A4-ch90-130) | 23 days | 23/12/2020 | 21/1/2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1750 | 29.2.20 | street lighting (Drg/ RD/2091) | 4 days | 21/1/2021 | 25/1/2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1751 | 29.2.21 | landscaping (hydroseeding) | 7 days | 25/1/2021 | 1/2/2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1752 | 29.2.22 | landscaping (shrub planting) | 5 days | 29/1/2021 | 3/2/2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1753 | 30 | Planned Completion for section 6 of the works | 0 days | 3/2/2021 | 3/2/2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1754 | 31 | Completion Date for section 6 of the works | 0 days | 3/2/2021 | 3/2/2021 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1755 | 32 | section 7 of the works (section Subject to Excision) - Completion of Establishment works for the Landscape Softworks within Parts A3 | 1095 days | 4/2/2021 | 3/2/2024 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1756 | 32.1 | Establishment works for the Landscape Softworks within Parts A3 and A4 of the Site | 1095 days | 4/2/2021 | 3/2/2024 | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix D

Monitoring Locations

Air Quality Monitoring Location

Legend

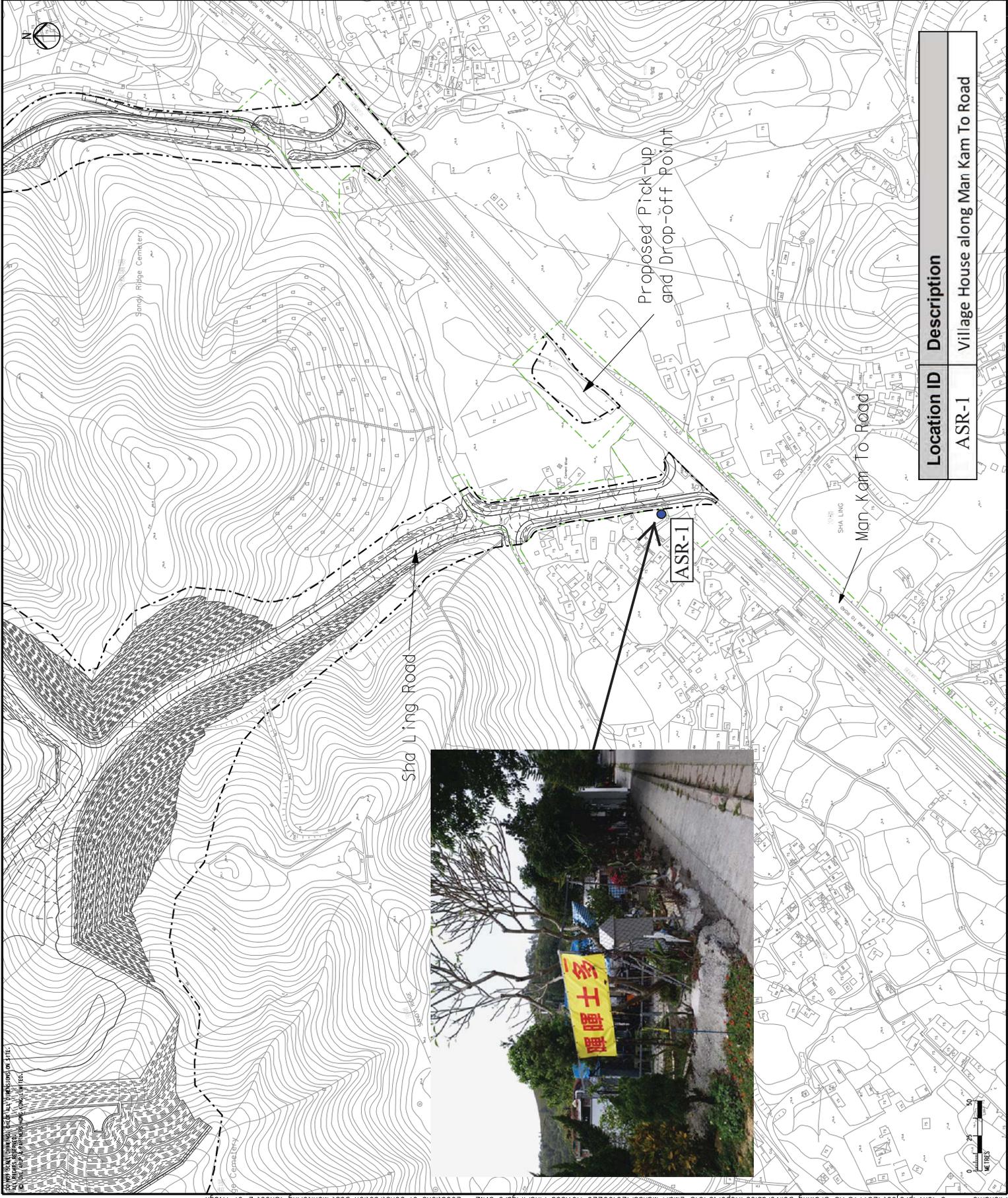
- Project Boundary
- Utilities Construction
- Proposed Air Monitoring Stations

| | | | |
|------------|--------------|----|-------|
| 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 | | | |

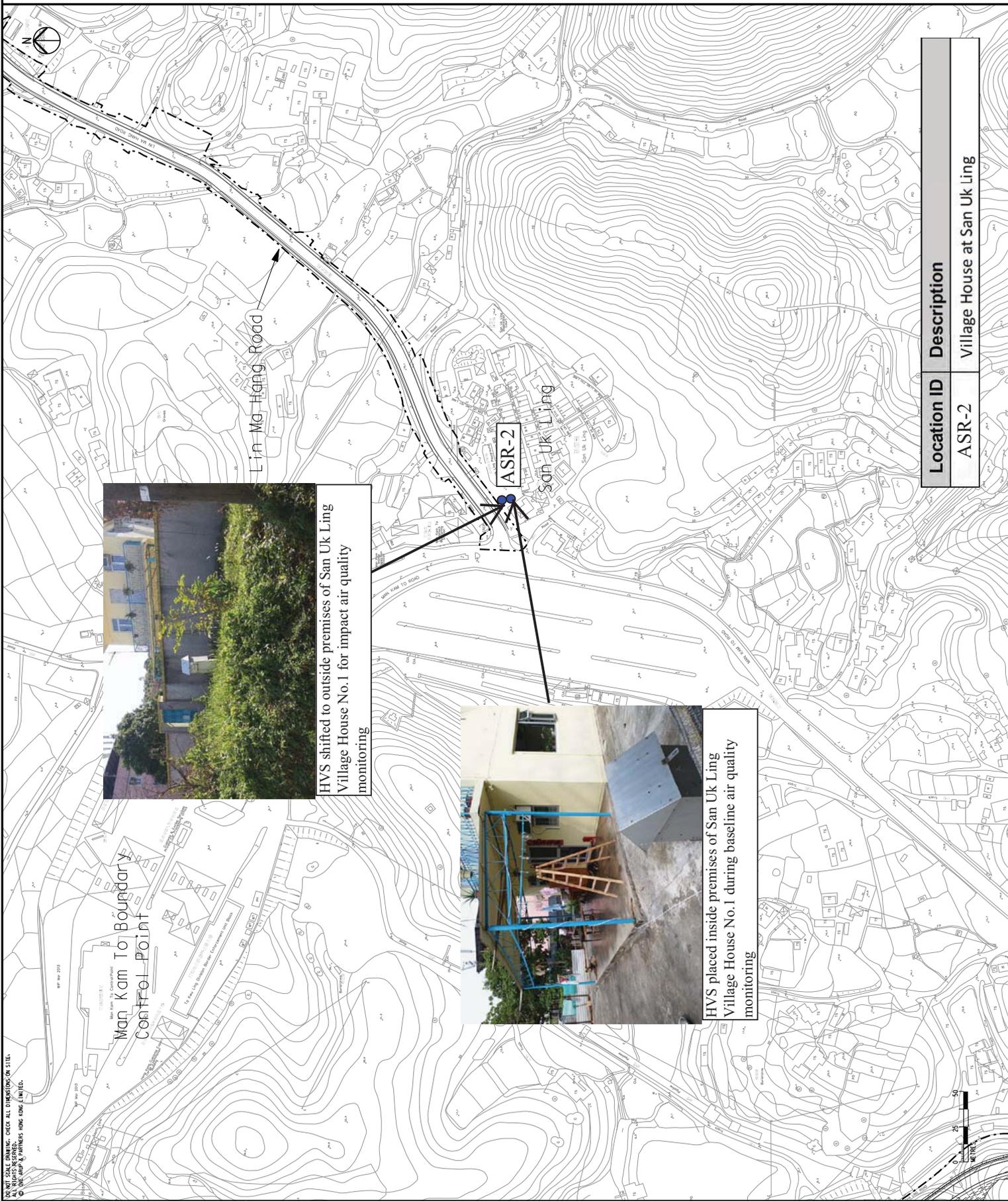
Contract No. and Title:
 Agreement No. CE 1/2013(CE)
 Site Formation and Associated
 Infrastructural Works for Development
 of Columbarium, Crematorium and
 Related Facilities at Sandy Ridge
 Cemetery - Design and Construction

Drawing title

Copyright Reserved



DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 ALL INFORMATION PARTIES HAVE ONE (1) SET.



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 |



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

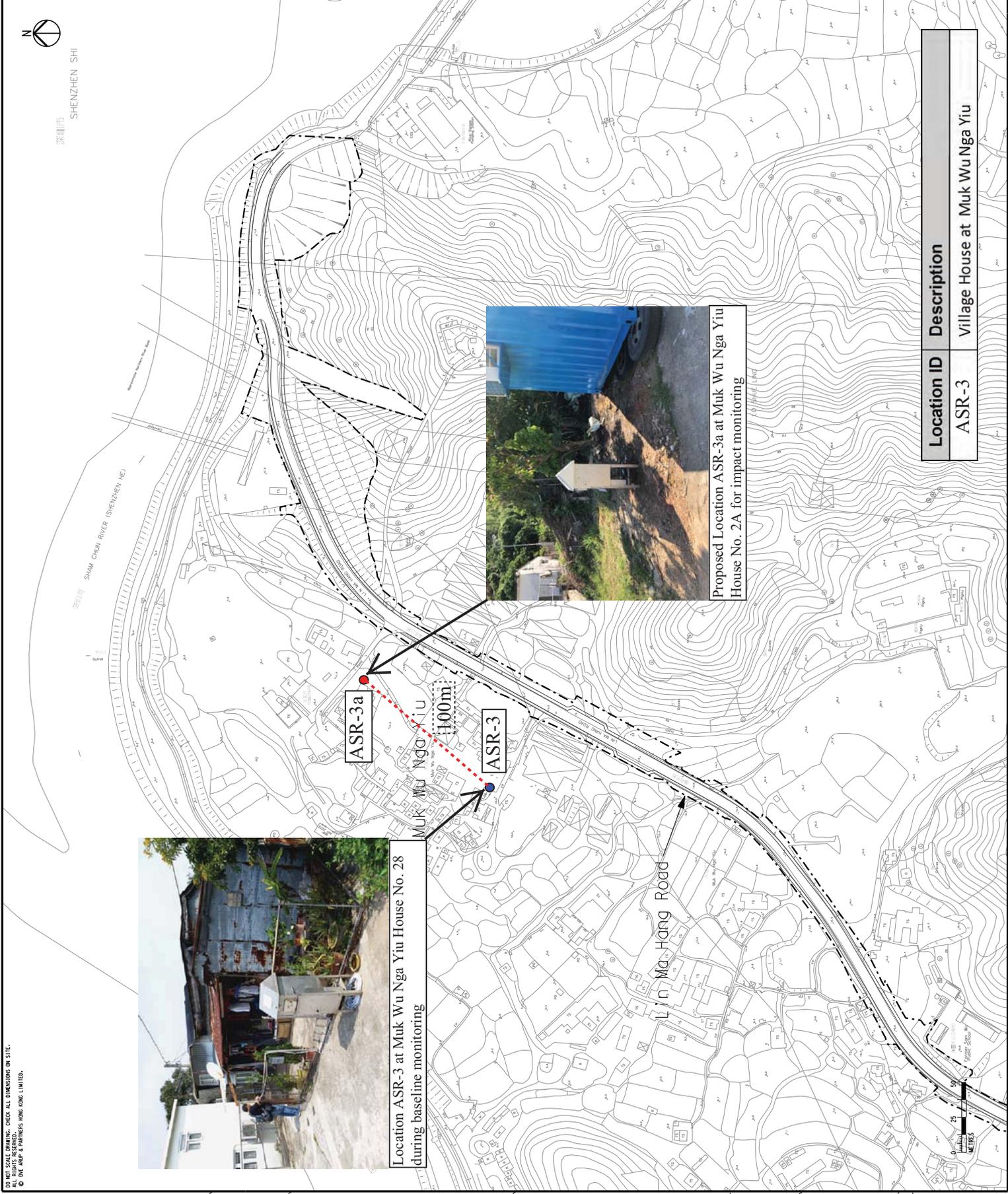
Man Kam To Boundary
 Control Point



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 |

Legend

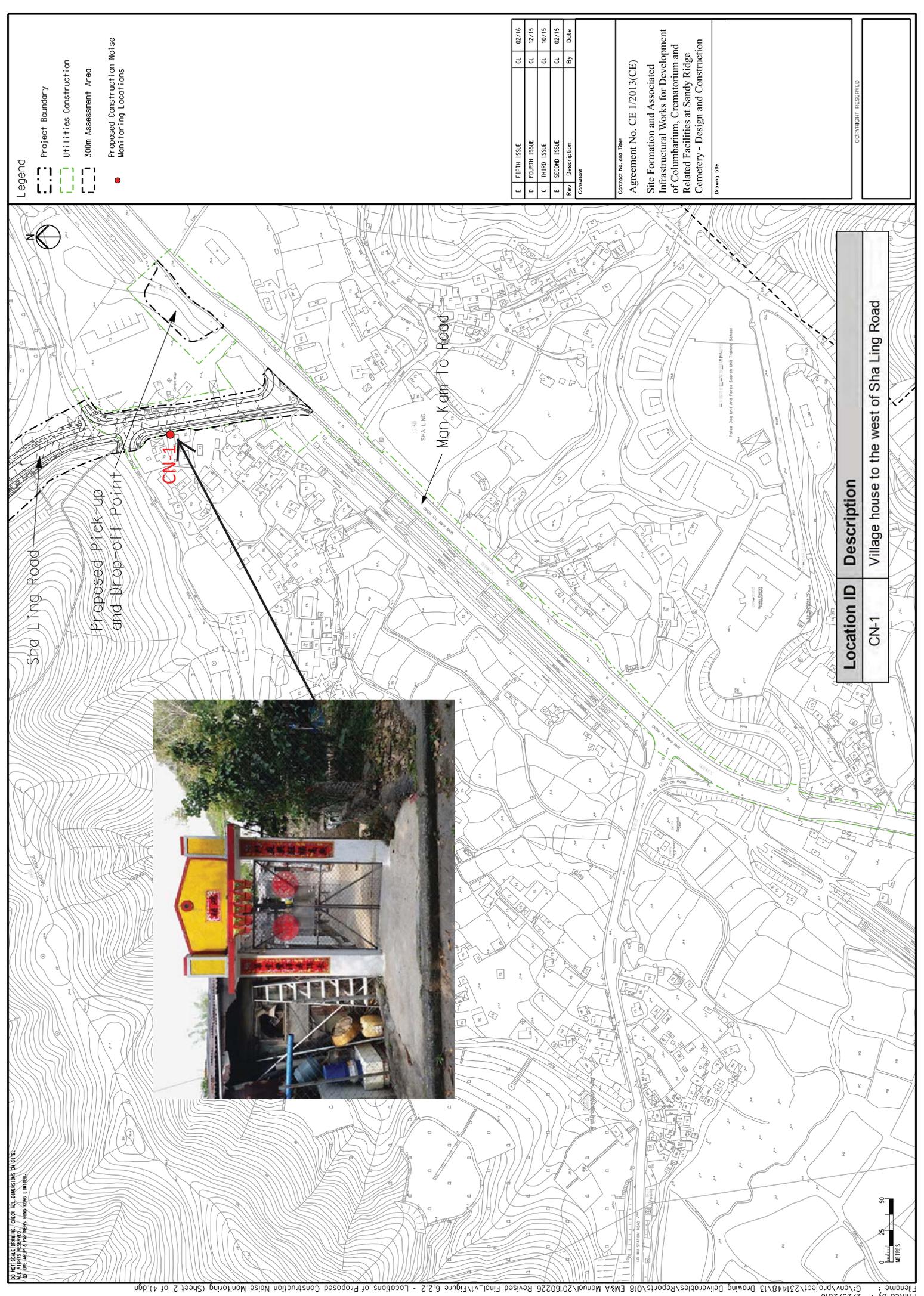
- Project Boundary
- Existing Air Monitoring Station
- Proposed Air Monitoring Station

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

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)

Noise Monitoring Location



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



Sha Ling Road
 Proposed Pick-up and Drop-off Point



Man Kam To Road

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



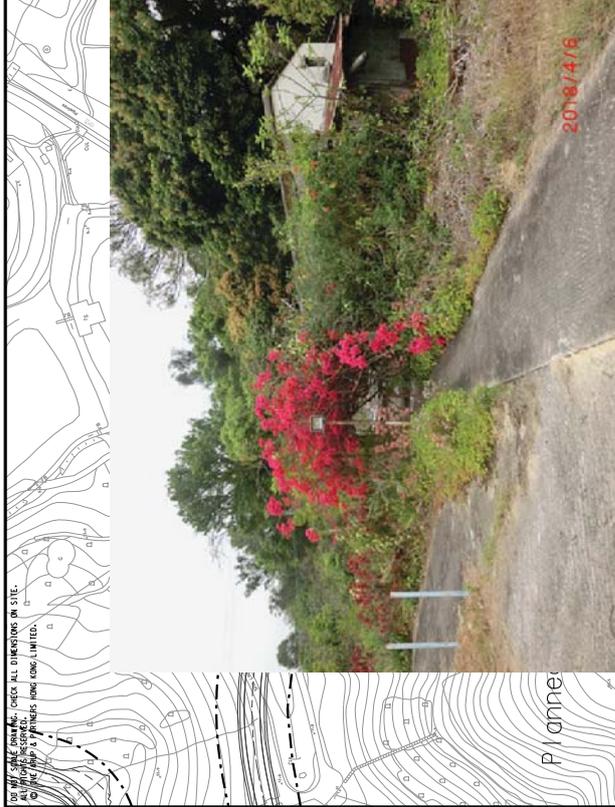
| Rev | Description | By | Date |
|-----|--------------|----|-------|
| E | FIFTH ISSUE | GL | 02/16 |
| D | FOURTH ISSUE | GL | 12/15 |
| C | THIRD ISSUE | GL | 10/15 |
| B | SECOND ISSUE | GL | 02/15 |

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

NO COPY AND DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © 2016 BY TERRACON CONSULTANTS LIMITED.



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

Legend

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

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

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

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © THE SHIP & PARTNERS INC. (UK) LIMITED.



Legend

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

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

Consultant

Contract No. and Title:
Agreement No. CE 1/2013(CE)
Site Formation and Associated
Infrastructural Works for Development
of Columbarium, Crematorium and
Related Facilities at Sandy Ridge
Cemetery - Design and Construction

Drawing Title

COPYRIGHT RESERVED

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

Water Quality Monitoring Station

NO NET SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © THE ARUP & PARTNERS HONG KONG LIMITED.



Legend

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

Printed by : 2/29/2016
 File name : G:\envy\project\231448\13 Drawing Deliverables\Reports\018 EM&A Manual\20160226 Revised Final\vi\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. | Figure 7.1.1 | | Rev. | E |
| Drawn | Date | Checked | Approved | |
| Scale | AS SHOWN | Status | 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 | 3 Jan 23 | 17 Jan 23 | |
| 1b | | TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-1 | 20 Jan 23 | 3 Feb 23 | |
| 2 | | TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2 | 3 Jan 23 | 17 Jan 23 | |
| 2a | | TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-2 | 20 Jan 23 | 3 Feb 23 | |
| 3 | | TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a | 3 Jan 23 | 17 Jan 23 | |
| 3a | | TISCH High Volume Air Sampler, HVS Model TE-5170 TSP Sampler Calibration Spreadsheet for ASR-3a | 20 Jan 23 | 3 Feb 23 | |
| 4 | | Calibration Kit TISCH Model TE-5025A Orifice ID 4064 and Rootsmeter S/N 438320 | 15 Dec 22 | 15 Dec 23 | |
| 5 | | Laser Dust Monitor, Model AM510 (Serial No. 11008060) | 4 Feb 22 | 4 Feb 23 | |
| 6 | | Laser Dust Monitor, Model AM510 (Serial No. 11008017) | 4 Feb 22 | 4 Feb 23 | |
| 7 | | Laser Dust Monitor, Model LD-3B (Serial No. 3Y6502) – EQ113 | 26 Mar 22 | 26 Mar 23 | |
| 9 | | Noise | Rion NL-52 Sound Level Meter (Serial No. 00809405) – EQ018 | 12 Mar 22 | 12 Mar 23 |
| 10 | | | Rion NL-31 Sound Level Meter (Serial No. 00410221) – EQ067 | 12 Mar 22 | 12 Mar 23 |
| 11 | | | Rion NC-73 Acoustical Calibrator (Serial No. 10655561) – EQ085 | 20 Aug 22 | 20 Aug 23 |
| 12 | Water | YSI Professional DSS (Serial No.20J101862) | 25 Oct 22 | 25 Jan 23 | |
| 12a | | YSI Professional DSS (Serial No.17B102764) | 4 Jan 23 | 4 Apr 23 | |
| 13 | | Global Water FP211 Flow Meter (Serial No. 22B106785) | 3 May 22 | 3 May 23 | |

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

| | |
|---|----------------------------------|
| Location : Sha Ling Village House No.6 | Date of Calibration: 3-Jan-23 |
| Location ID : ASR-1 | Next Calibration Date: 17-Jan-23 |
| Name and Model: TISCH HVS Model TE-5170 | Technician: Eric Chan |

CONDITIONS

| | | | |
|--------------------------|--------|----------------------------|---------|
| Sea Level Pressure (hPa) | 1023.7 | Corrected Pressure (mm Hg) | 767.775 |
| Temperature (°C) | 17.3 | Temperature (K) | 290 |

CALIBRATION ORIFICE

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

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION | | |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|-------------------|-------------|----------------|
| | | | | | | | Slope = | Intercept = | Corr. coeff. = |
| 18 | 6.50 | 6.50 | 13.0 | 1.758 | 54 | 55.72 | 30.9625 | 2.0671 | 0.9928 |
| 13 | 5.40 | 5.40 | 10.8 | 1.604 | 51 | 52.62 | | | |
| 10 | 4.30 | 4.30 | 8.6 | 1.433 | 46 | 47.46 | | | |
| 7 | 2.80 | 2.80 | 5.6 | 1.160 | 35 | 36.11 | | | |
| 5 | 1.70 | 1.70 | 3.4 | 0.908 | 30 | 30.95 | | | |

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

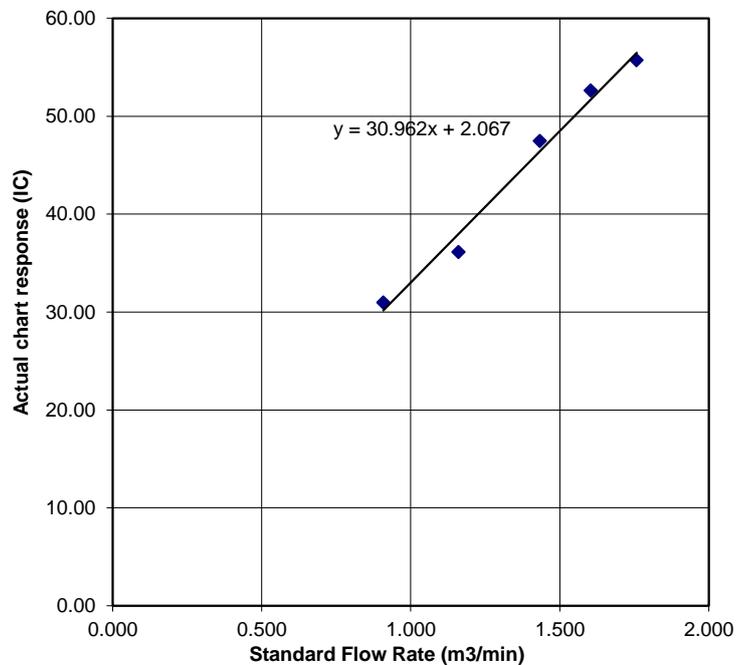
b = sampler intercept

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

Date of Calibration: 3-Jan-23

Location ID : ASR-2

Next Calibration Date: 17-Jan-23

Name and Model: TISCH HVS Model TE-5170

Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa) 1023.7
 Temperature (°C) 17.3

Corrected Pressure (mm Hg) 767.775
 Temperature (K) 290

CALIBRATION ORIFICE

Make-> TISCH
 Model-> 5025A
 Serial # -> 4064

Qstd Slope -> 2.10977
 Qstd Intercept -> -0.03782

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|---|
| 18 | 6.50 | 6.50 | 13.0 | 1.758 | 56 | 57.78 | Slope = 32.6179 Intercept = -0.0669 Corr. coeff. = 0.9939 |
| 13 | 5.50 | 5.50 | 11.0 | 1.619 | 51 | 52.62 | |
| 10 | 4.40 | 4.40 | 8.8 | 1.450 | 46 | 47.46 | |
| 7 | 2.70 | 2.70 | 5.4 | 1.140 | 34 | 35.08 | |
| 5 | 1.70 | 1.70 | 3.4 | 0.908 | 30 | 30.95 | |

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

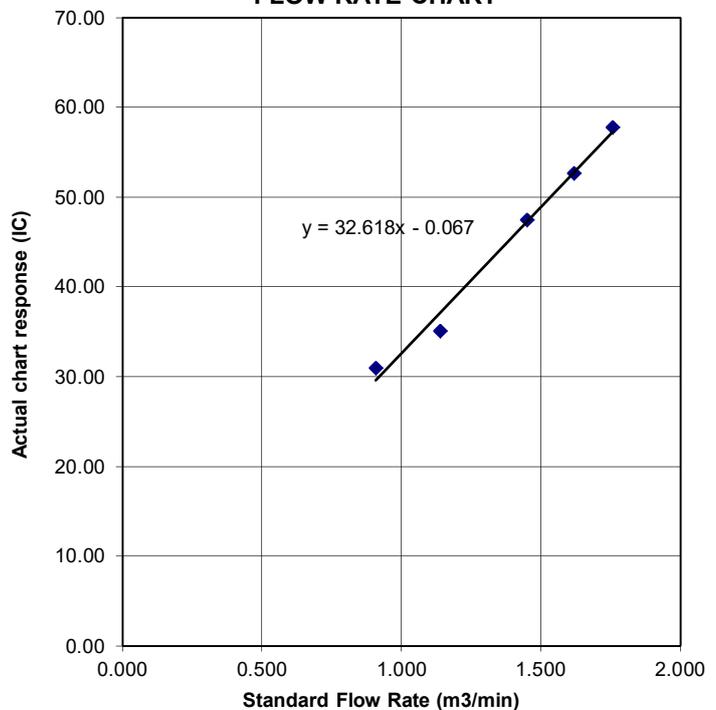
b = sampler intercept

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: 3-Jan-23 |
| Location ID : ASR-3a | Next Calibration Date: 17-Jan-23 |
| Name and Model: TISCH HVS Model TE-5170 | Technician: Eric Chan |

CONDITIONS

| | |
|---|--|
| Sea Level Pressure (hPa) 1023.7 | Corrected Pressure (mm Hg) 767.775 |
| Temperature (°C) 17.3 | Temperature (K) 290 |

CALIBRATION ORIFICE

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

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|--|
| 18 | 6.50 | 6.50 | 13.0 | 1.758 | 54 | 55.72 | Slope = 30.3860 Intercept = 2.3753 Corr. coeff. = 0.9958 |
| 13 | 5.30 | 5.30 | 10.6 | 1.589 | 50 | 51.59 | |
| 10 | 4.30 | 4.30 | 8.6 | 1.433 | 44 | 45.40 | |
| 7 | 2.60 | 2.60 | 5.2 | 1.119 | 34 | 35.08 | |
| 5 | 1.70 | 1.70 | 3.4 | 0.908 | 30 | 30.95 | |

Calculations :

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

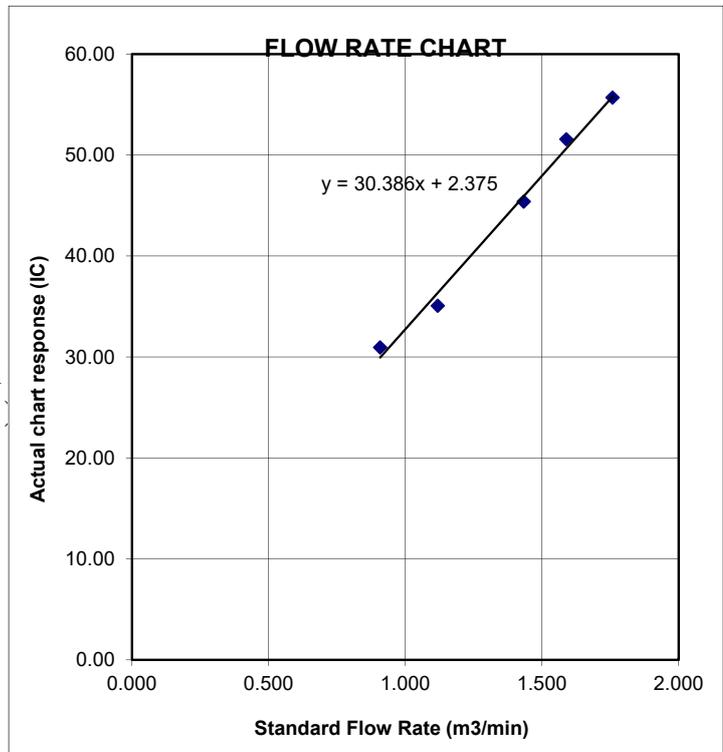
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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: 20-Jan-23

Location ID : ASR-1

Next Calibration Date: 3-Feb-23

Name and Model: TISCH HVS Model TE-5170

Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa) 1021.4
 Temperature (°C) 17.6

Corrected Pressure (mm Hg) 766.05
 Temperature (K) 291

CALIBRATION ORIFICE

Make-> TISCH
 Model-> 5025A
 Serial # -> 4064

Qstd Slope -> 2.10977
 Qstd Intercept -> -0.03782

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|--|
| 18 | 6.50 | 6.50 | 13.0 | 1.755 | 55 | 56.62 | Slope = 32.0664 Intercept = 0.8645 Corr. coeff. = 0.9992 |
| 13 | 5.40 | 5.40 | 10.8 | 1.602 | 51 | 52.51 | |
| 10 | 4.30 | 4.30 | 8.6 | 1.431 | 46 | 47.36 | |
| 7 | 2.70 | 2.70 | 5.4 | 1.138 | 36 | 37.06 | |
| 5 | 1.70 | 1.70 | 3.4 | 0.906 | 29 | 29.86 | |

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

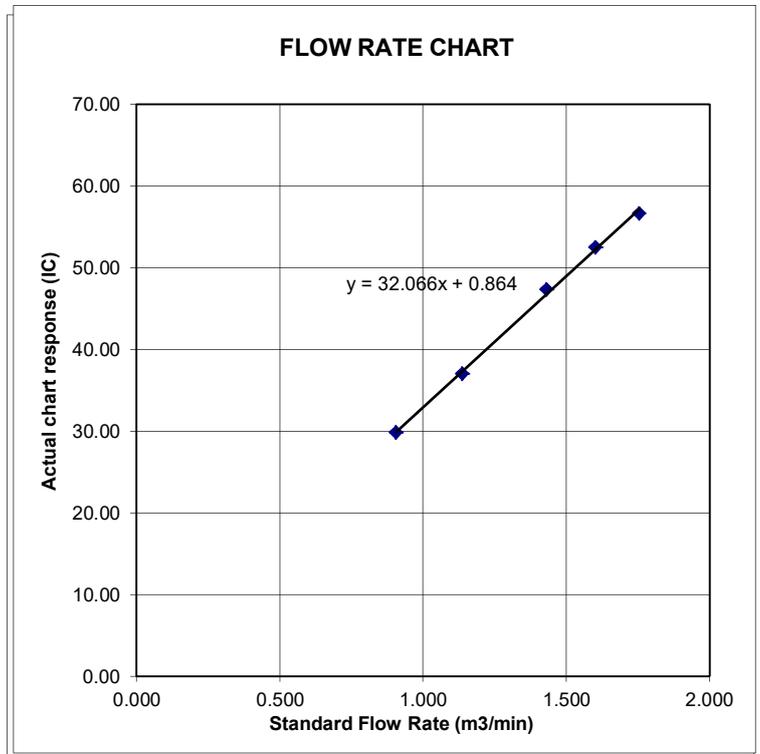
b = sampler intercept

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

Date of Calibration: 20-Jan-23

Location ID : ASR-2

Next Calibration Date: 3-Feb-23

Name and Model: TISCH HVS Model TE-5170

Technician: Eric Chan

CONDITIONS

Sea Level Pressure (hPa) 1021.4
 Temperature (°C) 17.6

Corrected Pressure (mm Hg) 766.05
 Temperature (K) 291

CALIBRATION ORIFICE

Make-> TISCH
 Model-> 5025A
 Serial # -> 4064

Qstd Slope -> 2.10977
 Qstd Intercept -> -0.03782

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|---|
| 18 | 6.50 | 6.50 | 13.0 | 1.755 | 56 | 57.65 | Slope = 32.9140 Intercept = -0.6622 Corr. coeff. = 0.9990 |
| 13 | 5.50 | 5.50 | 11.0 | 1.616 | 51 | 52.51 | |
| 10 | 4.40 | 4.40 | 8.8 | 1.447 | 45 | 46.33 | |
| 7 | 2.50 | 2.50 | 5.0 | 1.095 | 34 | 35.00 | |
| 5 | 1.60 | 1.60 | 3.2 | 0.880 | 28 | 28.83 | |

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

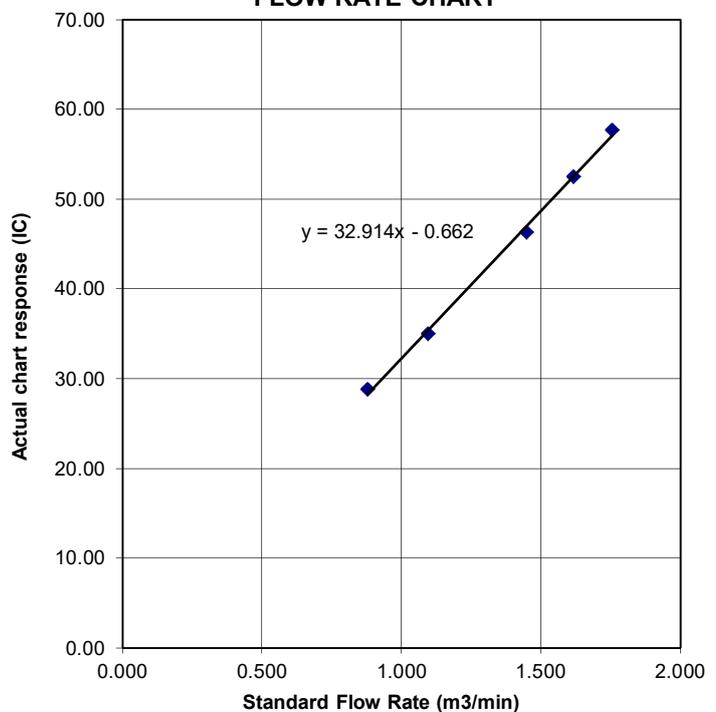
b = sampler intercept

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: 20-Jan-23 |
| Location ID : ASR-3a | Next Calibration Date: 3-Feb-23 |
| Name and Model: TISCH HVS Model TE-5170 | Technician: Eric Chan |

CONDITIONS

| | |
|--|--|
| Sea Level Pressure (hPa) 1021.4 | Corrected Pressure (mm Hg) 766.05 |
| Temperature (°C) 17.6 | Temperature (K) 291 |

CALIBRATION ORIFICE

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

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|-----------------------|
| | | | | | | | Slope = 32.3320 |
| 18 | 6.50 | 6.50 | 13.0 | 1.755 | 55 | 56.62 | Intercept = -0.5894 |
| 13 | 5.30 | 5.30 | 10.6 | 1.587 | 50 | 51.48 | Corr. coeff. = 0.9970 |
| 10 | 4.30 | 4.30 | 8.6 | 1.431 | 43 | 44.27 | |
| 7 | 2.60 | 2.60 | 5.2 | 1.117 | 34 | 35.00 | |
| 5 | 1.40 | 1.40 | 2.8 | 0.824 | 26 | 26.77 | |

Calculations :

$$Qstd = 1/m[\text{Sqrt}(H20(Pa/Pstd)(Tstd/Ta))-b]$$

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

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:

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

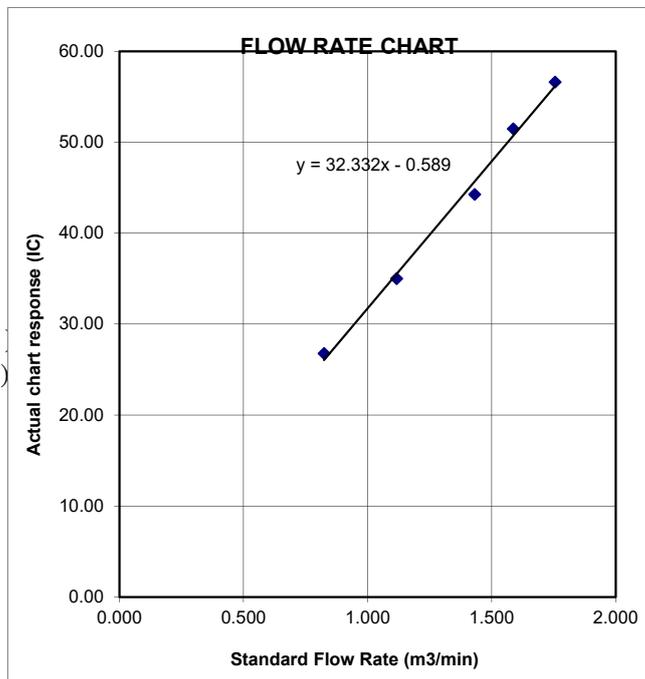
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure





Certificate of Calibration

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

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

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

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

| Standard Conditions | |
|---------------------|---------------------------------------|
| Tstd: | 298.15 °K |
| Pstd: | 760 mm Hg |
| Key | |
| ΔH: | calibrator manometer reading (in H2O) |
| ΔP: | rootsmeter manometer reading (mm Hg) |
| Ta: | actual absolute temperature (°K) |
| Pa: | actual barometric pressure (mm Hg) |
| b: | intercept |
| m: | slope |

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

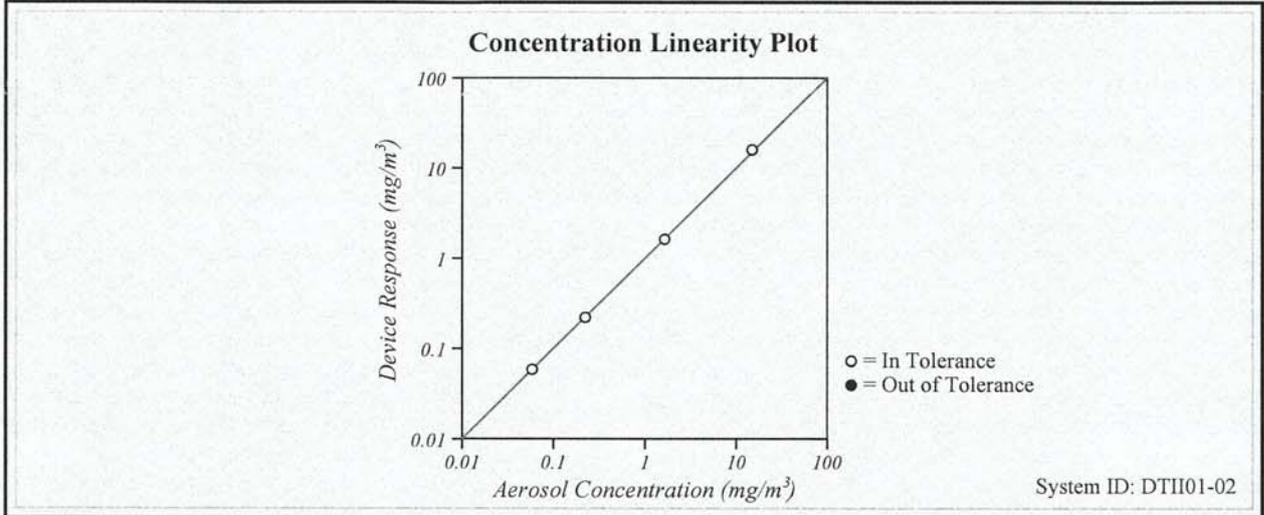


CERTIFICATE OF CALIBRATION AND TESTING

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) | | |
| Relative Humidity | 19.5 | %RH | | |
| Barometric Pressure | 29.30 (992.2) | inHg (hPa) | | |
| | | | Serial Number | 11008060 |

| | | |
|---|--|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance | |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance | |



| CONCENTRATION | | | | Unit: mg/m ³ | | | |
|---------------|----------|----------|-----------------|-------------------------|----------|----------|-----------------|
| # | 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 |
|-------------------------|-----------------------------------|

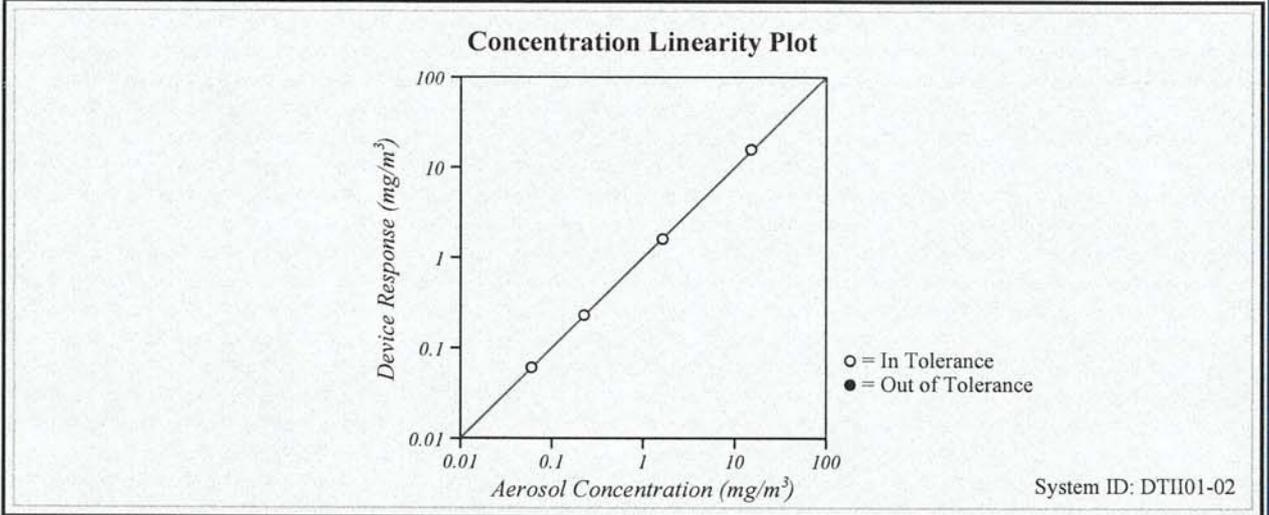


CERTIFICATE OF CALIBRATION AND TESTING

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) | | |

| | | |
|---|--|--|
| <input checked="" type="checkbox"/> As Left | <input checked="" type="checkbox"/> In Tolerance | |
| <input type="checkbox"/> As Found | <input type="checkbox"/> Out of Tolerance | |



| CONCENTRATION | | | | Unit: mg/m ³ | | | |
|---------------|----------|----------|-----------------|-------------------------|----------|----------|-----------------|
| # | 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 |
|-------------------------|-----------------------------------|



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

| | | | |
|---------|---|----------------|--------------------|
| CONTACT | : MR BEN TAM | WORK ORDER | : HK2214745 |
| 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 | : 12-APR-2022 |
| | | DATE OF ISSUE | : 29-APR-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

WORK ORDER : HK2214745
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. |
|---------------|--------------------|-------------|-------------|-------------------------|
| HK2214745-001 | S/N: 3Y6502 | AIR | 12-Apr-2022 | S/N: 3Y6502 |

Equipment Verification Report (TSP)

Equipment Calibrated:

Type: Laser Dust monitor
 Manufacturer: Sibata LD-3B
 Serial No. 3Y6502
 Equipment Ref: EQ113

Standard Equipment:

Standard Equipment: Higher Volume Sampler (TSP)
 Location & Location ID: AUES office (calibration room)
 Equipment Ref: HVS 018 & HVS 019
 Last Calibration Date: 22 February 2022

Equipment Verification Results:

Verification Date: 1 & 7 March 2022

| Date | Hour | Time | Mean Temp °C | Mean Pressure (hPa) | Concentration in ug/m ³ (Standard Equipment) | Total Count (Calibrated Equipment) | Count/Minute (Total Count/min) |
|----------|-----------|---------------|--------------|---------------------|---|------------------------------------|--------------------------------|
| 7-Mar-22 | 2hr01mins | 09:17 ~ 11:18 | 22.5 | 1010.6 | 26.4 | 947 | 7.9 |
| 7-Mar-22 | 2hr01mins | 11:24 ~ 13:25 | 22.5 | 1010.6 | 34.8 | 1449 | 12.0 |
| 7-Mar-22 | 2hr01mins | 13:30 ~ 15:31 | 22.5 | 1010.6 | 40.3 | 1874 | 15.5 |
| 1-Mar-22 | 30mins | 10:03 ~ 10:33 | 22 | 1016.9 | 123.1 | 1709 | 57.0 |
| 1-Mar-22 | 31mins | 10:39 ~ 11:10 | 22 | 1016.9 | 93.9 | 1401 | 45.8 |

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

Sensitivity Adjustment Scale Setting (Before Calibration) 655 (CPM)

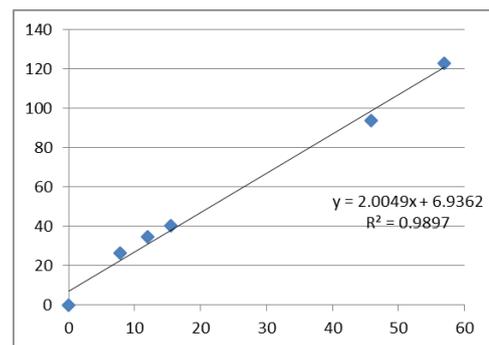
Sensitivity Adjustment Scale Setting (After Calibration) 661 (CPM)

Linear Regression of Y or X

Slope (K-factor): 2.0049 (ug/m³)/CPM

Correlation Coefficient (R) 0.9948

Date of Issue 26 March 2022



Remarks:

- Strong** Correlation (R>0.8)
- Factor 2.0049 (ug/m³)/CPM should be apply for TSP monitoring

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

Operator : Fai So Signature : [Signature] Date : 26 March 2022

QC Reviewer : Ben Tam Signature : [Signature] Date : 26 March 2022

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

| | | | |
|--------------------------|--------|----------------------------|-------|
| Sea Level Pressure (hPa) | 1010.8 | Corrected Pressure (mm Hg) | 758.1 |
| Temperature (°C) | 22.8 | Temperature (K) | 296 |

CALIBRATION ORIFICE

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

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|--|
| 18 | 5.8 | 5.8 | 11.6 | 1.713 | 54 | 54.13 | Slope = 27.3242 Intercept = 7.2177 Corr. coeff. = 0.9997 |
| 13 | 4.7 | 4.7 | 9.4 | 1.543 | 49 | 49.12 | |
| 10 | 3.6 | 3.6 | 7.2 | 1.351 | 44 | 44.11 | |
| 8 | 2.3 | 2.3 | 4.6 | 1.080 | 37 | 37.09 | |
| 5 | 1.4 | 1.4 | 2.8 | 0.844 | 30 | 30.07 | |

Calculations :

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

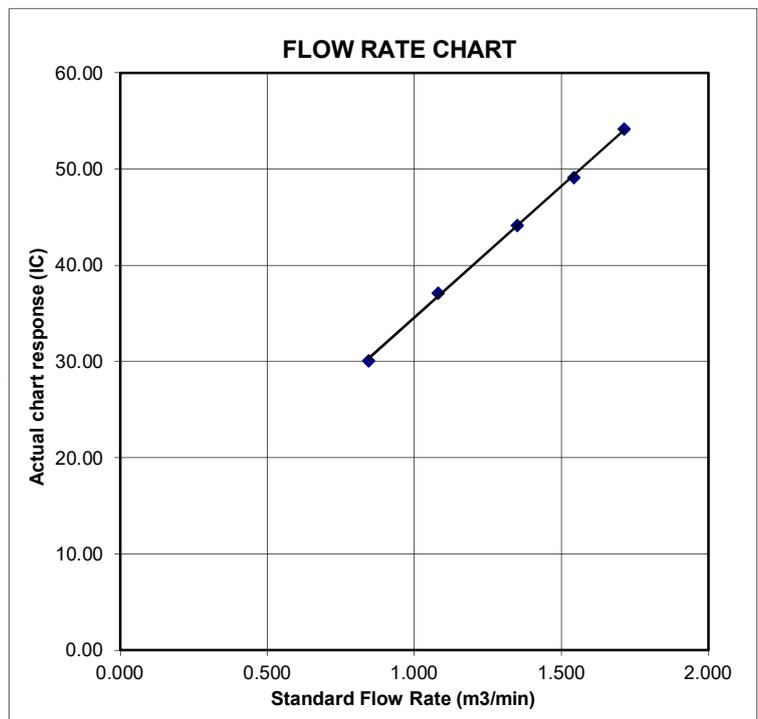
$$IC = I[\text{sqrt}(Pa/Pstd)(Tstd/Ta)]$$

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: 22-Feb-22
 Location ID : Calibration Room Next Calibration Date: 22-May-22

CONDITIONS

| | | | |
|--------------------------|--------|----------------------------|-------|
| Sea Level Pressure (hPa) | 1010.8 | Corrected Pressure (mm Hg) | 758.1 |
| Temperature (°C) | 22.8 | Temperature (K) | 296 |

CALIBRATION ORIFICE

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

CALIBRATION

| Plate No. | H2O (L) (in) | H2O (R) (in) | H2O (in) | Qstd (m3/min) | I (chart) | IC corrected | LINEAR REGRESSION |
|-----------|--------------|--------------|----------|---------------|-----------|--------------|---|
| 18 | 6.2 | 6.2 | 12.4 | 1.771 | 52 | 52.13 | Slope = 34.6002 Intercept = -9.1434 Corr. coeff. = 0.9958 |
| 13 | 4.9 | 4.9 | 9.8 | 1.575 | 44 | 44.11 | |
| 10 | 3.8 | 3.8 | 7.6 | 1.387 | 40 | 40.10 | |
| 8 | 2.4 | 2.4 | 4.8 | 1.104 | 30 | 30.07 | |
| 5 | 1.5 | 1.5 | 3.0 | 0.873 | 20 | 20.05 | |

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:

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

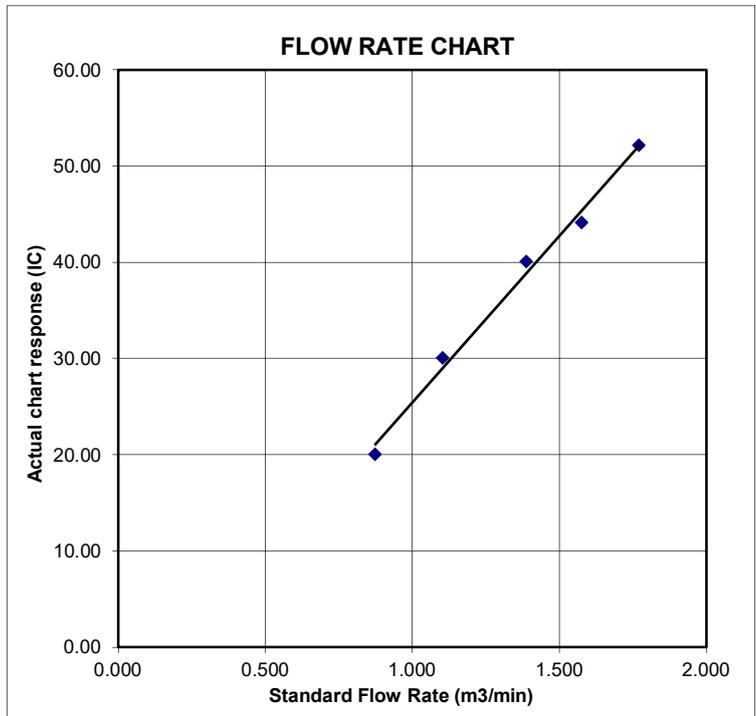
m = sampler slope

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 |
| QSTD | m= | 1.99838 | QA | m= | 1.25135 |
| | b= | -0.00903 | | b= | -0.00574 |
| | r= | 0.99999 | | r= | 0.99999 |

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

| Standard Conditions | |
|---|-----------|
| Tstd: | 298.15 °K |
| Pstd: | 760 mm Hg |
| Key | |
| ΔH: calibrator manometer reading (in H2O) | |
| ΔP: rootsmeter manometer reading (mm Hg) | |
| Ta: actual absolute temperature (°K) | |
| Pa: actual barometric pressure (mm Hg) | |
| b: intercept | |
| m: slope | |

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



Certificate of Calibration 校正證書

Certificate No. : C221365
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-0258) Date of Receipt / 收件日期 : 14 February 2022

Description / 儀器名稱 : Sound Level Meter (EQ018)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00809405
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

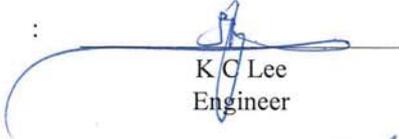
DATE OF TEST / 測試日期 : 12 March 2022

TEST RESULTS / 測試結果

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

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Fluke Everett Service Center, USA
- Agilent Technologies / Keysight Technologies

Tested By : 
測試 : K C Lee
Engineer

Certified By : 
核證 : H C Chan
Engineer

Date of Issue : 16 March 2022
簽發日期

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. : C221365

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
2. Self-calibration was performed before the test.
3. The results presented are the mean of 3 measurements at each calibration point.
4. Test equipment :

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

5. Test procedure : MA101N.

6. Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

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

- 6.1.2 Linearity

| UUT Setting | | | | Applied Value | | UUT Reading (dB) |
|-------------|----------------|---------------------|----------------|---------------|-------------|------------------|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | |
| 30 - 130 | L _A | A | Fast | 94.00 | 1 | 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.

- 6.2 Time Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|-------------|------------------|------------------------------|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 130 | L _A | A | Fast | 94.00 | 1 | 94.0 | Ref. |
| | | | Slow | | | 94.0 | ± 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. : C221365

證書編號

6.3 Frequency Weighting

6.3.1 A-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|--------|------------------|------------------------------|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 130 | L _A | A | Fast | 94.00 | 63 Hz | 67.8 | -26.2 ± 1.5 |
| | | | | | 125 Hz | 77.9 | -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 | 95.0 | +1.2 ± 1.6 |
| | | | | | 4 kHz | 94.7 | +1.0 ± 1.6 |
| | | | | | 8 kHz | 92.9 | -1.1 (+2.1 ; -3.1) |
| | | | | | 16 kHz | 85.5 | -6.6 (+3.5 ; -17.0) |

6.3.2 C-Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|--------|------------------|------------------------------|
| Range (dB) | Function | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 130 | L _C | C | Fast | 94.00 | 63 Hz | 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 | 93.6 | -0.2 ± 1.6 |
| | | | | | 4 kHz | 92.9 | -0.8 ± 1.6 |
| | | | | | 8 kHz | 91.0 | -3.0 (+2.1 ; -3.1) |
| | | | | | 16 kHz | 83.5 | -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。

Certificate of Calibration

校正證書

Certificate No. : C221365

證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 16463

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

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

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

Note :

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

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



輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C221363

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-0258) Date of Receipt / 收件日期 : 14 February 2022

Description / 儀器名稱 : Sound Level Meter (EQ067)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-31
Serial No. / 編號 : 00410221
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

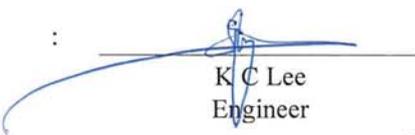
DATE OF TEST / 測試日期 : 12 March 2022

TEST RESULTS / 測試結果

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

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Fluke Everett Service Center, USA
- Agilent Technologies / Keysight Technologies

Tested By : 
測試

K C Lee
Engineer

Certified By : 
核證

H C Chan
Engineer

Date of Issue : 16 March 2022
簽發日期

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. : C221363
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 | C220381 |
| 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 Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|-------------|------------------|------------------------------|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 120 | L _A | A | Fast | 94.00 | 1 | 93.8 | ± 1.1 |

6.1.2 Linearity

| UUT Setting | | | | Applied Value | | UUT Reading (dB) |
|-------------|----------------|---------------------|----------------|---------------|-------------|------------------|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | |
| 30 - 120 | L _A | A | Fast | 94.00 | 1 | 93.8 (Ref.) |
| | | | | 104.00 | | 103.8 |
| | | | | 114.00 | | 113.7 |

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

6.2 Time Weighting

| UUT Setting | | | | Applied Value | | UUT Reading (dB) | IEC 61672 Class 1 Spec. (dB) |
|-------------|----------------|---------------------|----------------|---------------|-------------|------------------|------------------------------|
| Range (dB) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. (kHz) | | |
| 30 - 120 | L _A | A | Fast | 94.00 | 1 | 93.8 | Ref. |
| | | | Slow | | | 93.7 | ± 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. : C221363
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) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 120 | L _A | A | Fast | 94.00 | 63 Hz | 67.5 | -26.2 ± 1.5 |
| | | | | | 125 Hz | 77.6 | -16.1 ± 1.5 |
| | | | | | 250 Hz | 85.1 | -8.6 ± 1.4 |
| | | | | | 500 Hz | 90.5 | -3.2 ± 1.4 |
| | | | | | 1 kHz | 93.8 | Ref. |
| | | | | | 2 kHz | 95.0 | +1.2 ± 1.6 |
| | | | | | 4 kHz | 94.9 | +1.0 ± 1.6 |
| | | | | | 8 kHz | 92.7 | -1.1 (+2.1 ; -3.1) |
| | | | | | 16 kHz | 87.4 | -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) | Mode | Frequency Weighting | Time Weighting | Level (dB) | Freq. | | |
| 30 - 120 | L _C | C | Fast | 94.00 | 63 Hz | 92.8 | -0.8 ± 1.5 |
| | | | | | 125 Hz | 93.5 | -0.2 ± 1.5 |
| | | | | | 250 Hz | 93.7 | 0.0 ± 1.4 |
| | | | | | 500 Hz | 93.8 | 0.0 ± 1.4 |
| | | | | | 1 kHz | 93.7 | Ref. |
| | | | | | 2 kHz | 93.6 | -0.2 ± 1.6 |
| | | | | | 4 kHz | 93.1 | -0.8 ± 1.6 |
| | | | | | 8 kHz | 90.8 | -3.0 (+2.1 ; -3.1) |
| | | | | | 16 kHz | 85.4 | -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所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C221363

證書編號

Remarks : - UUT Microphone Model No. : UC-53A & S/N : 322551

- Mfr's Spec. : IEC 61672 Class 1

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

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

Note :

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

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



Certificate of Calibration

校正證書

Certificate No. : C224779
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC22-1539) **Date of Receipt / 收件日期** : 4 August 2022
Description / 儀器名稱 : Sound Level Calibrator (EQ085)
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10655561
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

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

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 20 August 2022

TEST RESULTS / 測試結果

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

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By / 測試 : 
H T Wong
Assistant Engineer

Certified By / 核證 : 
K C Lee
Engineer

Date of Issue / 簽發日期 : 23 August 2022

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所書面批准。

Certificate of Calibration

校正證書

Certificate No. : C224779

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
2. The results presented are the mean of 3 measurements at each calibration point.
3. Test equipment :

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

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

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

5.2 Frequency Accuracy

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

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

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

Note :

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

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

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。



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: BEN TAM
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES &
ADDRESS: RM A 20/F., GOLD KING IND BLDG,
NO. 35-41 TAI LIN PAI ROAD,
KWAI CHUNG, N.T.

WORK ORDER: HK2241896
SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 24-Oct-2022
DATE OF ISSUE: 31-Oct-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.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 25-October-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: HK2241896
SUB-BATCH: 0
DATE OF ISSUE: 31-Oct-2022
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 25-October-2022 Date of Next Calibration: 25-January-2023

PARAMETERS:

Conductivity

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

| Expected Reading (mS/cm) | Displayed Reading (mS/cm) | Tolerance (%) |
|--------------------------|---------------------------|---------------|
| 146.9 | 149.8 | +2.0 |
| 6667 | 7120 | +6.8 |
| 12890 | 13262 | +2.9 |
| 58670 | 58816 | +0.2 |
| | Tolerance Limit (%) | ±10.0 |

Dissolved Oxygen

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

| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------|--------------------------|------------------|
| 2.10 | 1.99 | -0.11 |
| 3.57 | 3.55 | -0.02 |
| 7.92 | 7.79 | -0.13 |
| | Tolerance Limit (mg/L) | ±0.20 |

pH Value

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

| Expected Reading (pH unit) | Displayed Reading (pH unit) | Tolerance (pH unit) |
|----------------------------|-----------------------------|---------------------|
| 4.0 | 3.89 | -0.11 |
| 7.0 | 7.08 | +0.08 |
| 10.0 | 9.92 | -0.08 |
| | Tolerance Limit (pH unit) | ±0.20 |

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2241896
SUB-BATCH: 0
DATE OF ISSUE: 31-Oct-2022
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 25-October-2022 Date of Next Calibration: 25-January-2023

PARAMETERS:

Turbidity

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

| Expected Reading (NTU) | Displayed Reading (NTU) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0 | 0.50 | -- |
| 4 | 4.25 | +6.3 |
| 40 | 36.21 | -9.5 |
| 80 | 81.94 | +2.4 |
| 400 | 380.13 | -5.0 |
| 800 | 764.90 | -4.4 |
| | Tolerance Limit (%) | ±10.0 |

Salinity

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

| Expected Reading (ppt) | Displayed Reading (ppt) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0 | 0.00 | -- |
| 10 | 9.46 | -5.4 |
| 20 | 18.39 | -8.1 |
| 30 | 28.45 | -5.2 |
| | Tolerance Limit (%) | ±10.0 |

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2241896
SUB-BATCH: 0
DATE OF ISSUE: 31-Oct-2022
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [20J101862/ 15H103928]/ [EQW018]
Date of Calibration: 25-October-2022 Date of Next Calibration: 25-January-2023

PARAMETERS:

Temperature

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

| Expected Reading (°C) | Displayed Reading (°C) | Tolerance (°C) |
|-----------------------|------------------------|----------------|
| 9.0 | 8.8 | -0.2 |
| 25.0 | 24.7 | -0.3 |
| 43.5 | 42.7 | -0.8 |
| | Tolerance Limit (°C) | ±2.0 |

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

A handwritten signature in blue ink, appearing to read 'Lis'.

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM
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.

WORK ORDER: HK2251569
SUB-BATCH: 0
LABORATORY: HONG KONG
DATE RECEIVED: 29-Dec-2022
DATE OF ISSUE: 05-Jan-2023

SPECIFIC COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the laboratory or quoted from relevant international standards.

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

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

Equipment Type: Multifunctional Meter

Service Nature: Performance Check

Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature

Brand Name/ Model No.: [YSI]/ [Professional DSS]

Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]

Date of Calibration: 04-January-2023

GENERAL COMMENTS

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2251569
SUB-BATCH: 0
DATE OF ISSUE: 05-Jan-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 04-January-2023 Date of Next Calibration: 04-April-2023

PARAMETERS:

Conductivity

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

| Expected Reading ($\mu\text{S}/\text{cm}$) | Displayed Reading ($\mu\text{S}/\text{cm}$) | Tolerance (%) |
|--|---|---------------|
| 146.9 | 156.1 | +6.3 |
| 6667 | 7092 | +6.4 |
| 12890 | 13808 | +7.1 |
| 58670 | 61025 | +4.0 |
| | Tolerance Limit (%) | ± 10.0 |

Dissolved Oxygen

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

| Expected Reading (mg/L) | Displayed Reading (mg/L) | Tolerance (mg/L) |
|-------------------------|--------------------------|------------------|
| 3.03 | 3.14 | +0.11 |
| 4.68 | 4.77 | +0.09 |
| 7.37 | 7.37 | +0.00 |
| | Tolerance Limit (mg/L) | ± 0.20 |

pH Value

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

| Expected Reading (pH unit) | Displayed Reading (pH unit) | Tolerance (pH unit) |
|----------------------------|-----------------------------|---------------------|
| 4.0 | 3.80 | -0.20 |
| 7.0 | 7.05 | +0.05 |
| 10.0 | 9.96 | -0.04 |
| | Tolerance Limit (pH unit) | ± 0.20 |

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

Ms. Lin Wai Yu, Iris
Assistant Manager - Inorganics

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK2251569
SUB-BATCH: 0
DATE OF ISSUE: 05-Jan-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 04-January-2023 Date of Next Calibration: 04-April-2023

PARAMETERS:

Turbidity

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

| Expected Reading (NTU) | Displayed Reading (NTU) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0 | -0.92 | -- |
| 4 | 4.37 | +9.3 |
| 40 | 37.54 | -6.2 |
| 80 | 73.45 | -8.2 |
| 400 | 370.84 | -7.3 |
| 800 | 725.48 | -9.3 |
| | Tolerance Limit (%) | ±10.0 |

Salinity

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

| Expected Reading (ppt) | Displayed Reading (ppt) | Tolerance (%) |
|------------------------|-------------------------|---------------|
| 0 | 0.00 | -- |
| 10 | 10.61 | +6.1 |
| 20 | 21.35 | +6.8 |
| 30 | 31.14 | +3.8 |
| | 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: HK2251569
SUB-BATCH: 0
DATE OF ISSUE: 05-Jan-2023
CLIENT: ACTION-UNITED ENVIRONMENTAL SERVICES & CONSULTING

Equipment Type: Multifunctional Meter
Brand Name/ Model No.: [YSI]/ [Professional DSS]
Serial No./ Equipment No.: [17B102764/17B100758]/ [EQW019]
Date of Calibration: 04-January-2023 Date of Next Calibration: 04-April-2023

PARAMETERS:

Temperature

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

| Expected Reading (°C) | Displayed Reading (°C) | Tolerance (°C) |
|-----------------------|------------------------|----------------|
| 7.5 | 8.5 | +1.0 |
| 20.5 | 21.0 | +0.5 |
| 42.0 | 42.0 | +0.0 |
| | 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

WATER

Manufacturing Certificate

This product has been tested in accordance with procedures established through Global Water Instrumentation's Quality Management System. This product meets or exceeds its manufacturing acceptance criteria.

| | |
|----------------------------|------------------------------------|
| ITEM DESCRIPTION: | Flow Probe, 5.5 - 14' |
| MODEL NAME/ NUMBER: | FP211 |
| PART NUMBER: | BB1100 |
| SERIAL NUMBER: | 22B106785 |
| ACCURACY: | ± 0.1 FPS (0.03 MPS) |
| POWER REQUIRED: | Internal Lithium Coin Cell Battery |
| CABLE LENGTH: | N/A |
| CERTIFICATES: | CE Compliant |
| RANGE: | 0.3 - 19.9 FPS (0.1 - 6.1 MPS) |
| OUTPUT: | Flow Display, FPS/MPS |
| CALIBRATION FACTOR: | 318 |

Contact
Global Water
for all your
instrumentation
needs:

Water Level

Water Flow

Water Samplers

Water Quality

Weather

Remote Monitoring

Control

Technician *Barnette, Melinda*

Inspector *Winberg, Josh*

Date *3/5/2022*

NOTE: Global Water Instrumentation warrants that its products are free from defects in material & workmanship under normal use & service for a period of one year from date of original shipment from factory. Repaired components are warranted for a period of 90 days from shipment. Contact us for complete warranty details.



Global Water
a xylem brand

In the U.S. call toll free
at 1-800-876-1172
International: 1-979-690-5560
Fax: 1-979-690-0440
Email: globalw@globalw.com

Visit our online catalog at:
www.globalw.com
Our Service Address:
151 Graham Rd
College Station, TX 77845





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

Note:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer's Representative

Event and Action Plan for Water Quality

| Event | Action | | | |
|---|--|---|--|---|
| | ET | IEC | ER | Contractor |
| Action level exceedance for one sampling day | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with ER, ET and IEC and purpose remedial measures to IEC and ER; and 7. Implement the agreed mitigation measures. |
| Action level exceedance for more than one consecutive sampling days | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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. | <ol style="list-style-type: none"> 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 – January 2023

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

Remark: No water quality monitoring would be carried out during Chinese New Year from 22 to 25 January 2023 as no construction activity will be carried out by The Contractors.

| | |
|---|--------------------------|
| ✓ | Monitoring Day |
| | Sunday or Public Holiday |

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

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

| | |
|---|--------------------------|
| ✓ | Monitoring Day |
| | Sunday or Public Holiday |

Appendix H

Monitoring Data

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

Air Quality (24-hour TSP)

24-Hour TSP Monitoring Data for ASR-1

| DATE | SAMPLE NUMBER | ELAPSED TIME | | | CHART READING | | | AVG TEMP (°C) | AVG AIR PRESS (hPa) | STANDARD FLOW RATE (m ³ /min) | AIR VOLUME (std m ³) | FILTER WEIGHT (g) | | DUST WEIGHT COLLECTED (g) | 24-Hr TSP (µg/m ³) |
|-----------|---------------|--------------|----------|---------|---------------|-----|------|------------------|------------------------|---|-------------------------------------|-------------------|--------|---------------------------|--------------------------------|
| | | INITIAL | FINAL | (min) | MIN | MAX | AVG | | | | | INITIAL | FINAL | | |
| 4-Jan-23 | 29071 | 26518.71 | 26542.71 | 1440.00 | 39 | 39 | 39.0 | 17.4 | 1023.4 | 1.22 | 1750 | 2.7387 | 2.8834 | 0.1447 | 83 |
| 10-Jan-23 | 29081 | 26542.71 | 26566.71 | 1440.00 | 40 | 40 | 40.0 | 18.2 | 1020 | 1.24 | 1792 | 2.7280 | 2.8214 | 0.0934 | 52 |
| 16-Jan-23 | 29091 | 26566.71 | 26590.71 | 1440.00 | 41 | 41 | 41.0 | 12.3 | 1021.6 | 1.29 | 1861 | 2.7301 | 2.8624 | 0.1323 | 71 |
| 21-Jan-23 | 28879 | 26590.71 | 26614.71 | 1440.00 | 40 | 40 | 40.0 | 16.9 | 1019.5 | 1.24 | 1788 | 2.5952 | 2.6738 | 0.0786 | 44 |
| 27-Jan-23 | 28982 | 26614.71 | 26638.71 | 1440.00 | 41 | 41 | 41.0 | 15.4 | 1022.5 | 1.28 | 1841 | 2.8253 | 2.9118 | 0.0865 | 47 |

24-Hour TSP Monitoring Data for ASR-2

| DATE | SAMPLE NUMBER | ELAPSED TIME | | | CHART READING | | | AVG TEMP (°C) | AVG AIR PRESS (hPa) | STANDARD FLOW RATE (m ³ /min) | AIR VOLUME (std m ³) | FILTER WEIGHT (g) | | DUST WEIGHT COLLECTED (g) | 24-Hr TSP (µg/m ³) |
|-----------|---------------|--------------|----------|---------|---------------|-----|------|------------------|------------------------|---|-------------------------------------|-------------------|--------|---------------------------|--------------------------------|
| | | INITIAL | FINAL | (min) | MIN | MAX | AVG | | | | | INITIAL | FINAL | | |
| 4-Jan-23 | 29072 | 23957.36 | 23981.36 | 1440.00 | 42 | 42 | 42.0 | 17.4 | 1023.4 | 1.31 | 1891 | 2.7350 | 2.8579 | 0.1229 | 65 |
| 10-Jan-23 | 29082 | 23981.36 | 24005.36 | 1440.00 | 41 | 41 | 41.0 | 18.2 | 1020 | 1.28 | 1840 | 2.7357 | 2.7782 | 0.0425 | 23 |
| 16-Jan-23 | 29092 | 24005.36 | 24029.36 | 1440.00 | 41 | 41 | 41.0 | 12.3 | 1021.6 | 1.29 | 1860 | 2.7400 | 2.8153 | 0.0753 | 40 |
| 21-Jan-23 | 28865 | 24029.36 | 24053.36 | 1440.00 | 42 | 42 | 42.0 | 16.9 | 1019.5 | 1.32 | 1898 | 2.6064 | 2.7087 | 0.1023 | 54 |
| 27-Jan-23 | 28983 | 24053.36 | 24077.36 | 1440.00 | 42 | 42 | 42.0 | 15.4 | 1022.5 | 1.32 | 1905 | 2.8214 | 3.0280 | 0.2066 | 108 |

24-Hour TSP Monitoring Data for ASR-3a

| DATE | SAMPLE NUMBER | ELAPSED TIME | | | CHART READING | | | AVG TEMP (°C) | AVG AIR PRESS (hPa) | STANDARD FLOW RATE (m ³ /min) | AIR VOLUME (std m ³) | FILTER WEIGHT (g) | | DUST WEIGHT COLLECTED (g) | 24-Hr TSP (µg/m ³) |
|-----------|---------------|--------------|----------|---------|---------------|-----|-----|------------------|------------------------|---|-------------------------------------|-------------------|--------|---------------------------|--------------------------------|
| | | INITIAL | FINAL | (min) | MIN | MAX | AVG | | | | | INITIAL | FINAL | | |
| 4-Jan-23 | 29073 | 17725.11 | 17749.11 | 1440.00 | 39 | 39 | 39 | 17.4 | 1023.4 | 1.23 | 1769 | 2.7327 | 2.8108 | 0.0781 | 44 |
| 10-Jan-23 | 29083 | 17749.11 | 17773.11 | 1440.00 | 39 | 39 | 39 | 18.2 | 1020 | 1.22 | 1763 | 2.7314 | 2.8159 | 0.0845 | 48 |
| 16-Jan-23 | 29093 | 17773.11 | 17797.11 | 1440.00 | 40 | 40 | 40 | 12.3 | 1021.6 | 1.27 | 1833 | 2.7304 | 2.7785 | 0.0481 | 26 |
| 21-Jan-23 | 28880 | 17797.11 | 17821.11 | 1440.00 | 39 | 39 | 39 | 16.9 | 1019.5 | 1.24 | 1793 | 2.5985 | 2.6435 | 0.0450 | 25 |
| 27-Jan-23 | 28984 | 17821.11 | 17845.11 | 1440.00 | 39 | 39 | 39 | 15.4 | 1022.5 | 1.25 | 1800 | 2.8255 | 2.9057 | 0.0802 | 45 |

Noise

| Noise Measurement Results (dB(A)) of CN-1 | | | | | | | | | | | | | | | | | | | | | |
|---|------------|-------------------------------------|------|------|-------------------------------------|------|------|-------------------------------------|------|------|-------------------------------------|------|------|-------------------------------------|------|------|-------------------------------------|------|------|----------------------|-----------------------|
| Date | Start Time | 1 st Leq _{5min} | L10 | L90 | 2 nd Leq _{5min} | L10 | L90 | 3 rd Leq _{5min} | L10 | L90 | 4 th Leq _{5min} | L10 | L90 | 5 th Leq _{5min} | L10 | L90 | 6 th Leq _{5min} | L10 | L90 | Leq _{30min} | Façade Correction (*) |
| 5-Jan-23 | 10:42 | 63.3 | 62.8 | 56.6 | 62.1 | 61.6 | 56.6 | 59.0 | 59.8 | 57.2 | 61.2 | 61.1 | 56.6 | 64.7 | 65.4 | 56.0 | 61.6 | 63.1 | 57.0 | 62 | 65 |
| 11-Jan-23 | 9:05 | 61.2 | 64.9 | 54.9 | 62.7 | 66.1 | 56.8 | 60.9 | 64.5 | 56.1 | 61.7 | 64.9 | 57 | 61.4 | 64.2 | 56.3 | 62 | 65.1 | 57.3 | 62 | 65 |
| 17-Jan-23 | 13:01 | 62.6 | 65.2 | 61.7 | 63 | 65.6 | 62 | 64.3 | 66.7 | 62 | 63.1 | 63.7 | 62.2 | 63.6 | 65.5 | 62 | 63.8 | 64.7 | 62.1 | 63 | 66 |
| 26-Jan-23 | 9:27 | 61.8 | 62.9 | 58.3 | 60.9 | 63.1 | 58.8 | 60.7 | 62.4 | 58.5 | 61.2 | 64.1 | 59.5 | 61.5 | 63.5 | 60.9 | 62.2 | 64.1 | 60.8 | 61 | 64 |
| 31-Jan-23 | 9:30 | 67.9 | 69.8 | 59.1 | 65.7 | 68.7 | 58.3 | 66.7 | 69.2 | 57.4 | 65.5 | 69.1 | 56.7 | 64.7 | 68.5 | 56.5 | 65.2 | 69.2 | 57.3 | 66 | 69 |

(*) 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 st Leq _{5min} | L10 | L90 | 2 nd Leq _{5min} | L10 | L90 | 3 rd Leq _{5min} | L10 | L90 | 4 th Leq _{5min} | L10 | L90 | 5 th Leq _{5min} | L10 | L90 | 6 th Leq _{5min} | L10 | L90 | Leq _{30min} | Façade Correction (*) |
| 5-Jan-23 | 11:35 | 65.4 | 66.9 | 61.0 | 62.9 | 65.3 | 60.2 | 66.3 | 69.4 | 60.7 | 65.1 | 68.0 | 61.0 | 66.0 | 68.0 | 60.8 | 66.6 | 70.0 | 61.8 | 66 | 69 |
| 11-Jan-23 | 9:40 | 67 | 69.5 | 61.7 | 65.9 | 67.2 | 59.1 | 61.7 | 65.9 | 57.1 | 65.9 | 69.6 | 61.7 | 64.3 | 68.1 | 59.8 | 65.1 | 68.9 | 60.4 | 65 | 68 |
| 17-Jan-23 | 13:35 | 68.2 | 69.7 | 62.2 | 69.3 | 69.7 | 62.1 | 69.5 | 68.2 | 57.7 | 65.2 | 67 | 57.5 | 66.6 | 67.1 | 58.2 | 64.8 | 67.3 | 59.2 | 68 | 71 |
| 26-Jan-23 | 10:10 | 67.1 | 69.5 | 60.6 | 64.9 | 68 | 60.9 | 64.5 | 66.9 | 61.2 | 65.5 | 69.6 | 61.9 | 64.7 | 69.1 | 63 | 64.9 | 69 | 62.7 | 65 | 68 |
| 31-Jan-23 | 10:10 | 58.3 | 59.7 | 56.8 | 57.2 | 58.4 | 55.7 | 58 | 59.1 | 56.2 | 59.1 | 61.4 | 57.5 | 60.1 | 61.4 | 56.8 | 67.2 | 60.6 | 56.2 | 62 | 65 |

(*) 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 st Leq _{5min} | L10 | L90 | 2 nd Leq _{5min} | L10 | L90 | 3 rd Leq _{5min} | L10 | L90 | 4 th Leq _{5min} | L10 | L90 | 5 th Leq _{5min} | L10 | L90 | 6 th Leq _{5min} | L10 | L90 | Leq _{30min} | Façade Correction (*) |
| 5-Jan-23 | 13:17 | 66.3 | 61.3 | 53.8 | 59.2 | 61.2 | 53.7 | 59.6 | 62.2 | 54.0 | 61.1 | 63.3 | 53.9 | 58.8 | 61.2 | 53.5 | 60.2 | 62.2 | 53.7 | 62 | 65 |
| 11-Jan-23 | 10:26 | 58.2 | 60.1 | 54.9 | 58.6 | 60.9 | 53.5 | 60.9 | 63.1 | 56.7 | 59.5 | 61.4 | 55.5 | 58.7 | 62 | 56.1 | 60.8 | 63.7 | 56.7 | 60 | 63 |
| 17-Jan-23 | 14:10 | 55.1 | 56.8 | 45.6 | 55.7 | 58.6 | 44.7 | 59.2 | 59.8 | 43.3 | 51.7 | 56.6 | 42.9 | 50.9 | 52 | 42.9 | 50.6 | 53.1 | 44.4 | 55 | 58 |
| 26-Jan-23 | 10:45 | 52.9 | 56.8 | 49.7 | 56.1 | 58.2 | 49.9 | 55.3 | 57 | 51.3 | 54.3 | 56.9 | 50.9 | 58.8 | 66.1 | 51.1 | 60.7 | 65.5 | 51.3 | 57 | 60 |
| 31-Jan-23 | 10:46 | 60.3 | 53.6 | 45.3 | 51.8 | 49.8 | 45.2 | 51.5 | 50.7 | 45.4 | 55.5 | 58.6 | 46.9 | 54.9 | 59.6 | 44.1 | 51.8 | 50.7 | 43.4 | 56 | 59 |

(*) 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 st Leq _{5min} | L10 | L90 | 2 nd Leq _{5min} | L10 | L90 | 3 rd Leq _{5min} | L10 | L90 | 4 th Leq _{5min} | L10 | L90 | 5 th Leq _{5min} | L10 | L90 | 6 th Leq _{5min} | L10 | L90 | Leq _{30min} | Façade Correction (*) |
| 5-Jan-23 | 13:55 | 57.4 | 59.4 | 55.5 | 56.9 | 58.7 | 55.0 | 57.8 | 57.7 | 55.1 | 58.9 | 60.7 | 56.0 | 60.9 | 62.5 | 55.3 | 57.9 | 59.2 | 56.8 | 59 | 62 |
| 11-Jan-23 | 13:15 | 61.1 | 63.4 | 56 | 59.8 | 62.9 | 55.7 | 59.2 | 61.7 | 55.4 | 60.1 | 63 | 54.2 | 65.1 | 63.9 | 55 | 62.3 | 64.1 | 55.9 | 62 | 66 |
| 17-Jan-23 | 14:45 | 68.1 | 69.9 | 59.1 | 66.3 | 68.7 | 58.7 | 66.6 | 69.7 | 57.9 | 65.8 | 69.5 | 56.8 | 64.6 | 68.2 | 56.5 | 65.6 | 69.1 | 57.3 | 64 | 66 |
| 26-Jan-23 | 11:25 | 63.8 | 65.9 | 61.5 | 64.9 | 68 | 62.1 | 63.1 | 64.7 | 62.3 | 63.9 | 66.1 | 62 | 63.7 | 65.7 | 61.3 | 61.7 | 62.9 | 60.8 | 64 | 66 |
| 31-Jan-23 | 11:20 | 69.3 | 62.7 | 52.7 | 60.6 | 65.2 | 51.9 | 57.3 | 61.2 | 51.2 | 59 | 62.8 | 52.4 | 58.6 | 59.9 | 51.7 | 58.3 | 58.9 | 51.6 | 63 | 66 |

Water Quality

Water Quality Impact Monitoring Result for M1

| Date | 3-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 10:00 | 0.13 | 14.3 | 14.3 | <0.1 | <0.1 | 8.41 | 8.40 | 89.5 | 89.4 | 6.7 | 6.6 | 7.70 | 7.7 | 0.07 | 0.07 | 5 | 5.0 |
| | | | 14.3 | | <0.1 | | 8.38 | | 89.2 | | 6.4 | | 7.70 | | 0.07 | | 5 | |

| Date | 5-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 12:15 | 0.13 | 17 | 17.0 | <0.1 | <0.1 | 8.33 | 8.33 | 90.1 | 90.1 | 6.31 | 6.2 | 7.61 | 7.6 | 0.06 | 0.06 | 8 | 8.0 |
| | | | 17 | | <0.1 | | 8.32 | | 90.0 | | 6.07 | | 7.61 | | 0.06 | | 8 | |

| Date | 7-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.13 | 16.4 | 16.4 | <0.1 | <0.1 | 8.1 | 8.09 | 90.7 | 90.6 | 5.41 | 5.4 | 7.12 | 7.1 | 0.07 | 0.07 | 7 | 7.5 |
| | | | 16.4 | | <0.1 | | 8.08 | | 90.5 | | 5.39 | | 7.12 | | 0.07 | | 8 | |

| Date | 10-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 10:30 | 0.14 | 17.1 | 17.1 | <0.1 | <0.1 | 7.98 | 7.98 | 89.1 | 89.1 | 3.24 | 3.4 | 7.29 | 7.3 | 0.06 | 0.06 | 4 | 5.0 |
| | | | 17.1 | | <0.1 | | 7.97 | | 89.0 | | 3.53 | | 7.29 | | 0.06 | | 6 | |

| Date | 12-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.13 | 20.3 | 20.3 | <0.1 | <0.1 | 8 | 7.99 | 89.1 | 89.0 | 2.02 | 2.0 | 7.67 | 7.7 | 0.05 | 0.05 | 2 | 2.5 |
| | | | 20.3 | | <0.1 | | 7.97 | | 88.8 | | 2.04 | | 7.67 | | 0.05 | | 3 | |

| Date | 14-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:20 | 0.14 | 20.9 | 20.9 | <0.1 | <0.1 | 7.97 | 7.97 | 88.6 | 88.6 | 2.28 | 2.3 | 7.05 | 7.1 | 0.05 | 0.05 | 5 | 4.5 |
| | | | 20.9 | | <0.1 | | 7.96 | | 88.6 | | 2.23 | | 7.05 | | 0.05 | | 4 | |

| Date | 17-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.13 | 12.7 | 12.7 | <0.1 | <0.1 | 8.31 | 8.30 | 85.3 | 85.2 | 2.29 | 2.3 | 7.59 | 7.6 | 0.07 | 0.07 | 4 | 3.5 |
| | | | 12.7 | | <0.1 | | 8.29 | | 85.1 | | 2.28 | | 7.59 | | 0.07 | | 3 | |

| Date | 19-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.13 | 13.1 | 13.1 | <0.1 | <0.1 | 8.18 | 8.17 | 83.8 | 83.7 | 2.24 | 2.3 | 7.41 | 7.4 | 0.05 | 0.05 | 3 | 3.0 |
| | | | 13.1 | | <0.1 | | 8.16 | | 83.5 | | 2.26 | | 7.41 | | 0.05 | | 3 | |

| Date | 21-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.13 | 14.6 | 14.6 | <0.1 | <0.1 | 8.36 | 8.34 | 88.2 | 88.0 | 3.16 | 3.2 | 7.70 | 7.7 | 0.06 | 0.06 | 4 | 4.5 |
| | | | 14.6 | | <0.1 | | 8.32 | | 87.8 | | 3.2 | | 7.70 | | 0.06 | | 5 | |

| Date | 26-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.13 | 14.3 | 14.3 | <0.1 | <0.1 | 9.01 | 9.00 | 95.4 | 95.3 | 0.29 | 0.3 | 7.43 | 7.4 | 0.04 | 0.04 | 2 | 2.0 |
| | | | 14.3 | | <0.1 | | 8.99 | | 95.2 | | 0.3 | | 7.43 | | 0.04 | | 2 | |

| Date | 28-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:20 | 0.13 | 11.6 | 11.6 | <0.1 | <0.1 | 8.91 | 8.91 | 95.2 | 95.2 | 1.09 | 1.1 | 7.10 | 7.1 | 0.05 | 0.05 | 2 | 2.5 |
| | | | 11.6 | | <0.1 | | 8.9 | | 95.1 | | 1.11 | | 7.10 | | 0.05 | | 3 | |

| Date | 30-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M1 | 9:30 | 0.14 | 11.4 | 11.4 | <0.1 | <0.1 | 8.96 | 8.96 | 95.5 | 95.5 | 0.34 | 0.3 | 7.30 | 7.3 | 0.05 | 0.05 | 6 | 5.5 |
| | | | 11.4 | | <0.1 | | 8.95 | | 95.4 | | 0.28 | | 7.30 | | 0.05 | | 5 | |

Water Quality Impact Monitoring Result for M2

| Date | 3-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| 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 | 14.1 | 14.1 | <0.1 | <0.1 | 8.59 | 8.59 | 91.3 | 91.3 | 1.38 | 1.4 | 7.37 | 7.4 | 0.08 | 0.08 | 2 | 2.0 |
| | | | 14.1 | | <0.1 | | 8.58 | | 91.2 | | 1.39 | | 7.37 | | 0.08 | | 2 | |

| Date | 5-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 13:30 | 0.07 | 17.2 | 17.2 | <0.1 | <0.1 | 8.57 | 8.58 | 93.6 | 93.7 | 1.4 | 1.4 | 7.48 | 7.5 | 0.04 | 0.04 | 2 | 2.0 |
| | | | 17.2 | | <0.1 | | 8.58 | | 93.8 | | 1.41 | | 7.48 | | 0.04 | | 2 | |

| Date | 7-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:05 | 0.07 | 17 | 17.0 | <0.1 | <0.1 | 8.23 | 8.21 | 92.7 | 92.5 | 1.21 | 1.2 | 7.28 | 7.3 | 0.08 | 0.08 | 2 | 2.0 |
| | | | 17 | | <0.1 | | 8.19 | | 92.2 | | 1.19 | | 7.28 | | 0.08 | | 2 | |

| Date | 10-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 11:15 | 0.08 | 17.5 | 17.5 | <0.1 | <0.1 | 8.27 | 8.27 | 92.7 | 92.6 | 1.14 | 1.2 | 7.15 | 7.2 | 0.08 | 0.08 | <2 | <2 |
| | | | 17.5 | | <0.1 | | 8.26 | | 92.5 | | 1.16 | | 7.15 | | 0.08 | | <2 | |

| Date | 12-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:00 | 0.07 | 20.9 | 20.9 | <0.1 | <0.1 | 8.12 | 8.12 | 90.9 | 90.9 | 1.45 | 1.4 | 7.32 | 7.3 | 0.07 | 0.07 | <2 | <2 |
| | | | 20.9 | | <0.1 | | 8.11 | | 90.8 | | 1.43 | | 7.32 | | 0.07 | | <2 | |

| Date | 14-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:10 | 0.07 | 20.7 | 20.7 | <0.1 | <0.1 | 8.1 | 8.10 | 90.0 | 90.0 | 1.44 | 1.4 | 6.97 | 7.0 | 0.04 | 0.04 | <2 | <2 |
| | | | 20.7 | | <0.1 | | 8.09 | | 89.9 | | 1.42 | | 6.97 | | 0.04 | | <2 | |

| Date | 17-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:05 | 0.07 | 13.2 | 13.2 | <0.1 | <0.1 | 8.87 | 8.85 | 89.6 | 89.4 | 1.56 | 1.5 | 7.61 | 7.6 | 0.09 | 0.09 | <2 | <2 |
| | | | 13.2 | | <0.1 | | 8.82 | | 89.1 | | 1.52 | | 7.61 | | 0.09 | | <2 | |

| Date | 19-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:10 | 0.07 | 14.2 | 14.2 | <0.1 | <0.1 | 8.68 | 8.66 | 88.1 | 87.8 | 1.5 | 1.5 | 7.30 | 7.3 | 0.08 | 0.08 | 3 | 3.0 |
| | | | 14.2 | | <0.1 | | 8.63 | | 87.5 | | 1.49 | | 7.30 | | 0.08 | | 3 | |

| Date | 21-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:00 | 0.07 | 14.8 | 14.8 | <0.1 | <0.1 | 8.5 | 8.50 | 89.5 | 89.5 | 1.18 | 1.2 | 7.39 | 7.4 | 0.07 | 0.07 | 2 | 2.0 |
| | | | 14.8 | | <0.1 | | 8.49 | | 89.4 | | 1.17 | | 7.39 | | 0.07 | | 2 | |

| Date | 26-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:15 | 0.07 | 14.5 | 14.5 | <0.1 | <0.1 | 9.13 | 9.07 | 96.0 | 95.4 | 0.59 | 0.6 | 7.40 | 7.4 | 0.08 | 0.08 | 2 | 2.0 |
| | | | 14.5 | | <0.1 | | 9 | | 94.8 | | 0.65 | | 7.40 | | 0.08 | | 2 | |

| Date | 28-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:05 | 0.07 | 11.8 | 11.8 | <0.1 | <0.1 | 9 | 9.00 | 96.0 | 96.0 | 0.65 | 0.7 | 7.50 | 7.5 | 0.08 | 0.08 | <2 | <2 |
| | | | 11.8 | | <0.1 | | 8.99 | | 95.9 | | 0.67 | | 7.50 | | 0.08 | | <2 | |

| Date | 30-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M2 | 10:10 | 0.08 | 12.3 | 12.3 | <0.1 | <0.1 | 8.99 | 8.99 | 95.5 | 95.5 | 0.22 | 0.2 | 7.40 | 7.4 | 0.08 | 0.08 | <2 | <2 |
| | | | 12.3 | | <0.1 | | 8.98 | | 95.5 | | 0.25 | | 7.40 | | 0.08 | | <2 | |

Water Quality Impact Monitoring Result for M3

| Date | 3-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:50 | 2.41 | 14.9 | 14.9 | <0.1 | <0.1 | 8.89 | 8.90 | 94.1 | 94.2 | 2.8 | 2.8 | 7.40 | 7.4 | 0.02 | 0.02 | 4 | 4.5 |
| | | | 14.9 | | <0.1 | | 8.91 | | 94.3 | | 2.7 | | 7.40 | | 0.02 | | 5 | |

| Date | 5-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 13:30 | 2.40 | 17.3 | 17.3 | <0.1 | <0.1 | 8.24 | 8.23 | 89.3 | 89.1 | 3.02 | 3.0 | 7.80 | 7.8 | 0.04 | 0.04 | 6 | 7.0 |
| | | | 17.3 | | <0.1 | | 8.22 | | 88.9 | | 3.06 | | 7.80 | | 0.04 | | 8 | |

| Date | 7-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:15 | 2.40 | 16.9 | 16.9 | <0.1 | <0.1 | 8.1 | 8.10 | 90.7 | 90.7 | 2.24 | 2.2 | 7.25 | 7.3 | 0.01 | 0.01 | 3 | 3.0 |
| | | | 16.9 | | <0.1 | | 8.09 | | 90.6 | | 2.09 | | 7.25 | | 0.01 | | 3 | |

| Date | 10-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 11:25 | 2.41 | 17.2 | 17.2 | <0.1 | <0.1 | 8.05 | 8.05 | 90.1 | 90.1 | 1.83 | 1.8 | 7.28 | 7.3 | 0.01 | 0.01 | 4 | 3.5 |
| | | | 17.2 | | <0.1 | | 8.04 | | 90.0 | | 1.7 | | 7.28 | | 0.01 | | 3 | |

| Date | 12-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:10 | 2.40 | 20.7 | 20.7 | <0.1 | <0.1 | 8.08 | 8.08 | 90.1 | 90.1 | 1.87 | 1.8 | 7.23 | 7.2 | 0.01 | 0.01 | 4 | 3.5 |
| | | | 20.7 | | <0.1 | | 8.07 | | 90.0 | | 1.76 | | 7.23 | | 0.01 | | 3 | |

| Date | 14-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:20 | 2.40 | 21.2 | 21.2 | <0.1 | <0.1 | 8.09 | 8.08 | 90.0 | 89.8 | 2.64 | 2.6 | 7.19 | 7.2 | 0.01 | 0.01 | 4 | 3.5 |
| | | | 21.2 | | <0.1 | | 8.07 | | 89.6 | | 2.61 | | 7.19 | | 0.01 | | 3 | |

| Date | 17-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:15 | 2.41 | 13.6 | 13.6 | <0.1 | <0.1 | 8.61 | 8.61 | 87.2 | 87.2 | 2.24 | 2.2 | 7.66 | 7.7 | 0.01 | 0.01 | 3 | 3.5 |
| | | | 13.6 | | <0.1 | | 8.61 | | 87.1 | | 2.21 | | 7.66 | | 0.01 | | 4 | |

| Date | 19-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:20 | 2.41 | 14.7 | 14.7 | <0.1 | <0.1 | 8.62 | 8.59 | 89.4 | 89.0 | 1.94 | 1.9 | 7.39 | 7.4 | 0.01 | 0.01 | 3 | 3.0 |
| | | | 14.7 | | <0.1 | | 8.55 | | 88.5 | | 1.87 | | 7.39 | | 0.01 | | 3 | |

| Date | 21-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:10 | 2.37 | 14.7 | 14.7 | <0.1 | <0.1 | 8.47 | 8.47 | 89.4 | 89.4 | 2.57 | 2.6 | 7.43 | 7.4 | 0.01 | 0.01 | 3 | 3.0 |
| | | | 14.7 | | <0.1 | | 8.47 | | 89.3 | | 2.55 | | 7.43 | | 0.01 | | 3 | |

| Date | 26-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:25 | 2.40 | 14.7 | 14.7 | <0.1 | <0.1 | 8.81 | 8.80 | 92.9 | 92.7 | 0.1 | 0.1 | 7.30 | 7.3 | 0.01 | 0.01 | 3 | 3.5 |
| | | | 14.7 | | <0.1 | | 8.78 | | 92.5 | | 0.16 | | 7.30 | | 0.01 | | 4 | |

| Date | 28-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:15 | 2.38 | 12.4 | 12.4 | <0.1 | <0.1 | 8.72 | 8.72 | 93.8 | 93.7 | 0.25 | 0.3 | 7.20 | 7.2 | 0.01 | 0.01 | 4 | 3.5 |
| | | | 12.4 | | <0.1 | | 8.71 | | 93.6 | | 0.27 | | 7.20 | | 0.01 | | 3 | |

| Date | 30-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M3 | 10:20 | 2.40 | 12.8 | 12.8 | <0.1 | <0.1 | 8.59 | 8.59 | 92.3 | 92.3 | 0.21 | 0.2 | 7.10 | 7.1 | 0.01 | 0.01 | 3 | 2.5 |
| | | | 12.8 | | <0.1 | | 8.58 | | 92.2 | | 0.23 | | 7.10 | | 0.01 | | 2 | |

Water Quality Impact Monitoring Result for M4

| Date | 3-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 11:10 | 0.40 | 15.2 | 15.2 | <0.1 | <0.1 | 8.77 | 8.78 | 92.8 | 92.9 | 3.7 | 3.7 | 7.14 | 7.1 | 0.06 | 0.06 | 4 | 4.0 | |
| | | | 15.2 | | <0.1 | | 8.78 | | 92.9 | | 3.7 | | 7.14 | | 0.06 | | 4 | | |

| Date | 5-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 12:00 | 0.40 | 17.8 | 17.8 | <0.1 | <0.1 | 8.58 | 8.57 | 93.1 | 93.0 | 3.6 | 3.5 | 7.59 | 7.6 | 0.09 | 0.09 | 4 | 4.0 | |
| | | | 17.8 | | <0.1 | | 8.56 | | 92.9 | | 3.5 | | 7.59 | | 0.09 | | 4 | | |

| Date | 7-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 10:35 | 0.41 | 17.2 | 17.2 | <0.1 | <0.1 | 8.38 | 8.37 | 93.8 | 93.8 | 1.5 | 1.6 | 7.12 | 7.1 | 0.07 | 0.07 | <2 | <2 | |
| | | | 17.2 | | <0.1 | | 8.36 | | 93.7 | | 1.6 | | 7.12 | | 0.07 | | <2 | | |

| Date | 10-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 11:45 | 0.43 | 17.6 | 17.6 | <0.1 | <0.1 | 8.22 | 8.21 | 91.7 | 91.6 | 1.9 | 1.9 | 7.10 | 7.1 | 0.08 | 0.08 | 5 | 4.5 | |
| | | | 17.6 | | <0.1 | | 8.19 | | 91.4 | | 2.0 | | 7.10 | | 0.08 | | 4 | | |

| Date | 12-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 10:30 | 0.41 | 21 | 21.0 | <0.1 | <0.1 | 8.18 | 8.17 | 92.7 | 92.6 | 1.6 | 1.6 | 7.02 | 7.0 | 0.07 | 0.07 | <2 | <2 | |
| | | | 21 | | <0.1 | | 8.16 | | 92.5 | | 1.6 | | 7.02 | | 0.07 | | <2 | | |

| Date | 14-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 10:40 | 0.42 | 21.4 | 21.4 | <0.1 | <0.1 | 8.25 | 8.24 | 92.8 | 92.7 | 1.4 | 1.4 | 7.00 | 7.0 | 0.04 | 0.04 | <2 | <2 | |
| | | | 21.4 | | <0.1 | | 8.22 | | 92.5 | | 1.4 | | 7.00 | | 0.04 | | <2 | | |

| Date | 17-Jan-23 | | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|--|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | | |
| M4 | 10:30 | 0.42 | 14 | 14.0 | <0.1 | <0.1 | 8.31 | 8.29 | 84.4 | 84.2 | 2.3 | 2.3 | 7.46 | 7.5 | 0.06 | 0.06 | 3 | 2.5 | |
| | | | 14 | | <0.1 | | 8.27 | | 84.0 | | 2.3 | | 7.46 | | 0.06 | | 2 | | |

| Date | 19-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M4 | 10:40 | 0.40 | 14.9 | 14.9 | <0.1 | <0.1 | 8.41 | 8.40 | 84.6 | 84.5 | 2.3 | 2.3 | 7.02 | 7.0 | 0.06 | 0.06 | 4 | 4.5 |
| | | | 14.9 | | <0.1 | | 8.39 | | 84.4 | | 2.3 | | 7.02 | | 0.06 | | 5 | |

| Date | 21-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M4 | 10:30 | 0.40 | 15.3 | 15.3 | <0.1 | <0.1 | 8.58 | 8.57 | 90.3 | 90.2 | 1.7 | 1.7 | 7.10 | 7.1 | 0.08 | 0.08 | 2 | 2.5 |
| | | | 15.3 | | <0.1 | | 8.55 | | 90.0 | | 1.6 | | 7.10 | | 0.08 | | 3 | |

| Date | 26-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M4 | 10:45 | 0.41 | 14.9 | 14.9 | <0.1 | <0.1 | 9 | 9.01 | 95.4 | 95.5 | 0.5 | 0.4 | 7.32 | 7.3 | 0.08 | 0.08 | 2 | 2.0 |
| | | | 14.9 | | <0.1 | | 9.01 | | 95.5 | | 0.4 | | 7.32 | | 0.08 | | 2 | |

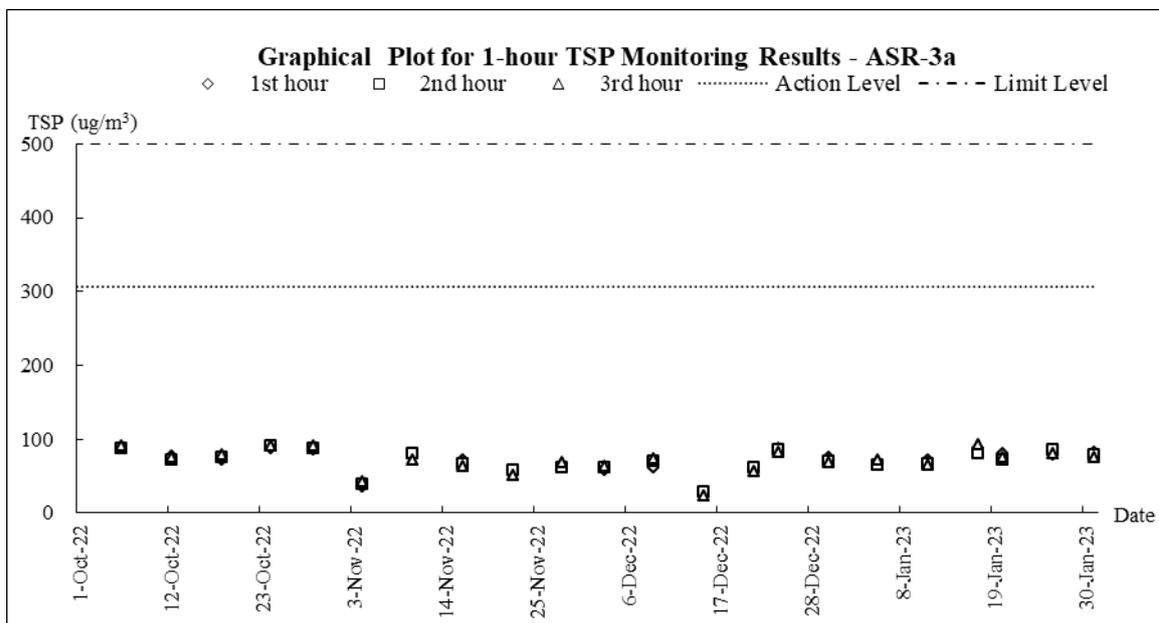
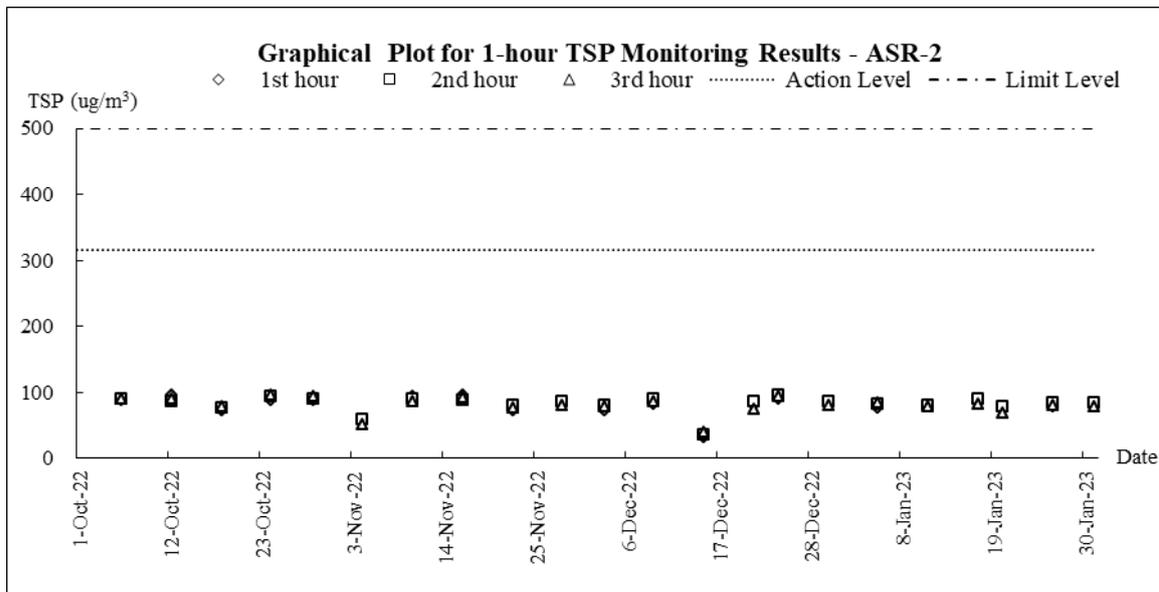
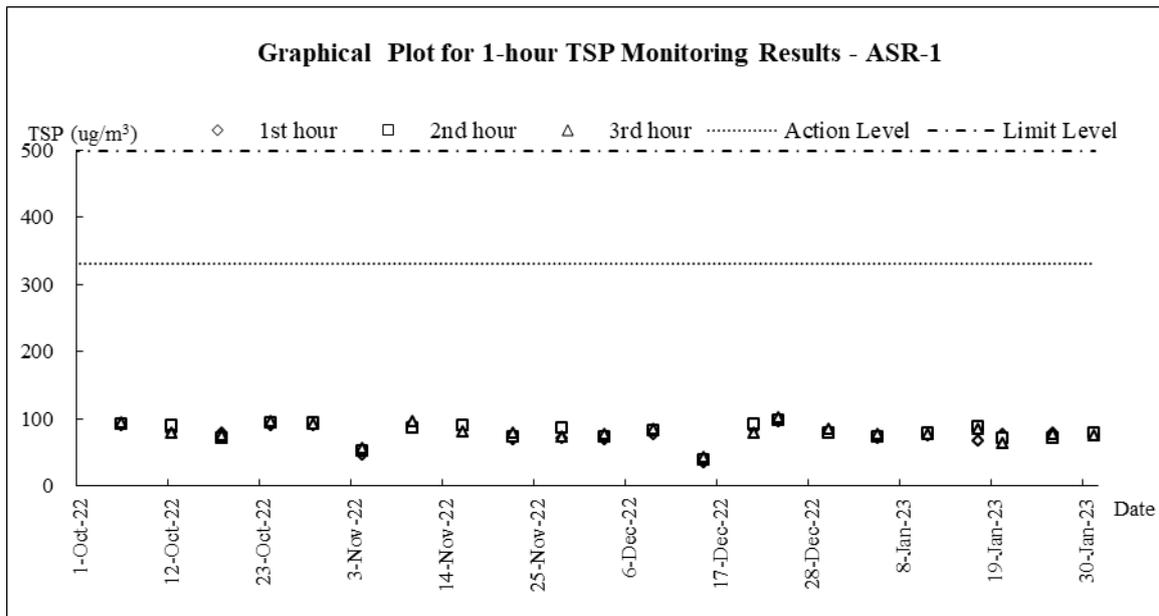
| Date | 28-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M4 | 10:30 | 0.40 | 12.6 | 12.6 | <0.1 | <0.1 | 8.38 | 8.37 | 89.6 | 89.5 | 0.1 | 0.1 | 7.34 | 7.3 | 0.05 | 0.05 | 2 | 2.5 |
| | | | 12.6 | | <0.1 | | 8.36 | | 89.4 | | 0.1 | | 7.34 | | 0.05 | | 3 | |

| Date | 30-Jan-23 | | | | | | | | | | | | | | | | | |
|----------|-----------|-----------|-----------|------|---------------------|------|-----------|------|--------|------|-----------------|-----|------|-----|----------|------|----------|-----|
| Location | Time | Depth (m) | Temp (oC) | | Flow Velocity (m/s) | | DO (mg/L) | | DO (%) | | Turbidity (NTU) | | pH | | Salinity | | SS(mg/L) | |
| M4 | 10:35 | 0.42 | 12.7 | 12.7 | <0.1 | <0.1 | 8.33 | 8.33 | 88.7 | 88.7 | 0.4 | 0.4 | 7.22 | 7.2 | 0.05 | 0.05 | 3 | 2.5 |
| | | | 12.7 | | <0.1 | | 8.32 | | 88.6 | | 0.4 | | 7.22 | | 0.05 | | 2 | |

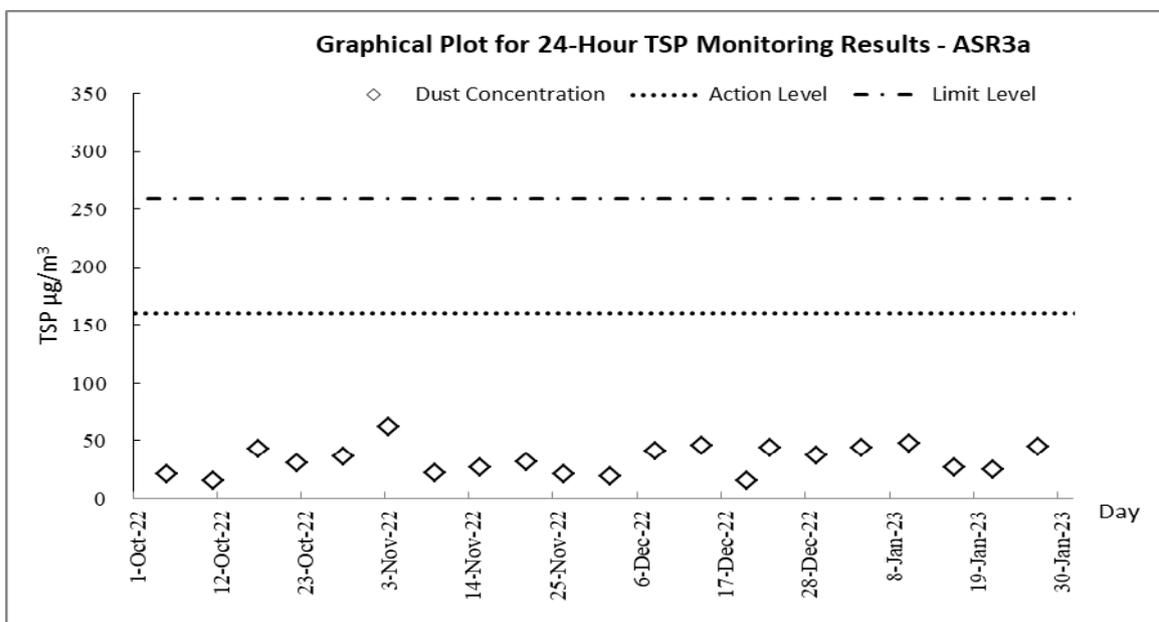
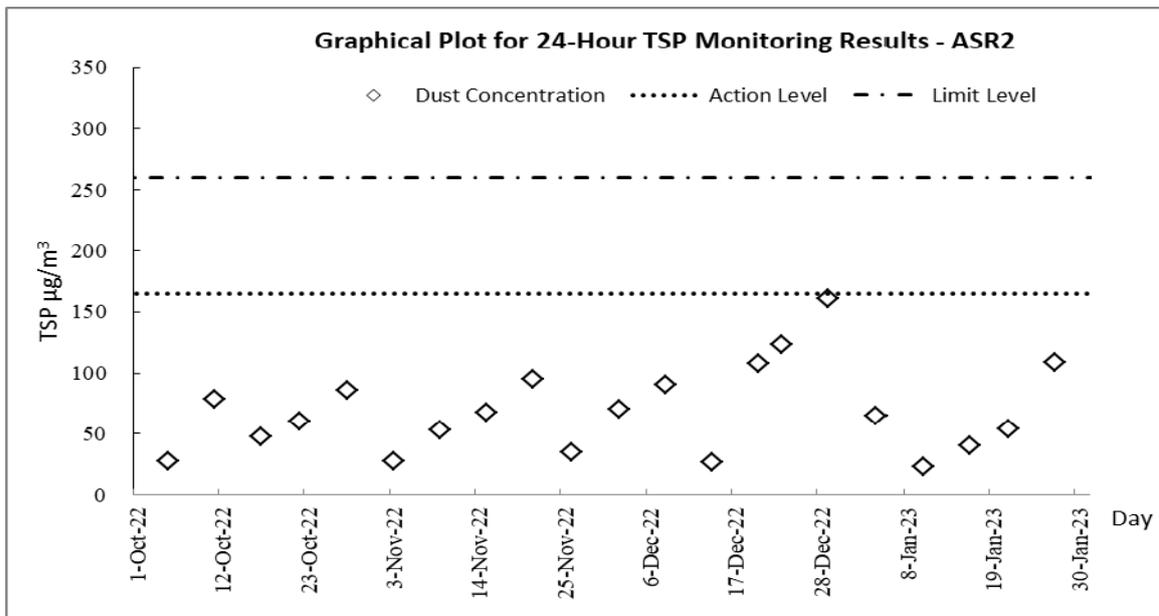
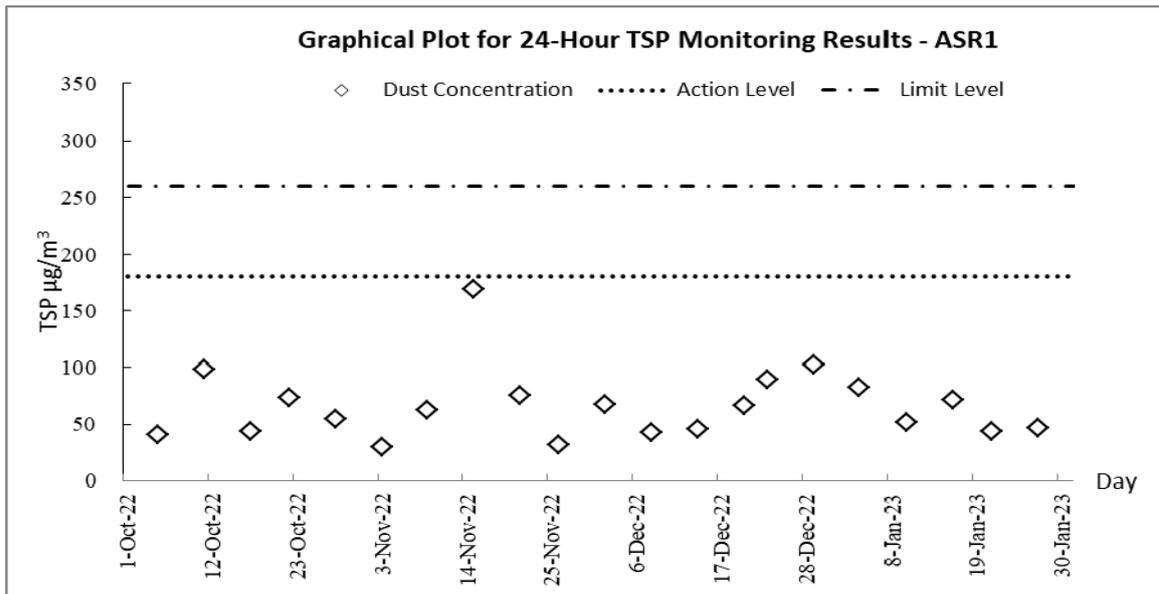
Appendix I

Graphical Plots of Air Quality, Noise and Water Quality

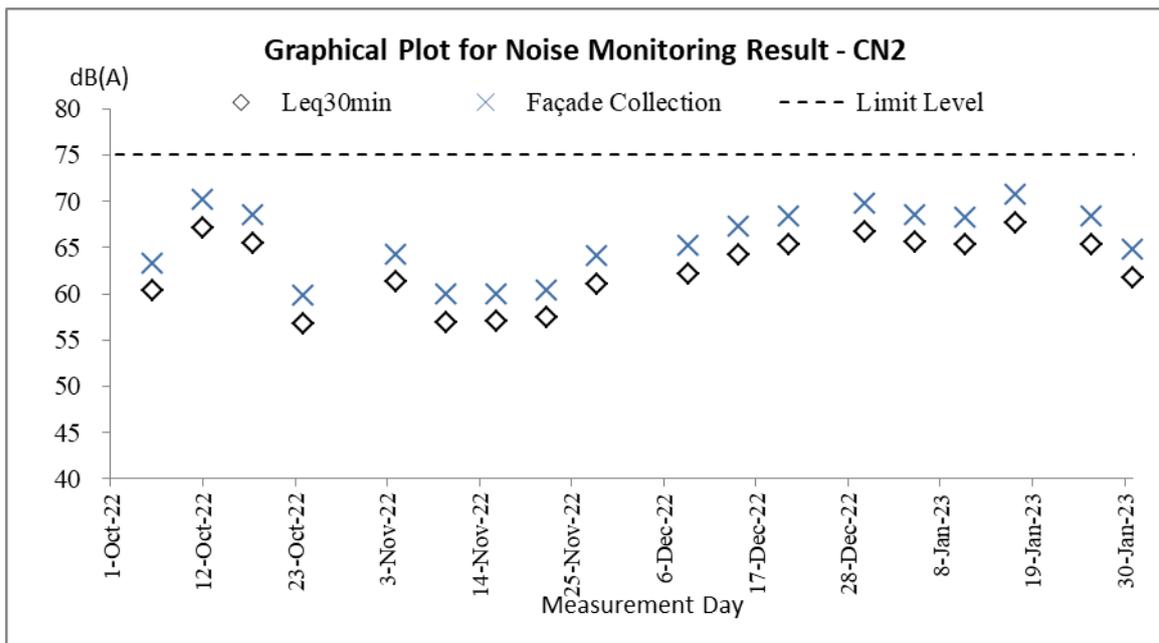
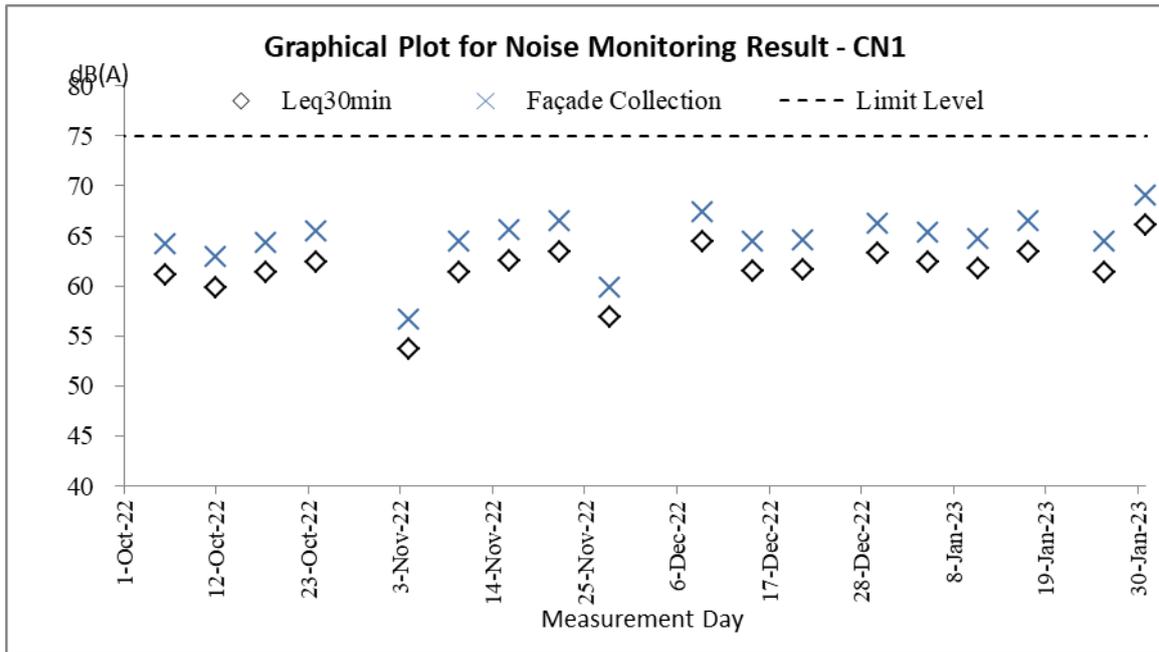
Air Quality Impact Monitoring – 1-hour TSP

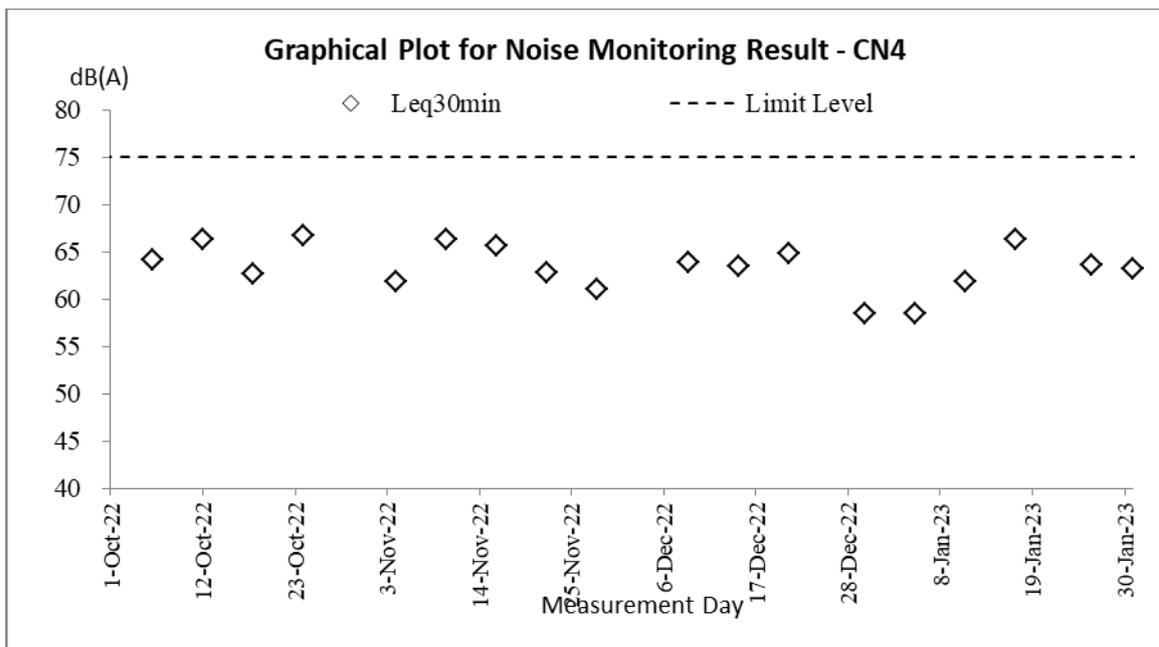
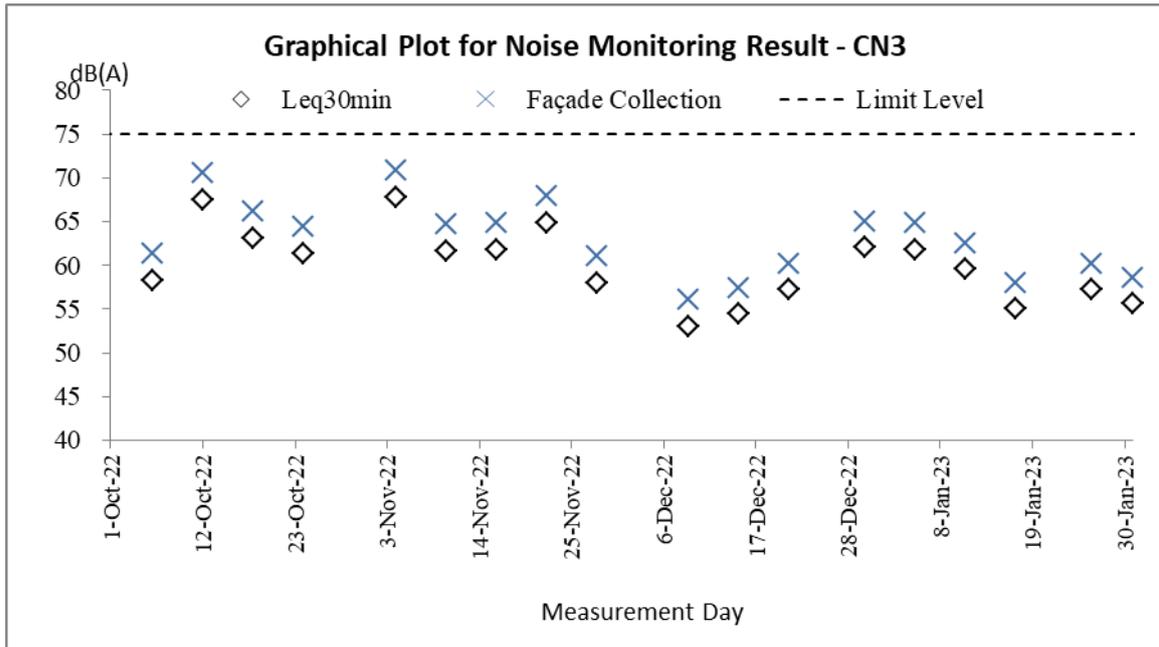


Air Quality Impact Monitoring – 24-hour TSP

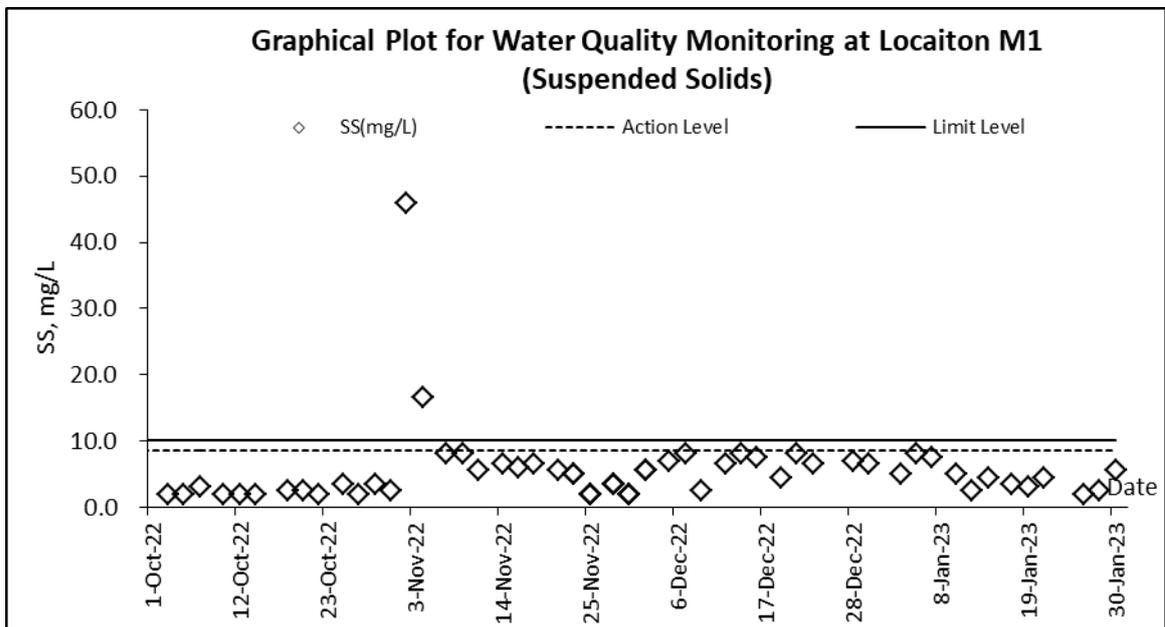
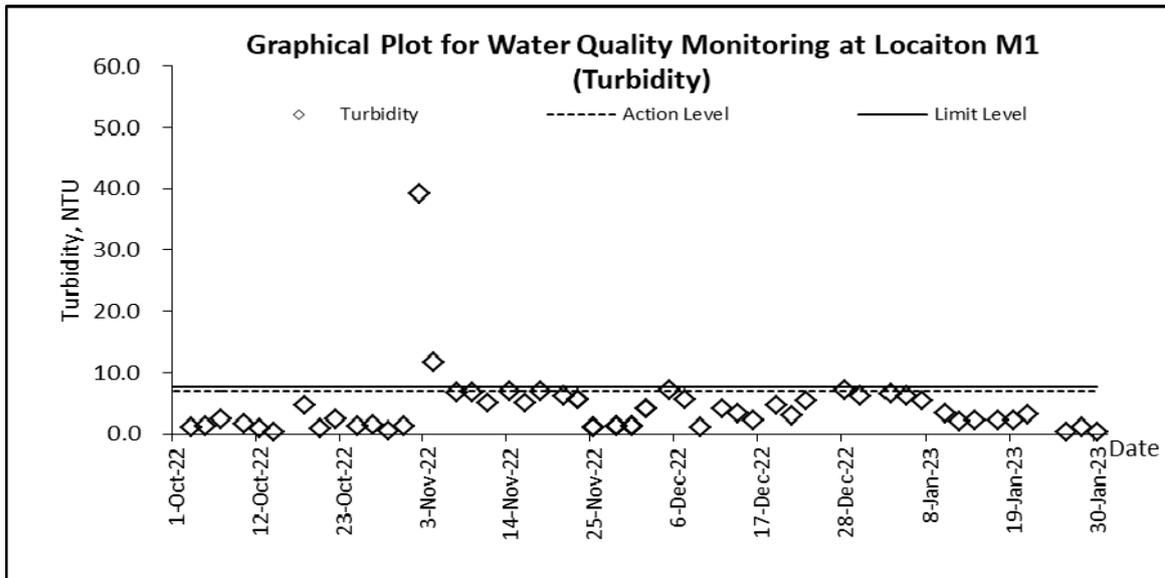
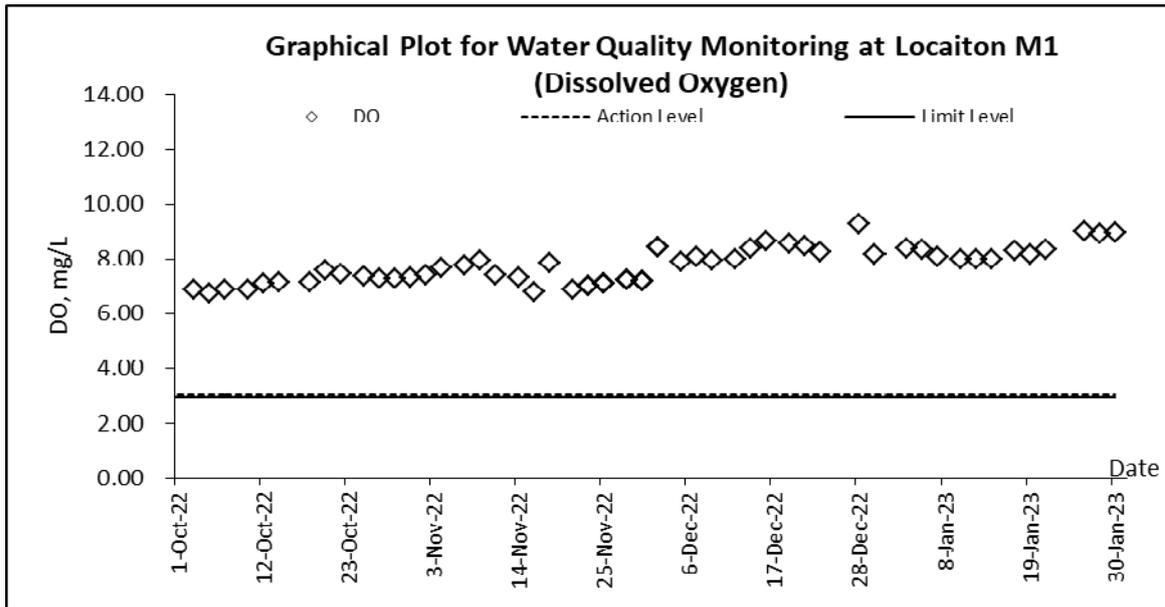


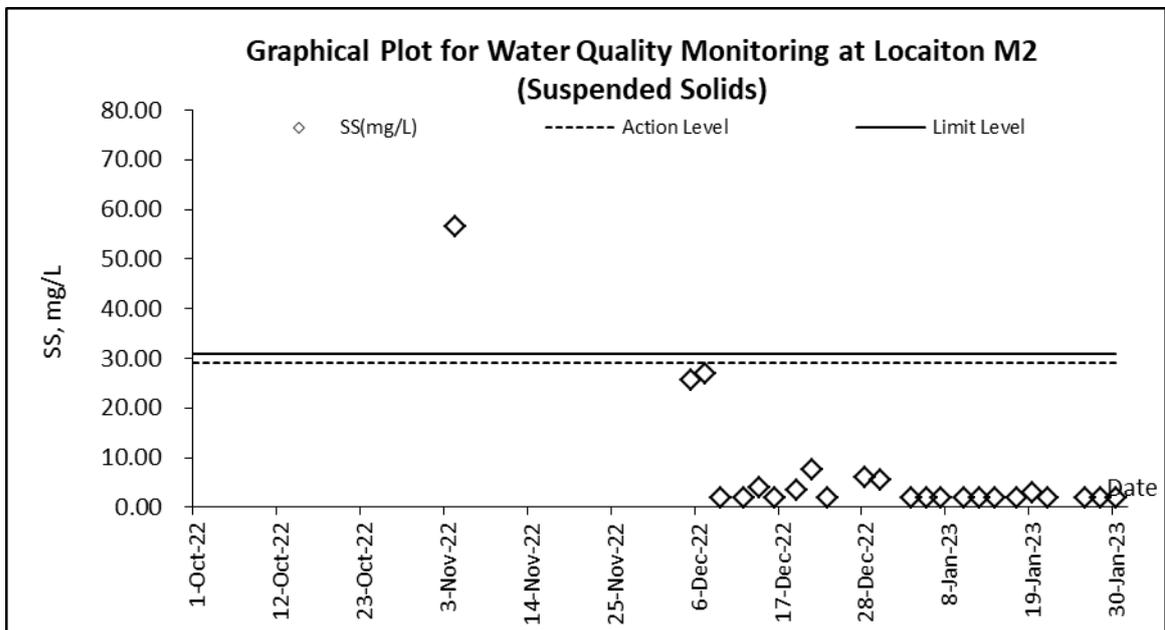
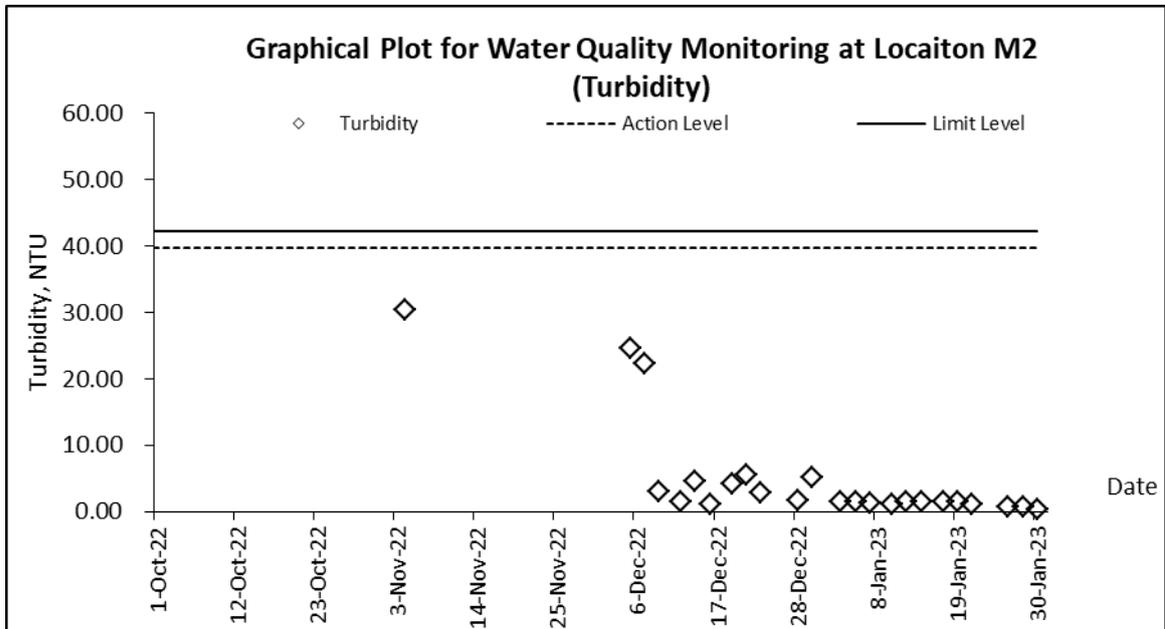
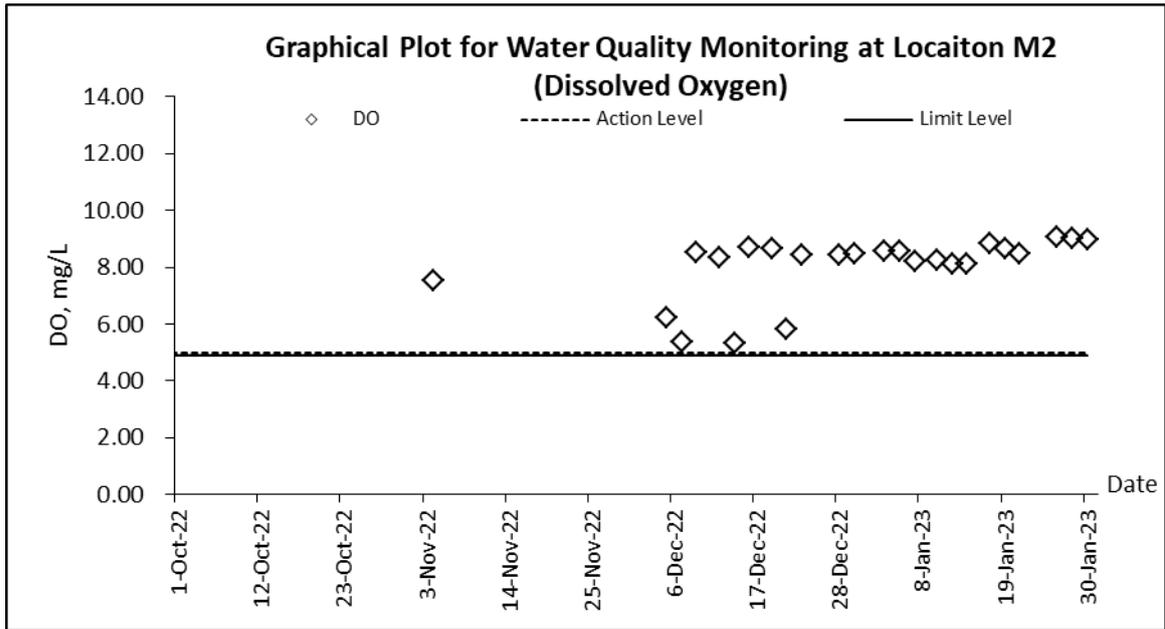
Construction Noise Impact Monitoring

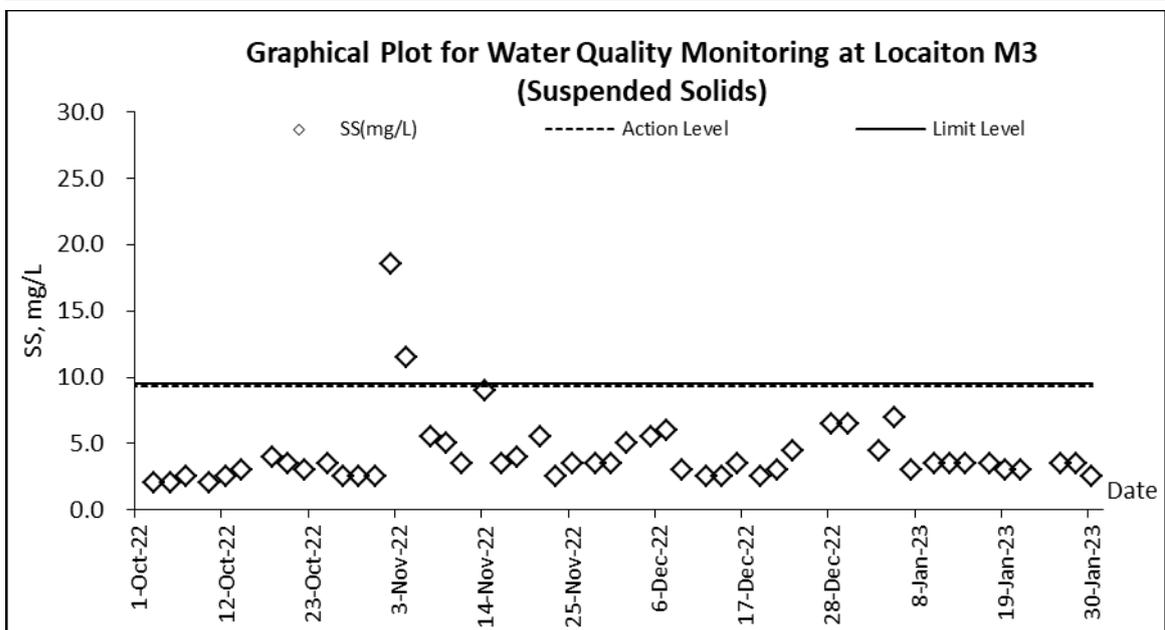
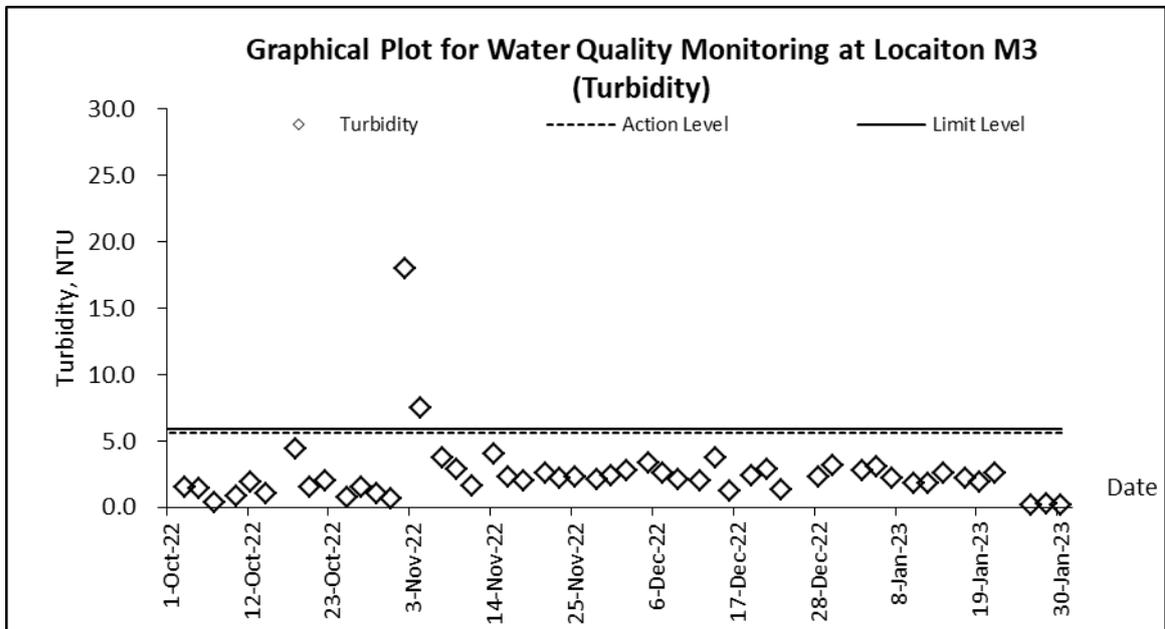
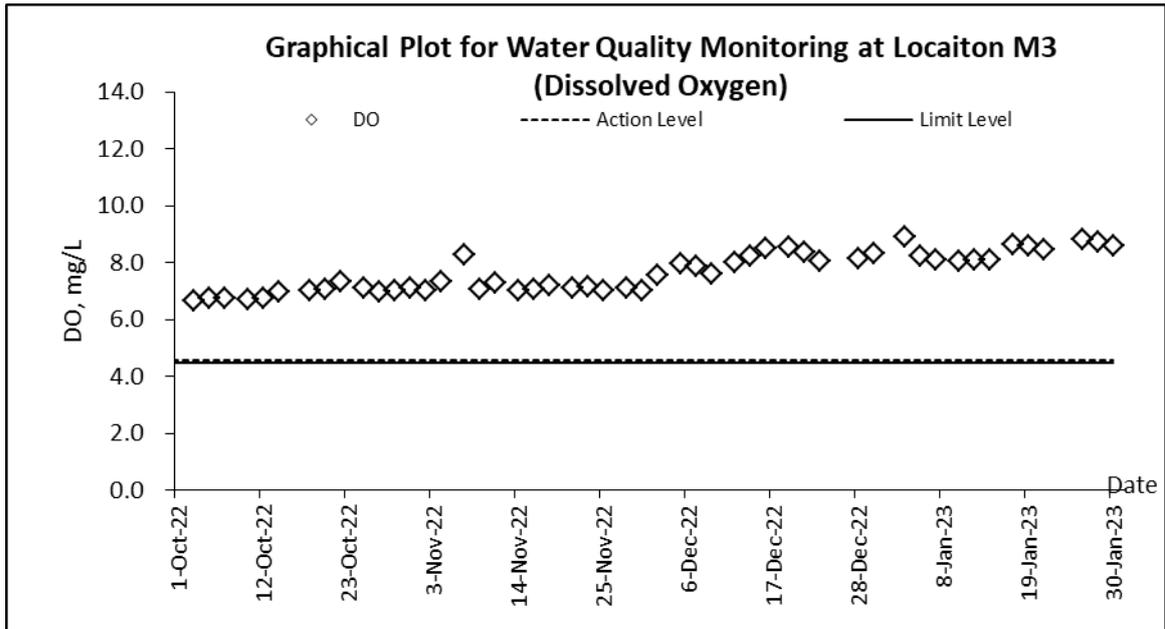


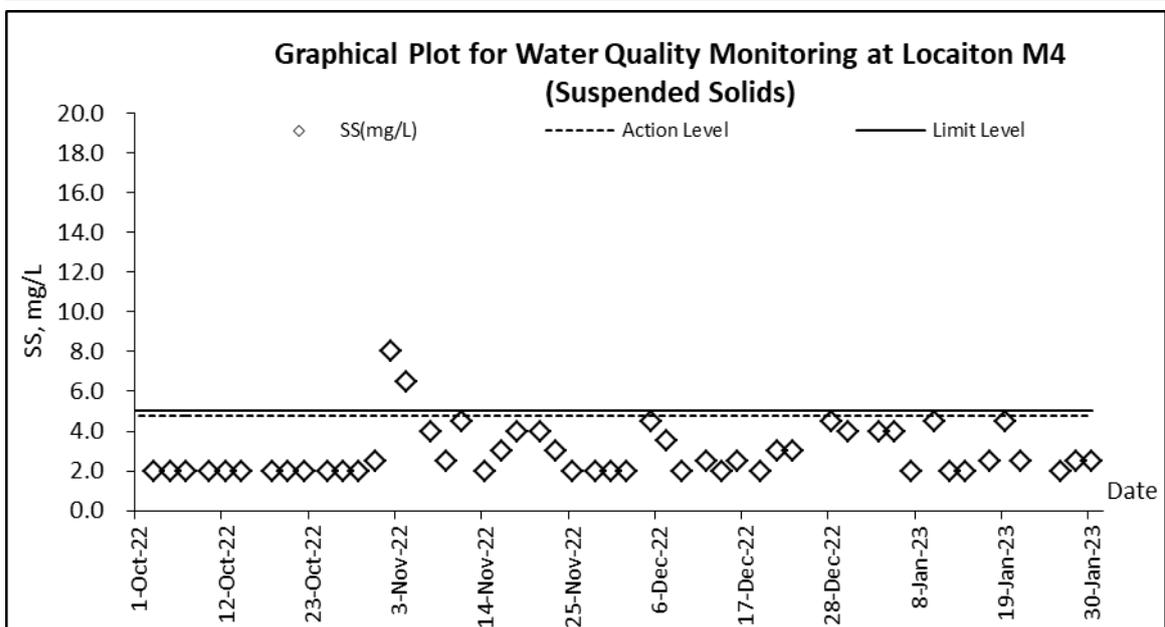
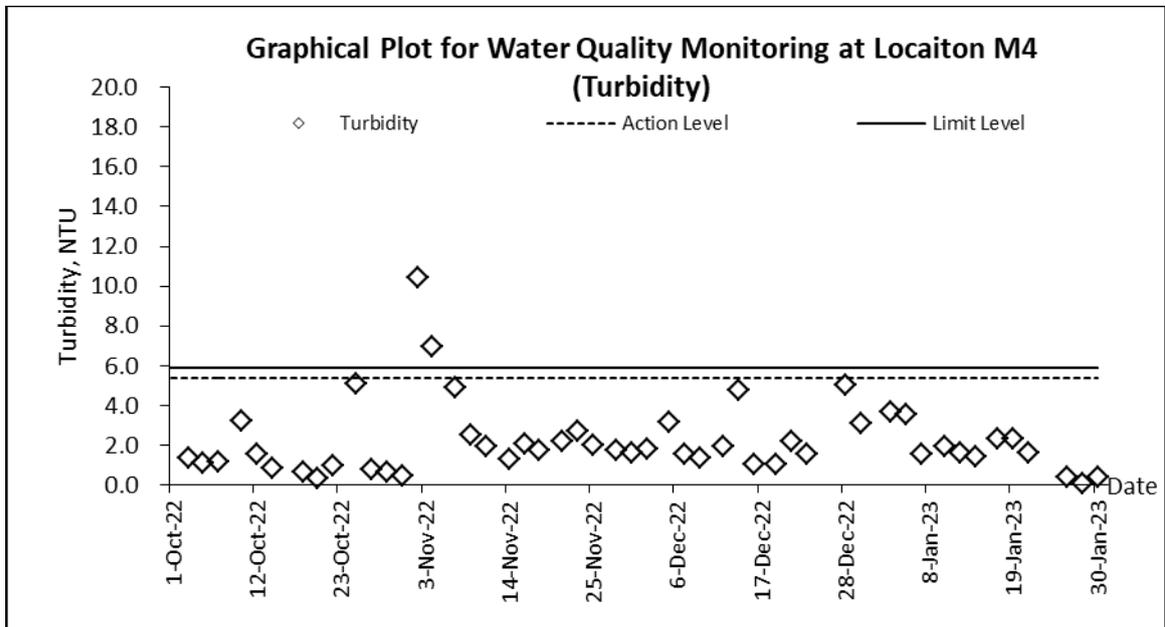
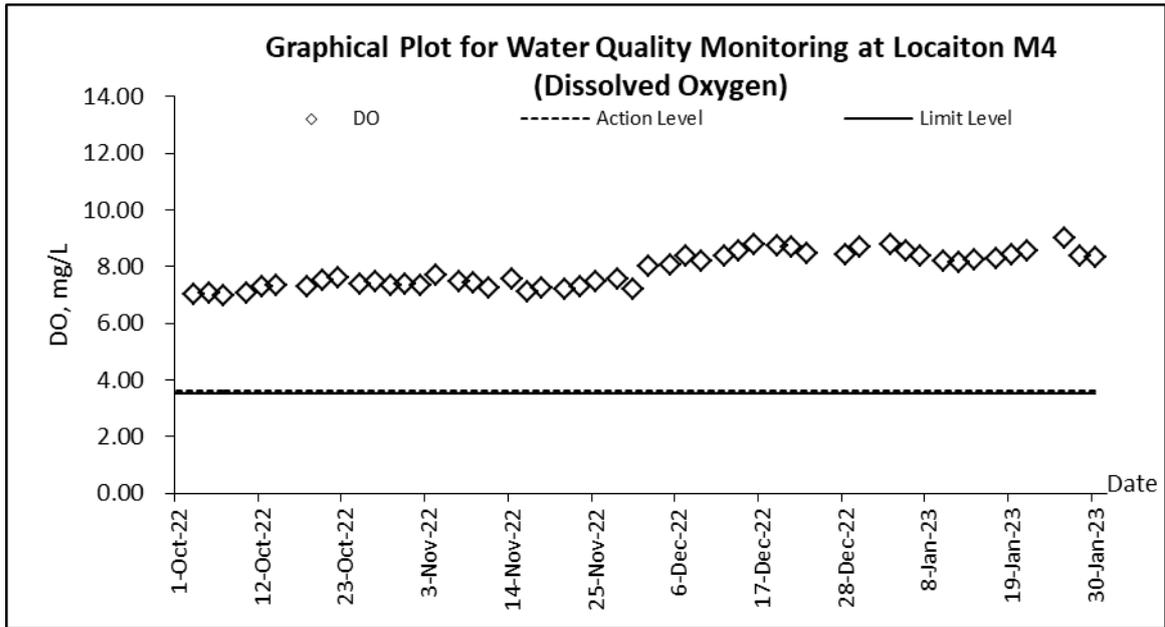


Water Quality Impact Monitoring









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-Jan-23 | Sun | Dry with sunny periods tomorrow. | 0.1 | 13.2 | 9.2 | 61.0 | N |
| 2-Jan-23 | Mon | Becoming cloudy | Trace | 17.7 | 8 | 64.0 | N |
| 3-Jan-23 | Tue | Mainly fine and dry. | Trace | 15.7 | 11.5 | 69.0 | N/NE |
| 4-Jan-23 | Wed | Moderate north to northeasterly winds | Trace | 16.8 | 6.2 | 70.0 | N/NE |
| 5-Jan-23 | Thu | Moderate north to northeasterly winds | 0 | 19.7 | 6.2 | 70.5 | N |
| 6-Jan-23 | Fri | Cloudy with a few rain patches. | 0 | 18.5 | 11.2 | 67.7 | N/NE |
| 7-Jan-23 | Sat | Moderate east to northeasterly winds | 0 | 17.7 | 8.5 | 68.0 | N/NE |
| 8-Jan-23 | Sun | Cloudy with a few rain patches. | Trace | 17.8 | 6 | 69.0 | E/SE |
| 9-Jan-23 | Mon | Moderate to fresh east to northeasterly winds | 0.1 | 18.5 | 5.5 | 78.5 | N |
| 10-Jan-23 | Tue | Cloudy with one or two rain patches. | 5.5 | 17.4 | 5 | 90.0 | N |
| 11-Jan-23 | Wed | Moderate to fresh east to northeasterly winds. | 3.2 | 17.7 | 5 | 90.7 | E |
| 12-Jan-23 | Thu | Mainly cloudy with coastal fog. | 0.5 | 18.7 | 13.2 | 88.2 | E/SE |
| 13-Jan-23 | Fri | One or two light rain patches. | 4.5 | 21.4 | 8 | 91.0 | E/SE |
| 14-Jan-23 | Sat | Light to moderate southeasterly winds. | 3.4 | 23.7 | 6.2 | 83.0 | W |
| 15-Jan-23 | Sun | Sunny intervals in the afternoon. | Trace | 15.1 | 20 | 69.2 | N/NE |
| 16-Jan-23 | Mon | It will be cold. Mainly cloudy and dry. | 0 | 9.8 | 18.5 | 63.5 | N/NE |
| 17-Jan-23 | Tue | Cold and mainly cloudy. | 0 | 10.8 | 8.5 | 71.5 | N |
| 18-Jan-23 | Wed | Fine and dry. Moderate northeasterly winds. | 0 | Maintenance | 13.2 | Maintenance | N |
| 19-Jan-23 | Thu | Fine. Dry in the afternoon. | 0 | 13.0 | 6.2 | 68.2 | N |
| 20-Jan-23 | Fri | Moderate northeasterly winds | Trace | 16.1 | 6 | 66.7 | N/NW |
| 21-Jan-23 | Sat | Moderate northeasterly winds | Trace | 17.1 | 7.2 | 65.2 | N/NE |
| 22-Jan-23 | Sun | Dry with sunny intervals during the day. | 0.6 | 20.6 | 7.5 | 78.0 | E/SE |
| 23-Jan-23 | Mon | <u>Mainly cloudy.</u> | 0 | 18.6 | 9 | 81.0 | E/SE |
| 24-Jan-23 | Tue | Mainly cloudy. | 0.3 | 13.9 | 19.5 | 50.7 | N/NE |
| 25-Jan-23 | Wed | Bright periods during the day. | 0 | 11.5 | 8.7 | 63.7 | E/NE |
| 26-Jan-23 | Thu | Moderate to fresh east to northeasterly winds. | 0 | 12.7 | 6.2 | 71.2 | E/SE |
| 27-Jan-23 | Fri | <u>Cold in the morning and at night.</u> | 0 | 13.9 | 15 | 58.5 | N/NE |
| 28-Jan-23 | Sat | Moderate to fresh north to northeasterly winds | 0 | 10.2 | 13.7 | 45.5 | N/NE |
| 29-Jan-23 | Sun | Fine and very dry at first. | 0 | 10.6 | 10.1 | 51.5 | N/NW |
| 30-Jan-23 | Mon | Sunny intervals during the day | 0 | 11.7 | 7.5 | 57.0 | E/SE |
| 31-Jan-23 | Tue | Sunny periods. Mainly cloudy tonight. | 0 | 15.6 | 8 | 66 | 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 – January 2023

| | | |
|---------------|-----------------|---|
| Revision | 0 | |
| Date of issue | 8 February 2023 | |
| Prepared by | Alan Lam |  |
| Reviewed by | Rachel Siu |  |
| Verified by | Mike Leung |  |

Table of Contents

| | | |
|----------|---|-----------|
| 1 | INTRODUCTION | 4 |
| 1.1 | BACKGROUND | 4 |
| 1.2 | OBJECTIVE | 4 |
| 2 | ECOLOGICALLY SENSITIVE HABITATS | 5 |
| 2.1 | DESCRIPTION OF HABITATS | 5 |
| 2.2 | MONITORING MEASURES OF WETLAND HABITATS | 6 |
| 2.3 | MONITORING MEASURES OF NON-WETLAND HABITATS | 6 |
| 3 | METHODOLOGY | 7 |
| 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 |
| 4 | RESULT | 9 |
| 5 | DISCUSSION | 13 |
| | Appendix I – Transect Routes for Contract CV/2016/10 | 16 |

| <u>LIST OF TABLE</u> | |
|-----------------------------|--|
| 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 |

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

| <u>LIST OF FIGURES</u> | |
|-------------------------------|---|
| 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 Watercourses | Upland Grassland 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, *Somaniathelphusa 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 10th January 2023, a rainy 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 19 birds individuals from 10 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey.

- Herpetofauna

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

- Butterfly

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

- Dragonfly

There was no odonate species recorded in the monitoring area.

- Freshwater communities

There was no freshwater community recorded in the monitoring area.

Picture 1
Inside the monitoring site



Picture 2
Inside the monitoring site



Table 4 Result of mammal in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

Table 5 Result of Avifauna in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|--------------------------------|-------------------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| <i>Spilopelia chinensis</i> | Spotted Dove | 珠頸斑鳩 | | | | | 1 | |
| <i>Pycnonotus jocosus</i> | Red-whiskered Bulbul | 紅耳鸚 | | | | | 3 | |
| <i>Turdus hortulorum</i> | Grey-backed Thrush | 灰背鸚 | | 1 | | | | |
| <i>Phylloscopus fuscatus</i> | Dusky Warbler | 褐柳鶯 | | | | | 2 | |
| <i>Phylloscopus inornatus</i> | Yellow-browed Warbler | 黃眉柳鶯 | | 1 | | | | |
| <i>Prinia flaviventris</i> | Yellow-bellied Prinia | 黃腹鷦鶯 | | 2 | | | 1 | |
| <i>Orthotomus sutorius</i> | Common Tailorbird | 長尾縫葉鶯 | | 1 | | | | |
| <i>Garrulax perspicillatus</i> | Masked Laughingthrush | 黑臉噪鶯 | | | | | 4 | |
| <i>Sitta frontalis</i> | Velvet-fronted Nuthatch | 絨額鶯 | | | | | 2 | |
| <i>Phoenicurus aureoreus</i> | Daurian Redstart | 北紅尾鶯 | | | | | 1 | |

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

Table 6 Result of reptile in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

Table 7 Result of amphibian in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

Table 8 Result of butterfly in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|-------------------------|-----------------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| <i>Mycalesis mineus</i> | Dark Brand Bush Brown | 小眉眼蝶 | | | | | 1 | |
| <i>Abisara echerius</i> | Plum Judy | 蛇目褐蛱蝶 | | 2 | | | | |

*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 | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

*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 | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-------------|----|---------|----|----|
| | | | | Non-wetland | | Wetland | | |
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

5 DISCUSSION

Data analysis was carried out to compare with the biodiversity within the site boundary in the same month over years. General description of the ecological conditions is first revealed in terms of abundance as well as species richness, following by statistical analysis of the existing database. The result is considered as significant whenever the drop of diversity indexes exceeds the percentages mentioned in previous sections 2.2 and 2.3.

5.1 Total abundance and species richness in January over years were compared to show the trends. Figures 1 and 2 indicate the total species richness and total abundance within the site boundary respectively.

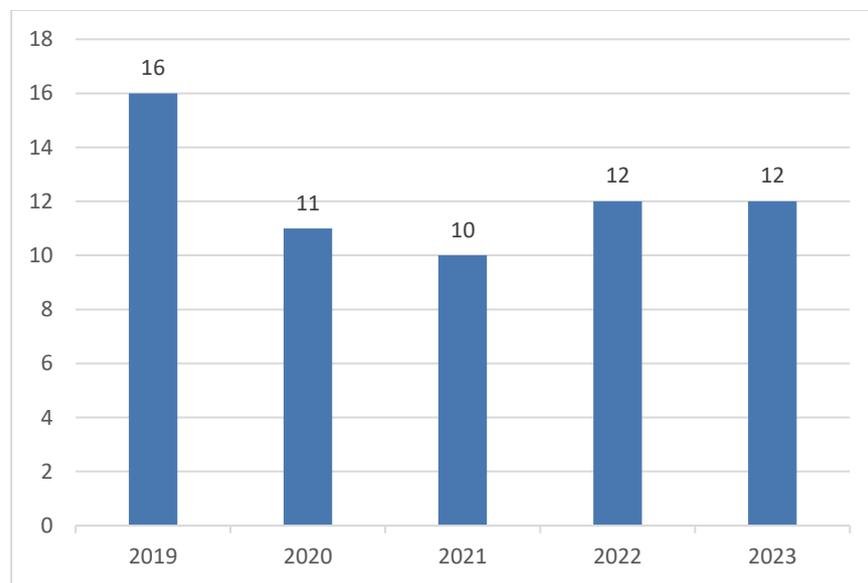


Figure 1: Bar chart showing the total species richness within site boundary from 2019 to 2023 (Actual quantity annotated at the top of each bar)

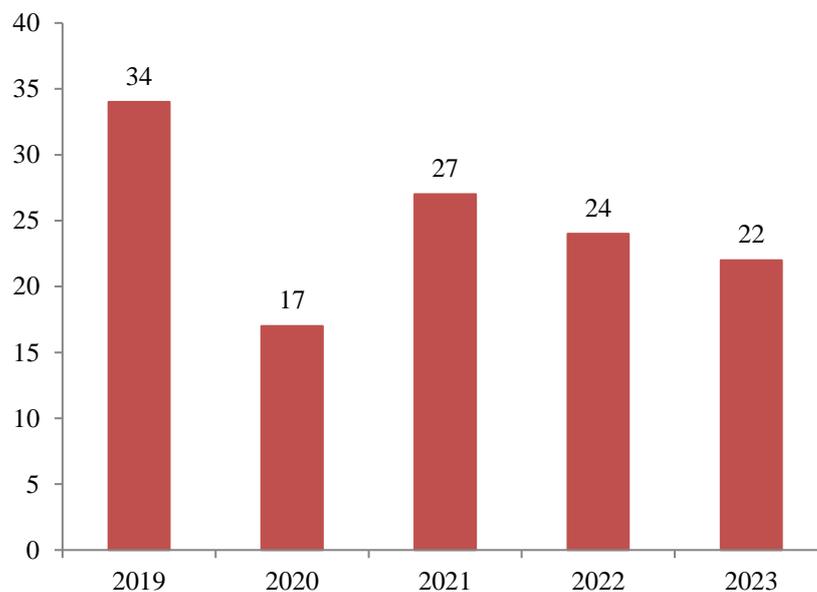


Figure 2: Bar chart showing the total abundance within site boundary from 2019 to 2023 (Actual quantity annotated at the top of each bar)

5.2 As results in section 4 were categorized by taxa, a detailed breakdown of each taxon is shown in figure 3 to further investigate the trend of specific taxa over contract period.

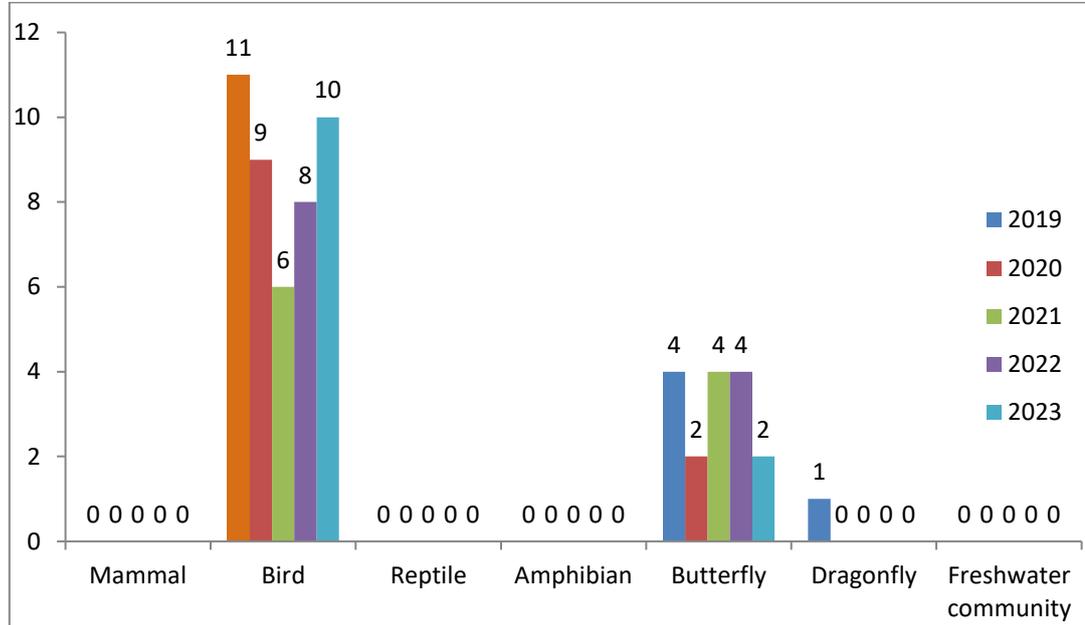


Figure 3: Bar chart showing the species richness within site boundary by taxa from 2019 to 2023 (Actual quantity annotated at the top of each bar)

5.3 According to EM&A Manual, monitoring measures was determined by the species diversity of types of sensitive habitats, i.e. non-wetland and wetland habitats. Abundance and species richness by habitat type in January over years were compared in Figures 4 and 5.

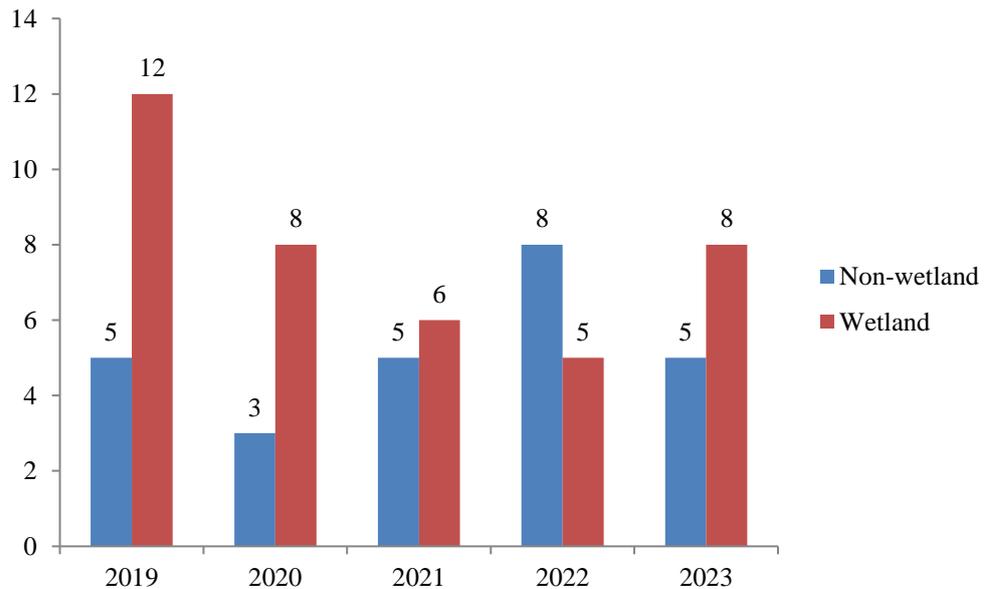


Figure 4: Bar chart showing the species richness based on habitat type from 2019 to 2023 (Actual quantity annotated at the top of each bar)

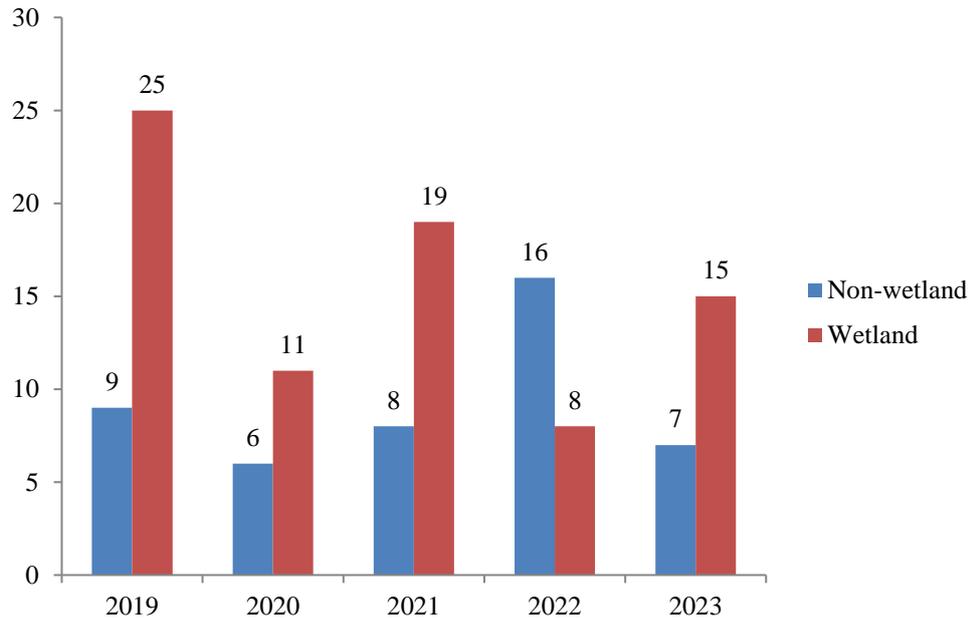
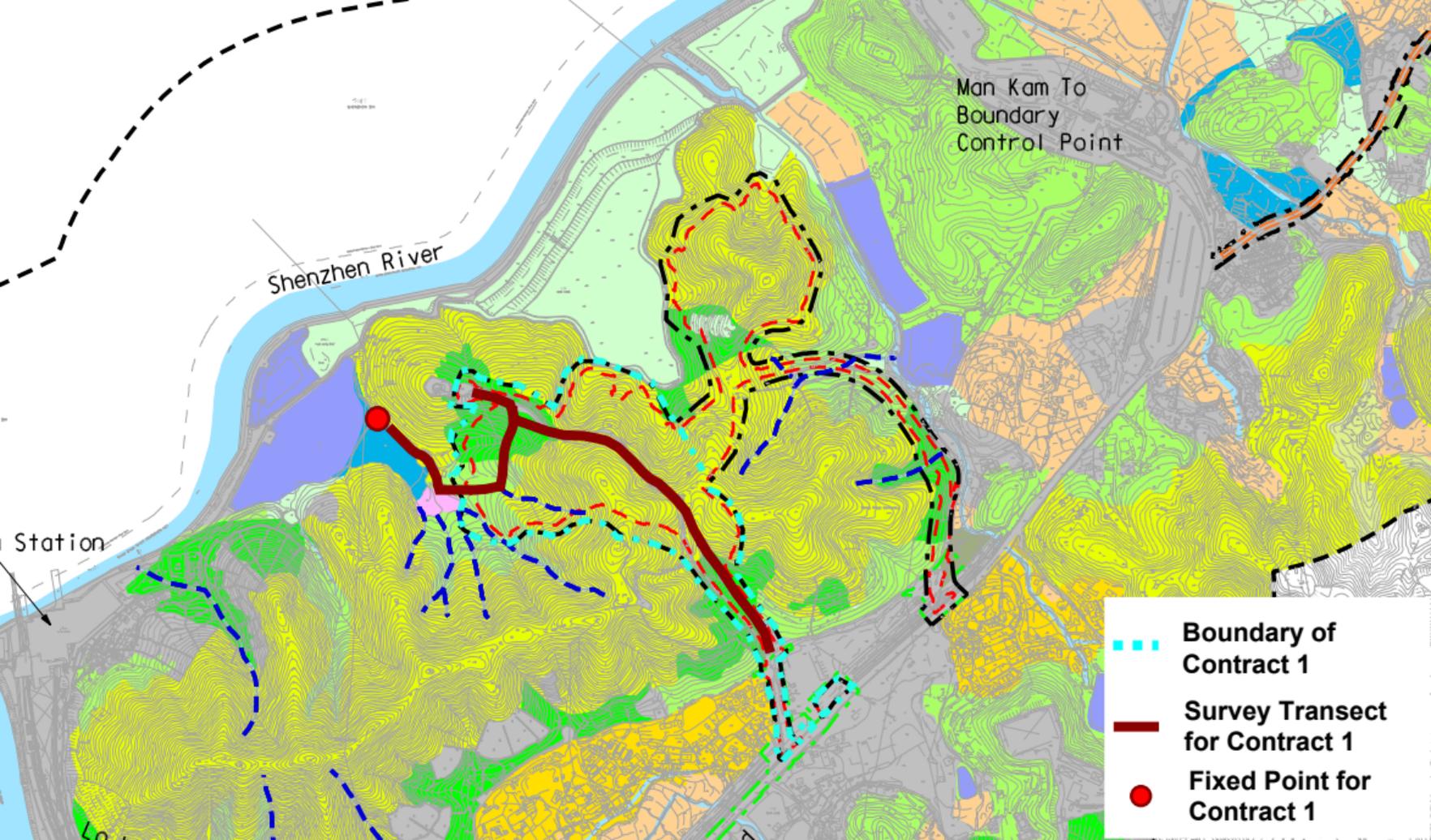


Figure 5: Bar chart showing the abundance based on habitat type from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.4 After analysing survey results in January from 2019 to 2023, 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. 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



Shenzhen River

Man Kam To
Boundary
Control Point

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 – January 2023

| | | |
|---------------|-----------------|---|
| Revision | 0 | |
| Date of issue | 8 February 2023 | |
| Prepared by | Alan Lam |  |
| Reviewed by | Rachel Siu |  |
| Verified by | Mike Leung |  |

Table of Contents

| | | |
|----------|---|-----------|
| 1 | INTRODUCTION | 4 |
| 1.1 | BACKGROUND | 4 |
| 1.2 | OBJECTIVE | 4 |
| 2 | ECOLOGICALLY SENSITIVE HABITATS | 5 |
| 2.1 | DESCRIPTION OF HABITATS | 5 |
| 2.2 | MONITORING MEASURES OF WETLAND HABITATS | 6 |
| 2.3 | MONITORING MEASURES OF NON-WETLAND HABITATS | 6 |
| 3 | METHODOLOGY | 7 |
| 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 |
| 4 | RESULT | 9 |
| 5 | DISCUSSION | 13 |
| | Appendix I – Transect Routes for Contract CV/2017/02 | 16 |

| <u>LIST OF TABLE</u> | |
|-----------------------------|--|
| 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 |

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

| <u>LIST OF FIGURES</u> | |
|-------------------------------|---|
| 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 Watercourses | Upland Grassland 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, *Somaniathelphusa 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 sandariana*. 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 10th January 2023, a rainy 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 4 bird individuals from 3 species recorded in the monitoring area. No Golden-headed Cisticola was observed during the bird survey. One species of conservation interests was recorded in this survey: Cinnamon Bittern (*Ixobrychus cinnamomeus*) 栗葦鶉.

- Herpetofauna

There was no reptile recorded in the monitoring area.

There was no amphibian recorded in the monitoring area.

- Butterfly

There was no butterfly recorded in the monitoring area.

- Dragonfly

There was no odonate 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 | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

Table 5 Result of Avifauna in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|--------------------------------|-------------------------|--------------|----------------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| <i>Ixobrychus cinnamomeus</i> | Cinnamon Bittern | 栗葦鴉 | Fellowes et al. (2002): LC | | | 1 | | |
| <i>Amaurornis phoenicurus</i> | White-breasted Waterhen | 白胸苦惡鳥 | | | | 1 | | |
| <i>Garrulax perspicillatus</i> | Masked Laughingthrush | 黑臉噪鶇 | | 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 | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

Table 7 Result of amphibian in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

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

Table 8 Result of butterfly in survey

| Scientific Name | Common Name | Chinese Name | Conservation Status | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

*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 | 10/1/2023 | | | | |
|-----------------|-------------|--------------|---------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| N/A | | | | | | | | |

*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 | 10/1/2023 | | | | |
|--------------------------------|---------------|--------------|---------------------|-----------|----|----|----|----|
| | | | | UG | WL | MA | WW | WC |
| <i>Gambusia affinis</i> | Mosquito fish | 食蚊魚 | | | | | | + |
| <i>Puntius semifasciolatus</i> | Chinese Barb | 五線無鬚鯪 | | | | | | + |

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

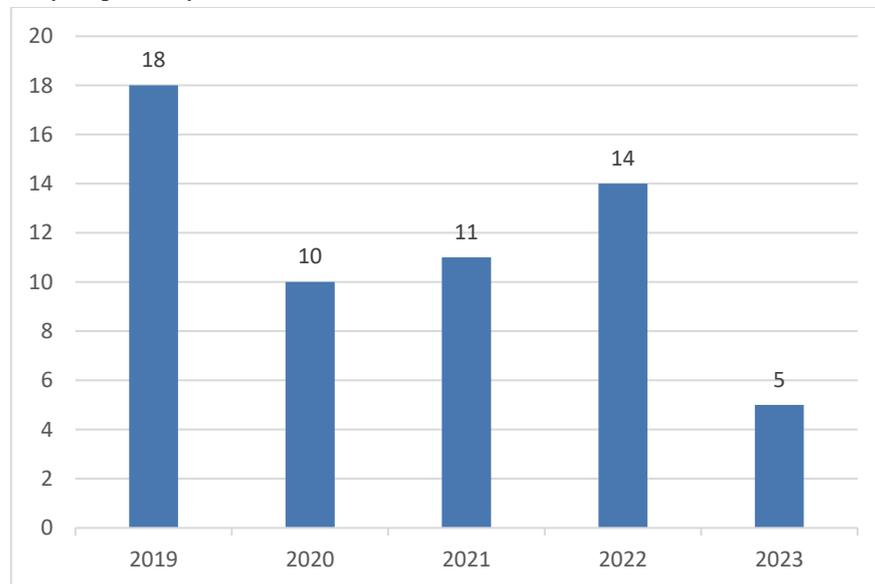


Figure 1: Bar chart showing the total species richness within site boundary from 2019 to 2023 (Actual quantity annotated at the top of each bar)

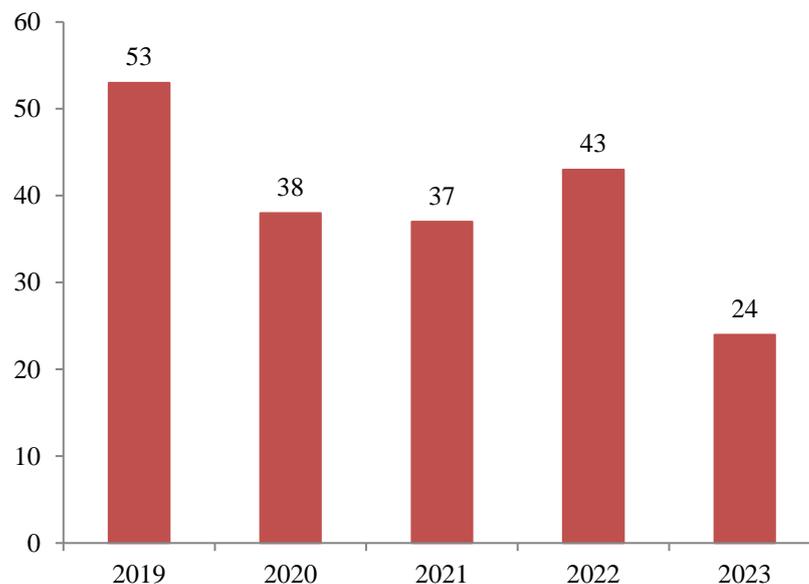


Figure 2: Bar chart showing the total abundance within site boundary from 2019 to 2023 (Actual quantity annotated at the top of each bar)

5.2 As results in section 4 were categorized by taxa, a detailed breakdown of each taxon is shown in figure 3 to further investigate the trend of specific taxa over contract period.

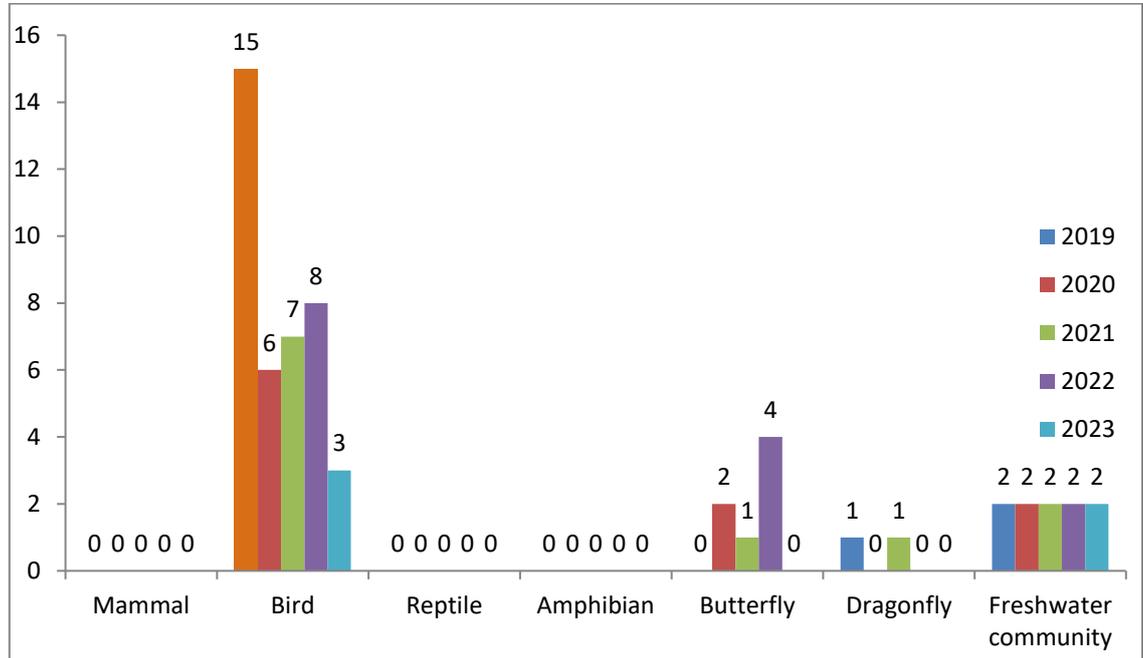


Figure 3: Bar chart showing the species richness within site boundary by taxa from 2019 to 2023 (Actual quantity annotated at the top of each bar)

5.3 According to EM&A Manual, monitoring measures was determined by the species diversity of types of sensitive habitats, i.e. non-wetland and wetland habitats. Abundance and species richness by habitat type in January over years were compared in figures 4 and 5.

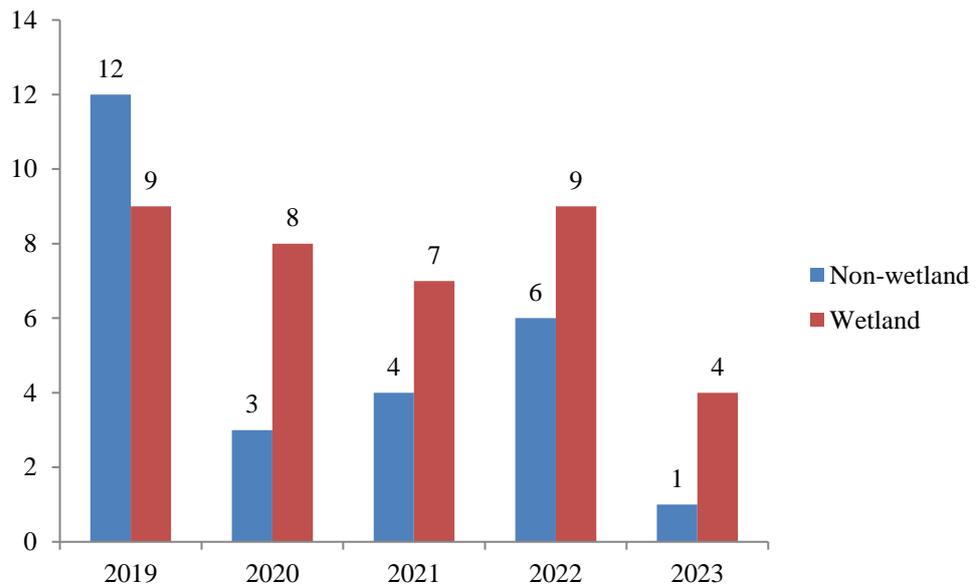


Figure 4: bar chart showing the species richness based on habitat type from 2019 to 2023 (Actual quantity annotated at the top of each bar)

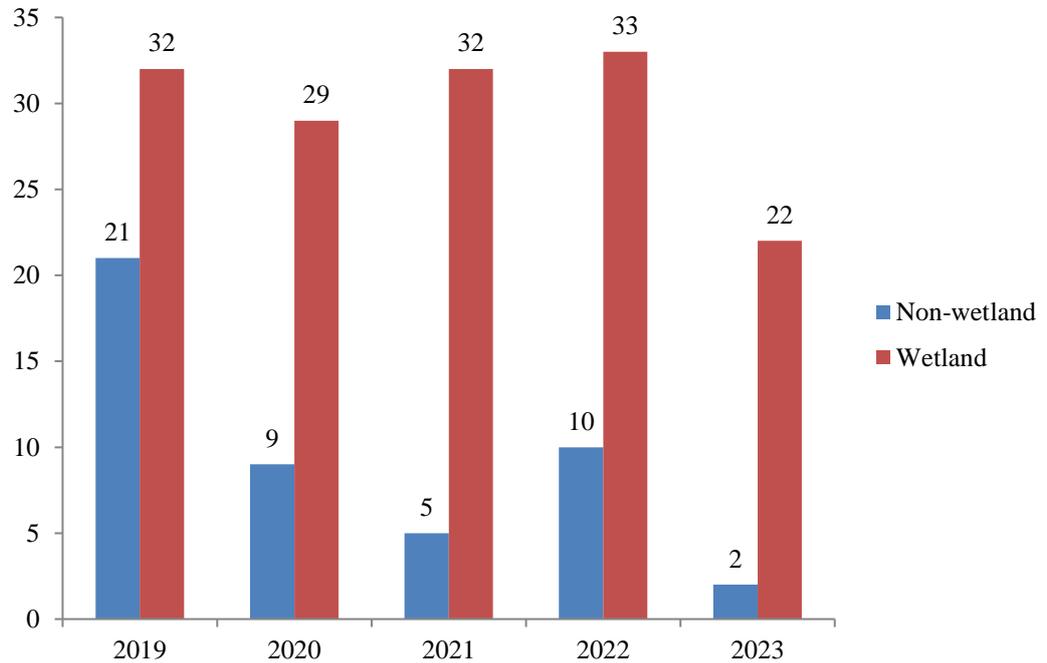
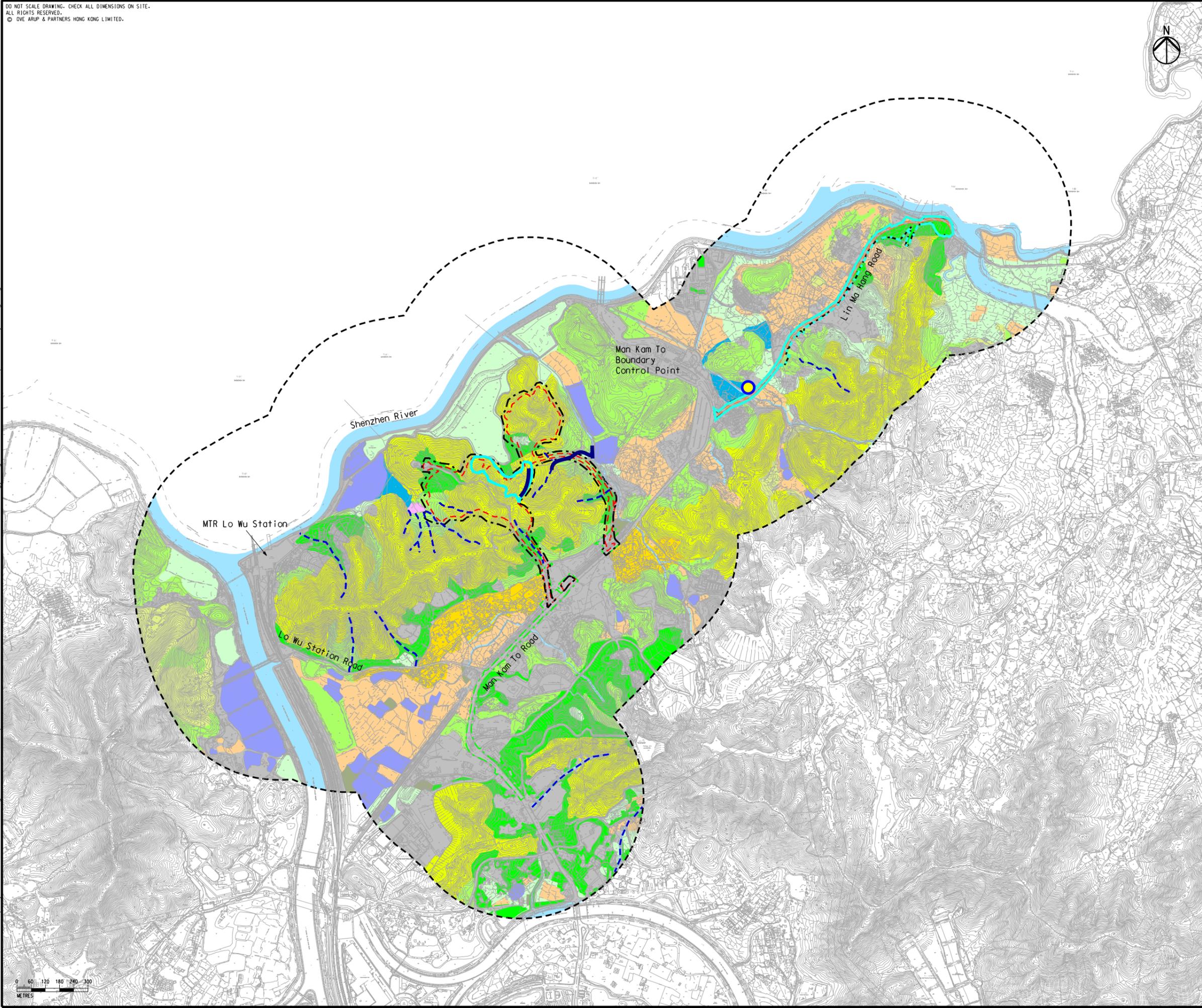


Figure 5: bar chart showing the abundance based on habitat type from 2019 to 2023
(Actual quantity annotated at the top of each bar)

5.4 After analysing survey results in January from 2019 to 2023, there was no significant drop 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. In addition, implementing proper waste disposal is necessary to reduce contamination to water and soil. Continuous monitoring is also recommended to inspect any significant decrease in species diversity.

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



Legend

- Project Boundary
- Utilities Construction
- Sandy Ridge Works Area
- Lin Ma Hang Road Works Area
- 500m Assessment Area
- Watercourse
- Seasonal Watercourse
- Pond
- Developed Area
- Agricultural Land
- Marsh
- Wasteland
- Grassland
- Upland Grassland
- Shrubland
- Plantation
- Woodland
- Wet Woodland
- Village Area
- Site boundary of Contract 2
- Survey Transect for Contract 2
- Fixed Point for Contract 2

| | | | |
|-----|---------------|----|-------|
| 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

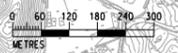
Contract No. and Title:
 Agreement No. CE 1/2013(CE)
 Site Formation and Associated
 Infrastructural Works for Development
 of Columbarium, Crematorium and
 Related Facilities at Sandy Ridge
 Cemetery - Design and Construction

Drawing title
Habitat Map at Sandy Ridge

| | | | |
|--------------------------------|---------------|-----------------------|----------------|
| Drawing no. Figure 9.4b | | Rev. G | |
| Drawn GL | Date 02/16 | Checked EL | Approved ST |
| Scale AS SHOWN | | Status 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: 31/01/2023 10:30 Weather: Fine/ Overcast/ Rain/ Windy

| Item | Mitigation Measures | Implementation | | | Actions/ Remarks |
|----------|---|----------------|----|-----|--|
| | | Yes | No | N/A | |
| 1 | Landscape and Visual | | | | |
| 1.1 | Is the construction period become shortened? | | | ✓ | Under review. |
| 1.2 | Is the work site confined within site boundaries and without encroaching into the landscape resources offsite? | ✓ | | | |
| 1.3 | Is the site kept clean and tidy (E.g. storage of materials, location and appearance of site accommodation being well positioned) | ✓ | | | |
| 1.4 | Is the construction site screened properly by hoardings or noise barriers in visually unobstructed colours? | ✓ | | | |
| 1.5 | Is the erosion and dust control for exposed soil well performed during excavation work? (E.g. Exposed soil shall be covered or “camouflaged” and watered frequently. Areas that are expected to be left with bare soil for a long period of time should be hydro seeded and / or covered with suitable protective fabrics.) | ✓ | | | |
| 1.6 | Are the woodland, plantation and other vegetation being protected and preserved in accordance with DEVB TC(W) No. 07/2015(E.g. Set up Tree Protection Zone)? | ✓ | | | |
| 1.7 | Are the trees which are in direct conflict with the development proposal being transplanted as far as practical in accordance with and DEVB TC(W) No. 07/2015? | ✓ | | | |
| 1.8 | Are compensatory planting for trees being provided to compensate the trees felled in accordance with DEVB TC(W) No. 07/2015? | | | ✓ | Tree planting works have not yet been commenced. |
| 1.9 | Are precautionary control measures to protect natural streams and rivers from adverse impact being implemented in accordance with ETWWB TCW No. 5/2005? (E.g. Construction debris and spoil should be covered up and properly disposed) | ✓ | | | |
| 1.10 | Is light and glare control such as hooding being implemented during construction and operation to minimize light pollution and night time glare? (E.g. All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers) | ✓ | | | |

Summary / Remarks:

Follow up actions taken by Contractor for previous comments:

N/A

New observation:

N/A

Reminders:

1. Contractor is reminded to set up TPZ of proper size and with appropriate material around retain trees according to approved method statement.
2. Contractor is reminded to prevent the construction material pile within TPZ and ensure no works is allowed within the TPZ.
3. Transplanted trees T2465 and T2928 were in fair health condition with normal foliage color and density. Contractor is reminded to provide proper maintenance according to approved method statement.

Photo Record:

Fig A.



General view (1)

Fig B.



General view (2)

Fig C.



General view (3)

Fig D.



General view (4)

Fig E.



Transplanted tree (T-2465)

Fig F.



Transplanted tree (T-2928)

Contract No. CV/2017/02

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

**Development of Columbarium at Sandy Ridge Cemetery –
Infrastructural Works at Man Kam To Road and Lin Ma Hang Road
Landscape and Visual Impact Assessment Checklist for Site Audit**

Date/ Time: 31/01/2023 11:30 Weather: Fine/ Overcast/ Rain/ Windy

| Item | Mitigation Measures | Implementation | | | Actions/ Remarks |
|----------|---|----------------|----|-----|------------------|
| | | Yes | No | N/A | |
| 1 | Landscape and Visual | | | | |
| 1.1 | Is the construction period become shortened? | | | ✓ | Under review |
| 1.2 | Is the work site confined within site boundaries and without encroaching into the landscape resources offsite? | ✓ | | | |
| 1.3 | Is the site kept clean and tidy (E.g. storage of materials, location and appearance of site accommodation being well positioned) | ✓ | | | |
| 1.4 | Is the construction site screened properly by hoardings or noise barriers in visually unobstructed colours? | ✓ | | | |
| 1.5 | Is the erosion and dust control for exposed soil well performed during excavation work? (E.g. Exposed soil shall be covered or “camouflaged” and watered frequently. Areas that are expected to be left with bare soil for a long period of time should be hydro seeded and / or covered with suitable protective fabrics.) | ✓ | | | |
| 1.6 | Are the woodland, plantation and other vegetation being protected and preserved in accordance with DEVB TC(W) No. 07/2015(E.g. Set up Tree Protection Zone)? | ✓ | | | |
| 1.7 | Are the trees which are in direct conflict with the development proposal being transplanted as far as practical in accordance with and DEVB TC(W) No. 07/2015? | | | ✓ | |
| 1.8 | Are compensatory planting for trees being provided to compensate the trees felled in accordance with DEVB TC(W) No. 07/2015? | | | ✓ | |
| 1.9 | Are precautionary control measures to protect natural streams and rivers from adverse impact being implemented in accordance with ETWWB TCW No. 5/2005? (E.g. Construction debris and spoil should be covered up and properly disposed) | | | ✓ | |
| 1.10 | Is light and glare control such as hooding being implemented during construction and operation to minimize light pollution and night time glare? (E.g. All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers) | | | ✓ | |

Summary / Remarks:

Follow up actions taken by Contractor for previous comments:

N/A

New Observation:

N/A

Reminders:

1. Contractor is reminded to set up TPZ of proper size and with appropriate material around retain trees according to approved method statement. Contractor should prevent any construction material pile within TPZ and ensure no works is allowed within the TPZ.

Photo Record:

Fig A.



General view (1)

Fig B.



General view (2)

Fig C.



General view (3)

Fig D.



General view (4)

Signature:

| | | Signature | Date |
|-------------|-----------------------------------|---|-------------|
| Recorded by | Registered Landscape Architect |   | 31 Jan 2023 |
| Checked by | Environmental Team Leader |  | 9 Feb 2023 |
| | Independent Environmental Checker |  | 13 Feb 2023 |

Appendix M

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for 2023

Department: Civil Engineering and Development Department Contract No.: CV/2016/10
 Contract Title: Site Formation and 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 ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000 kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000m ³) |
| Jan | 0.440 | 0.000 | 0.100 | 0.000 | 0.340 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.050 |
| Feb | | | | | | | | | | | |
| Mar | | | | | | | | | | | |
| Apr | | | | | | | | | | | |
| May | | | | | | | | | | | |
| June | | | | | | | | | | | |
| Sub-total | 0.440 | 0.000 | 0.100 | 0.000 | 0.340 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.050 |
| July | | | | | | | | | | | |
| Aug | | | | | | | | | | | |
| Sept | | | | | | | | | | | |
| Oct | | | | | | | | | | | |
| Nov | | | | | | | | | | | |
| Dec | | | | | | | | | | | |
| Total | 0.440 | 0.000 | 0.100 | 0.000 | 0.340 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.050 |

- Notes:
- (1) The waste flow table should cover the whole construction period of the Contract.
 - (2) The original estimates of the C&D materials should be the estimates at contract commencement and should not be altered during construction.
 - (3) Inert C&D materials that are specified in the Contract to be imported for use at the Site shall be separately indicated.
 - (4) The yearly estimates of the C&D materials should be updated as appropriate taking into account the latest works programme etc.
 - (5) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
 - (6) Broken concrete for recycling into aggregates.

Name of Department: CEDD

Monthly Summary Waste Flow Table for 2023

| Month | Actual Quantities of Inert C&D Materials Generated Monthly | | | | | | Actual Quantities of C&D Wastes Generated Monthly | | | | |
|-----------|--|-------------------------------------|------------------------|--------------------------|-------------------------|---------------|---|----------------------------|-------------|----------------|-----------------------------|
| | Total Quantity Generated | Hard Rock and Large Broken Concrete | Reused in the Contract | Reused in other Projects | Disposed as Public Fill | Imported Fill | Metals | Paper/ cardboard packaging | Plastics | Chemical Waste | Others, e.g. general refuse |
| | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in Litre) | (in '000kg) |
| JAN | 191.800 | 0.000 | 0.000 | 0.000 | 191.8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.800 |
| FEB | | | | | | | | | | | |
| MAR | | | | | | | | | | | |
| APRIL | | | | | | | | | | | |
| MAY | | | | | | | | | | | |
| JUN | | | | | | | | | | | |
| Sub Total | 191.800 | 0.000 | 0.000 | 0.000 | 191.800 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.800 |
| JUL | | | | | | | | | | | |
| AUG | | | | | | | | | | | |
| SEP | | | | | | | | | | | |
| OCT | | | | | | | | | | | |
| NOV | | | | | | | | | | | |
| DEC | | | | | | | | | | | |
| Total | 191.800 | 0.000 | 0.000 | 0.000 | 191.800 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.800 |

Notes: * estimated quantity (pending from EPD NENT (soil) to update the actual quantity)

Name of Department: CEDD

| Forecast of Total Quantities of C&D Materials to be Generated from the Contract (see Note 4) | | | | | | | | | | |
|--|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------|-----------------------------|-----------------------|----------------|-----------------------------|
| Total Quantity Generated | Hard Rocks and Large Broken Concrete | Reused in the Contract | Reused in Other Projects | Disposed as Public Fill | Imported Fill | Metal | Paper / cardboard packaging | Plastics (see Note 3) | Chemical Waste | Others, e.g. general refuse |
| (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000m ³) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000kg) | (in '000m ³) |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

Notes:

- (1) The performance targets are given in PS clause 6(14) above.
- (2) The waste flow table shall also include C&D materials that are specified in the Contractor to be imported for use at the Site.
- (3) Plastic refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature
 - Hard Rocks and Large Broken Concrete = Cannot be defined at this stage
 - Imported Fill = Estimated by the Contractor
 - Metal = Estimated by the Contractor
 - Paper/cardboard packaging = Estimated by the Contractor
 - Plastics = Estimated by the Contractor
 - Chemical Waste = Estimated by the Contractor (Spent lubricating oil, assume density 0.9kg/L)
 - Other, e.g. general refuse = Estimated by the Contractor

Appendix N

Complaint Log

Complaint Log for Contract 1

| Log ref. | Date of complaint | Complaint route | Reference no. | Complaint nature | Investigation fining | Status |
|----------|-------------------|-----------------|----------------------------------|------------------|----------------------|---|
| 1 | 15-Apr-21 | EPD | EPD Ref.: EP3/N07/RN/8770-21 | Air Quality | Non-project related | Interim IR was submitted to EPD on 22 April 2021 and included in EM&A Report – Apr 2021 |
| 2 | 11-Feb-22 | EPD | EPD Ref.: EP3/N07/RN/03921-22 | Noise | Non-project related | Interim IR was submitted to EPD on 25 Feb 2022 and included in EM&A Report – Feb 2021 |

Complaint Log for Contract 2

| Log ref. | Date of complaint | Complaint route | Reference no. | Complaint nature | Investigation fining | Status |
|----------|-------------------|-----------------|----------------------------------|------------------|----------------------|---|
| 1 | 4-Sep-20 | EPD | EPD Ref.: EP/RN/419300 | Water quality | Non-project related | Interim IR was submitted to EPD on 14 Sep 2020 and included in EM&A Report – Sep 2020 |
| 2 | 15-Apr-21 | EPD | EPD Ref.: EP3/N07/RN/8770-21 | Air Quality | Non-project related | Interim IR was submitted to EPD on 22 April 2021 and Included in EM&A Report – Apr 2020 |
| 3 | 11-Feb-22 | EPD | EPD Ref.: EP3/N07/RN/03921-22 | Noise | Non-project related | Interim IR was submitted to EPD on 25 Feb 2022 and included in EM&A Report – Feb 2021 |
| 4 | 14-July-22 | EPD | EPD Ref.: N07/RN/00014141-22 | Soil/muddy water | Non-project related | Interim IR was submitted to EPD on 19 Aug 2022 and included in EM&A Report – Aug 2022 |
| 5 | 23-9-22 | EPD | EPD Ref.: N07/RN/00020415-22 | Air Quality | Non-project related | Interim IR was submitted to EPD on 30 Sep 2022 and included in EM&A Report – Sep 2022 |

Appendix O

Implementation Schedule for Environmental Mitigation Measures

| 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 | <ul style="list-style-type: none"> 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 | 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 | 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. |
| S13.4.1.2 | | | | | | | |
| Operational Noise (Road Traffic Noise) | | | | | | | |
| S5.6.6.4 | Provide a series of noise mitigation measures including absorptive noise barriers and low noise road surfacing materials along Lin Ma Hang Road and Sha Ling Road before operation of the proposed project for existing and planned representative NSRs. Locations of noise mitigation measures are stated as following: <i>For existing representative NSRs</i> <ul style="list-style-type: none"> Approx. 12m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM1); Approx. 92m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM2); Approx. 28m of absorptive noise barrier 3m above road level along Project Road near Sha Ling Road (MM3); Approx. 51m of absorptive noise barrier 3m above road level along Project Road near Sha Ling Road (MM4); Approx. 25m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM5); Approx. 21m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM6); Approx. 14m of absorptive noise barrier 4m above road level along Lin Ma Hang Road near San Uk Ling (MM7); Approx. 18m of absorptive noise barrier 3m above road level along Lin Ma Hang Road near San Uk Ling (MM8); Approx. 42m of absorptive noise barrier 3m above road level along temporary pullover space opposite San Uk Ling (MM9); Approx. 93m of absorptive noise barrier 3m above road level along Lin Ma Hang Road opposite San Uk Ling (MM10); Approx. 185m of low noise surfacing materials along Lin Ma Hang Road near San Uk Ling (MM11); For planned representative NSRs Approx. 36m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM12); Approx. 47m of absorptive noise barrier 5m above road level along Lin Ma Hang | Reduce operation noise from road traffic | Contractor | Refer to Figures 5.6.9 - 5.6.13 of the EIA Report | Prior to operation of the Project for existing representative NSRs. While for barriers to protect planned representative NSRs, it should be constructed before intake of planned representative NSRs. | <ul style="list-style-type: none"> 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* |
|---|---|--|----------------------|---|----------------------|--|-----------------------------------|
| | <ul style="list-style-type: none"> Road near Muk Wu Nga Yiu (MM13); Approx. 3.1m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM14); Approx. 3.1m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM15); Approx. 4.1m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM16); Approx. 340m of low noise surfacing materials along Lin Ma Hang Road near Muk Wu Nga Yiu (MM17). | | | | | | |
| Water Quality (Construction Phase) | | | | | | | |
| S6.4.4.1 | 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: | 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"> Water Pollution Control Ordinance ProPECC PN1/94 TM-EIAO TM-DSS | Implemented |
| S6.4.4.3 | <p><u>General Site Operation</u></p> <ul style="list-style-type: none"> At the start of site establishment, perimeter cut-off drains to direct offsite water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction; Diversion of natural stormwater should be avoided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipment in order to avoid or minimise polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 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; The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates; The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction; Construction works should be programmed to minimise surface excavation works during the rainy seasons (April to September). All exposed earth areas should be | | | | | 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"> Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts; All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby; Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the water bodies, marsh and ponds; Adopt best management practices. | | | | | | <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> |
| S6.4.4.4 – S6.4.4.5 | <p><u>Sewage from workforce</u></p> <ul style="list-style-type: none"> Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance; Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project; Regular environmental audit on the construction site should be conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site. | To minimise water quality from sewage effluent | Contractor | All construction sites where practicable | Construction phase | <ul style="list-style-type: none"> Water Pollution Control Ordinance TM-DSS | <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> |
| S6.4.4.6 | <p><u>Operation of Barging Point at Siu Lam</u></p> <ul style="list-style-type: none"> All barges should be fitted with tight bottom seals to prevent leakage of materials during transport; Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation; All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. Mitigation measures for land-based activities as outlined in Section 6.4.4 should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate. | To minimise water quality from operation of barging point at Siu Lam | Contractor | All construction sites where practicable | Construction phase | <ul style="list-style-type: none"> Water Pollution Control Ordinance TM-DSS | <p>No Applicable.</p> <p>* Barging point at Siu Lam is not in used.</p> |
| Water Quality (Operational Phase) | | | | | | | |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|----------------------------|---|---|----------------------|------------------------|----------------------|---|---|
| S7.3.4.3 | <p><u>Waste Reduction Measures</u></p> <p>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:</p> <ul style="list-style-type: none"> segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; proper storage and site practices to minimise the potential for damage and contamination of construction materials; plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete metal etc.); provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. | Reduce waste generation | Contractor | All construction sites | Construction phase | <ul style="list-style-type: none"> Waste Disposal Ordinance | Implemented Implemented Implemented Implemented Implemented |
| S7.3.4.5 | <p><u>Storage of Waste</u></p> <p>The following recommendation should be implemented to minimise the impacts:</p> <ul style="list-style-type: none"> non-inert C&D materials such as soil should be handled and stored well to ensure secure containment; stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; different locations should be designated to stockpile each material to enhance reuse; | Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal | Contractor | All construction sites | Construction phase | <ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance ETWB TCW No. 19/2005 | Implemented Implemented Implemented Implemented |
| S7.3.4.6 | <p><u>Collection and Transportation of Waste</u></p> <p>The following recommendation should be implemented to minimise the impacts:</p> <ul style="list-style-type: none"> remove waste in timely manner; employ the trucks with cover or enclosed containers for waste transportation; obtain relevant waste disposal permits from the appropriate authorities; and disposal of waste should be done at licensed waste disposal facilities. | Minimise waste impacts from storage | Contractor | All construction sites | Construction phase | <ul style="list-style-type: none"> Waste Disposal Ordinance | Implemented Implemented Implemented Implemented |
| S7.3.4.8 – S7.3.4.15 | <p><u>Excavated and C&D Materials</u></p> <p>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:</p> <ul style="list-style-type: none"> maintain temporary stockpiles and reuse excavated fill material for backfilling; carry out on-site sorting; make provisions in the Contract documents to allow and promote the | Minimise waste impacts from excavated and C&D materials | Contractor | All construction sites | Construction phase | <ul style="list-style-type: none"> Land (Miscellaneous Provisions) Ordinance Waste Disposal Ordinance | Implemented Implemented Implemented Implemented |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|---|--|---|---------------------------------|---|----------------------|---|--|
| | <ul style="list-style-type: none"> use of recycled aggregates where appropriate; and implement a recording system for the amount of waste generated, recycled and disposed of for checking. The recommended C&D materials handling should include: <ul style="list-style-type: none"> On-site sorting of C&D materials; Reuse of C&D materials; and Use of Standard Formwork and Planning of Construction Material purchasing. | | | | | | <p>Implemented</p> <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><u>Chemical Waste</u></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"> Waste Disposal (Chemical Waste) General Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste | Implemented |
| S7.3.4.19 | <p><u>General Refuse</u></p> <ul style="list-style-type: none"> General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. A reputable waste collector should be employed to remove general refuse on a daily basis. | Minimise production of the general refuse and avoid odour, pest and litter impacts | Contractor | All construction sites | Construction phase | <ul style="list-style-type: none"> Waste Disposal Ordinance | <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> |
| S7.3.4.20 | <p><u>Sewage</u></p> <ul style="list-style-type: none"> The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities. Regularly collection by licensed collectors should be arranged to minimise potential environmental impacts. | Minimise production of sewage impacts | Contractor | All construction sites | Construction phase | <ul style="list-style-type: none"> Waste Disposal Ordinance | <p>Implemented</p> <p>Implemented</p> |
| Waste Management (Operational Waste) | | | | | | | |
| 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"> Waste Disposal Ordinance | Implemented |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|---------------------------|---|--|--|---------------------------------------|--|--|-------------------------------------|
| Land Contamination | | | | | | | |
| S8.9.1.1 | Re-appraisal of the potentially contaminated site (SRC-1) | Identify any hot spots for SI within the southeast and western portions of SRC-1 | Project Proponent / Detailed Design Consultant | Potentially contaminated site (SRC-1) | Once the works area for the Project is confirmed and site access is available (e.g. after land resumption) | <ul style="list-style-type: none"> Annex 19 of the TM-EIAO, Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3 Potential Contaminated Land Issues); Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; Guidance Notes for Contaminated Land Assessment and Remediation; and Practice Guide for Investigation and Remediation of Contaminated Land Recommendations in Health Risk Assessment | Implemented |
| S8.11.1.1 | Preparation and submission of Contamination Assessment Plan (CAP) to EPD for review and approval, if required | Present the findings of the reappraisal and strategy of the recommended SI, if required | Project Proponent / Detailed Design Consultant | Potentially contaminated site (SRC-1) | After land resumption and prior to the construction phase | Ditto | Implemented |
| S8.11.1.2 | Preparation and submission of Contamination Assessment Report (CAR) to EPD for review and approval, if required | Present the findings of SI, if any, and evaluate the level and extent of potential contamination | Project Proponent / Detailed Design Consultant | Potentially contaminated site (SRC-1) | Prior to the construction phase | Ditto | Implemented |
| S8.11.1.2 | Preparation and submission of Remediation Action Plan (RAP) to EPD for review and approval if contamination is identified | Recommend appropriate mitigation | Project Proponent / | Potentially contaminated | Prior to the construction | Ditto | Not required as no contamination is |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|--------------------------------------|--|---|---|---|--|---|---|
| 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 | measures for the contaminated soil and groundwater identified in the assessment if remediation is required Demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP | Detailed Design Consultant Project Proponent / Detailed Design Consultant | site (SRC-1) Potentially contaminated site (SRC-1) | phase Prior to the construction phase | Ditto | identified. Not required as no contamination is identified. |
| Ecology (Construction Phase) | | | | | | | |
| S9.7.2.3 | Preparation and submission of Upland Grassland Reinstatement Plan to EPD for agreement. | An Upland Grassland Reinstatement Plan will be prepared by a qualified ecologist/botanist with full details of the findings of a baseline grassland survey, the practical details and methodology of the physical excavation, transport and storage or turves/topsoil and their subsequent reinstatement once the receptor sites have been established, along with an implementation programme of reinstatement, post-reinstatement monitoring and maintenance programme. A contingency plan | Project Proponent/ Detailed Design Consultant (qualified ecologist/botanist) for Upland Grassland Reinstatement Plan | Engineered slopes Of Crematorium Indicative locations for Grassland Reinstatement should be referred to Figure 9.11 of the EIA Report | Prior to construction phase | <ul style="list-style-type: none"> Reinstatement and establishment requirements to be detailed in Upland Grassland Reinstatement Plan TM-EIAO | Implemented *Upland Grassland Reinstatement Plan was submitted to EPD. |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|------------------------------------|---|---|---|---|------------------------------------|---|--|
| | | <p>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.</p> | | | | | |
| <p>S9.7.2.5 – S9.7.2.6</p> | <p>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> | <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> | <p>Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Vegetation Survey Report and Transplantation Proposal.</p> | <p>Within the Project Area where applicable</p> | <p>Prior to construction phase</p> | <ul style="list-style-type: none"> Survey findings and transplantation methodology to be detailed in Vegetation Survey Report and Transplantation Plan respectively. TM-EIAO. | <p>Implemented * Vegetation Survey Report and Transplantation Proposals for Contract 1 and Contract 2 were submitted to EPD.</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* |
|--|--|--|---|--|---|---|--|
| S9.7.5.3 – S9.7.5.5, S9.8.1.6 | Preparation and submission of Enhancement Woodland Proposal to EPD for agreement. | and maintenance programme. Recommend appropriate enhancement planting programme, planting and post-transplantation monitoring methodology, action plan for monitoring the enhancement planting and maintenance programme. | Project Proponent/ Detailed Design Consultant (qualified ecologist/botanist) for Wooded Area Proposal. | Filled slope west of the platform, and north west of the platform in the valley below MacIntosh Fort Indicative locations for Enhancement Woodland should be referred to Figure 9.11 of the EIA Report | Prior to construction phase | <ul style="list-style-type: none"> Enhancement planting and establishment requirements to be detailed in Wooded Enhancement Proposal. TM-EIAO | Implemented *Woodland compensation plan was submitted to EPD. |
| S9.7.3.1 – S9.7.3.3 | Indirect impacts due to potential changes in water quality, hydrology and sedimentation could occur to a series of downstream watercourses and wetland systems (including the wet woodland, marsh and mitigation ponds) during both the construction (for the Platform and LMHR widening works) and operational stages. Generally, indirect water impact to any aquatic fauna during the construction phase should easily be avoided by implementing water control measures (ETWB TCW No. 5/2005) to avoid direct or indirect impacts any watercourses and good site practices (further details are discussed in Section 6 of the EIA Report). In addition, construction phase impacts on the watercourses, riparian corridor and fauna using these areas will be minimised by erection of a 2m high, solid, dull green site boundary fence on the edge of any active works area, 30m from the watercourse. Where this is not practicable due to site constraints, demarcation fencing will need to be erected to prevent unauthorised encroachment into the riparian corridor by constructions works and traffic. Detailed mitigation measures will be designed at the detailed design stage. | Minimise the indirect impacts to Water Quality and Hydrology | Contractor /detailed design consultant. | On the edge of any active works area, 30m from The watercourse | Prior to commencement and during construction phase | <ul style="list-style-type: none"> ETWB TCW No. 5/2005 TM-EIAO | Implemented. |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|---------------------------|---|--|---------------------------------|------------------------|---|--|---------------------------------------|
| S9.7.3.4 – S9.7.3.6 | <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"> • TM-EIAO. | |
| .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"> • Put up signs to alert site staff about any locations which are ecologically sensitive and measures to prevent accidental impacts; • Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering | <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"> • TM-EIAO. | <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* |
|------------------------------------|--|--|---|--|-------------------------|--|--|
| | <p>watercourses;</p> <ul style="list-style-type: none"> Prohibition of soil storage against trees or close to waterbodies; Delineation of works site to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value; No smoking, hot works or sources of fire close to upland grassland; No on-site burning of waste; and Waste and refuse in appropriate receptacles. | | | | | | <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> |
| S.9.7.3.9 | <p>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.</p> | <p>Minimise the impacts to breeding birds within the works areas.</p> | Contractor | All construction sites | Prior to site clearance | <ul style="list-style-type: none"> TM-EIAO WAPO | <p>Implemented during breeding season.</p> |
| Ecology (Operational Phase) | | | | | | | |
| S9.7.2 | <p>Establishment, maintenance and monitoring of a Upland Grassland Reinstatement Area</p> | <p>Reinstatement of upland grassland and to maintain connectivity in Sandy Ridge.</p> | Project Proponent/ Contractor / Maintenance Authority | <p>Engineered slopes of Crematorium</p> <p>Indicative locations for Grassland Reinstatement should be referred to Figure 9.11 of the EIA Report</p> | Operational phase | <ul style="list-style-type: none"> Monitoring methodology and successfulness of survival of upland grassland should follow Upland Grassland Reinstatement Plan. TM-EIAO. | <p>Upland Grassland Reinstatement Area will be implemented by other contract.</p> |
| S9.7.5.3 – S9.7.5.6 | <p>Establishment, maintenance and monitoring of an enhancement woodland</p> | <p>Recommend appropriate enhancement planting programme, planting and post-transplantation monitoring methodology, action plan for monitoring the enhancement planting and</p> | Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Wooded Area Proposal. | <p>Filled slope west of the platform, and north west of the platform in the valley below MacIntosh Fort</p> | Operational phase | <ul style="list-style-type: none"> Enhancement planting and establishment requirements to be detailed in Wooded Area Proposal. TM-EIAO. | |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|---------------------------|--|---|----------------------------|---|---|---|--------------------------------------|
| | | maintenance programme. | | Indicative locations for Enhancement Woodland should be referred to Figure 9.11 of the EIA Report | | | |
| S9.7.4.1 – S9.7.4.5 | <p><u>Mitigation for Impacts to Water Quality and Hydrology (Operational Phase)</u></p> <ul style="list-style-type: none"> Stormwater drainage system will be further developed in detailed design stage to collect dusty materials from water collected from the platform and associated road system. Silt traps will be installed to ensure removal of dusty materials. Regular cleaning will be conducted to avoid debris entering downstream rivers during first flush; and The proposed small diameter bore pile system at the foundation of the proposed platform structure. | <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. The surface runoff collected on the platform will be captured by a stormwater drainage system, which will be further developed at the detailed design stage. The proposed small diameter bore pile system at the foundation of the</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"> TM-EIAO | Implemented before Operational phase |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|-------------------------------|--|--|--|--------------------------------|---|--|--------------------------------------|
| | | proposed platform structure would allow a notional free area of about 87 – 91% for groundwater to pass through. | | | | | |
| S9.7.4.6 | Minimise the potential indirect light disturbance on the Street Lighting on fireflies surrounding the Project Site during operational phase | 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-E/IAO | Implemented before Operational phase |
| S9.7.4.7 | <ul style="list-style-type: none"> It is considered that at the detailed design stage, street lighting of similar lux/light intensity as to what is currently present is utilised. Furthermore, as a precautionary measure, it is suggested that deflectors are fixed to the back of the street lights to prevent additional light reaching the marsh and causing adverse impacts to fireflies. | | | | | | |
| S9.7.4.9 | The increase in visitors to the columbarium allows greater public access to the upland grassland of Sandy Ridge and in turn, the potential for hill fires is also increased. Fires may emanate from discarded cigarettes and from specific practices during festivals or grave-sweeping. | Minimise the risk of hill fires. | Detailed Design/ Consultant/ Operator | The whole Project area | Detailed Design phase/Operational phase | • TM-E/IAO | Implemented before Operational phase |
| S9.7.4.9 | In order to reduce the risk of hill fires, sufficient educational signage should be displayed throughout the columbarium warning people of the risks of fire and strictly prohibits practices that could cause hill fires. This will require input in the detailed design phase. | | | | | | |
| Fisheries | | | | | | | |
| 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 |
| Landscape & Visual | | | | | | | |
| S11.8.1.3, Table 11.9 | CM1 – The construction area and contractor's temporary works areas should be minimised to avoid impacts on adjacent landscape, and the reliance on off-site construction. | Minimise landscape impact and visual impact | Funded by CEDD and implemented by Contractor | Work site/ during construction | Construction phase | - | Implemented. |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|-----------------------|---|---|--|--------------------------------|-------------------------------|---|-----------------------------------|
| S11.8.1.3, Table 11.9 | CM3 – Screening of construction works by hoardings/noise barriers around works area in visually unobtrusive colours and to screen construction works. It is proposed that screening be compatible with the surrounding environment and non-reflective, recessive colours be used. Hoarding should be taken down at the end of the construction period. | Minimise visual impact | Funded by CEDD and implemented by Contractor | Work site/ during construction | Construction phase | - | Implemented. |
| S11.8.1.3, Table 11.9 | CM4 – Dust and Erosion Control for Exposed Soil - Excavation works 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"> • DEVB TC(W) 07/2015 • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB | Implemented. |
| S11.8.1.3, Table 11.9 | CM7 – Tree Transplantation – Tree(s) will be affected according to the Tree Preservation and Removal Proposal to be carried out in a later stage. Established trees of value are to be re-located where practically feasible. | Minimise landscape and visual impact | Funded by CEDD and implemented by Contractor | Work site/ during construction | Design and Construction phase | <ul style="list-style-type: none"> • ‘Guidelines for Tree Risk Management And Assessment Arrangement on an Area Basis and on a Tree Basis’, issued January 2011, Greening, Landscape and Tree Management | Implemented. |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|-----------------------|--|---|--|--------------------------------|-------------------------------|--|-----------------------------------|
| 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 | (GLTM) Section, DevB • Latest recommended horticultural practices from GLTM Section, DevB • 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 |

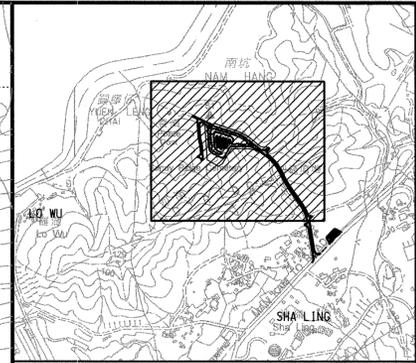
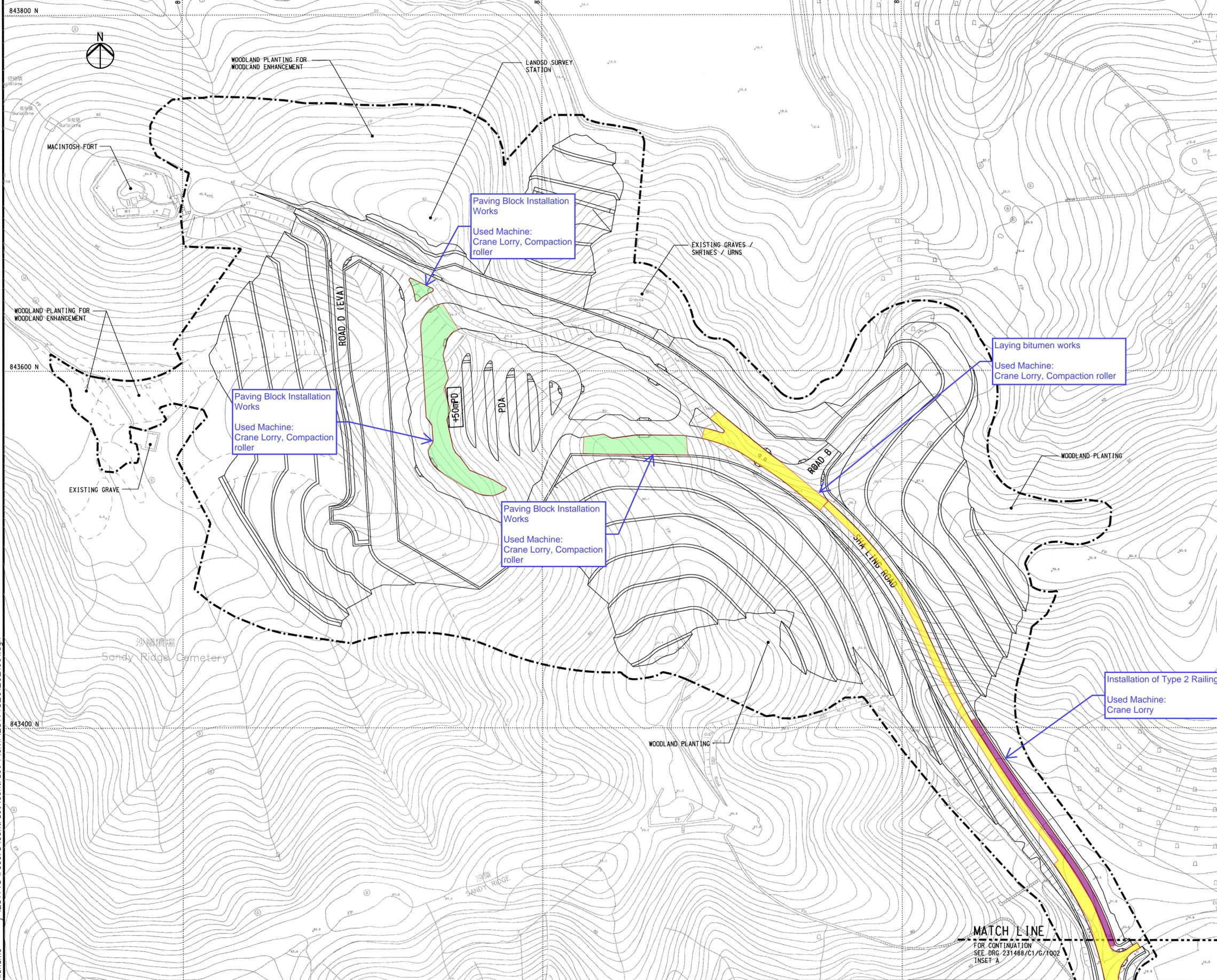
| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|-----------------------|--|--|--|--|---|---|---|
| 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 | Maintenance of Vegetation and Hard Landscape Features • Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB • DEVB TCW No. 06/2015 – Maintenance of Vegetation and Hard Landscape Features | Implemented |
| S11.8.1.3, Table 11.9 | OM4 – Greening Works and Contour Grading Works on Cut/Fill Slopes - Greening works such as hydroseeding/ terraces of shrub or tree planting will be provided where slope gradient allows, according to Geotechnical Engineering Office (GEO) Publication No.1/2011 Technical Guidelines on Landscape Treatment for Slopes. | Minimise landscape and visual impact | Funded by CEDD and implemented by Contractor | Within Project Site | Construction phase | Geotechnical Engineering Office (GEO) Publication No.1/2011 Technical Guidelines on Landscape Treatment for Slopes. | Implemented |
| S11.8.1.3, Table 11.9 | OM5 – Landscape design treatment to be provided by relevant government department. | Mitigate the loss of greenery and enhance the overall landscape and visual value | Funded by FEHD and implemented by Contractor | Within Project Site | After handover to the relevant department | - | Implemented after handover to the relevant department |
| S11.8.1.3, Table 11.9 | OM6 – Architectural and chromatic treatment of the hard architectural and engineering structures and facilities. | Mitigate the loss of greenery and enhance the overall landscape and visual value | Funded by FEHD and implemented by Contractor | Within Project Site | After handover to the relevant department | - | Implemented after handover to the relevant department |
| S11.8.1.3, Table 11.9 | OM7 – Aesthetic design of the proposed noise barriers. | Mitigate the visual impact | Funded by CEDD and implemented by Contractor | Along Sha Ling Road and Lin Ma Hang Road | Construction phase | • WBTC No. 36/2004 - ACABAS - submission is required to ACABAS for approval of any bridges and associated structures within the public highway | Implemented |

| EIA Ref. | Recommended Mitigation Measures | Objectives of the Recommended Measures & Main Concerns to address | Implementation Agent | Location / Timing | Implementation Stage | Requirements and / or standards to be achieved | Implementation status and remark* |
|---|---|---|--|------------------------|----------------------|--|-----------------------------------|
| 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 | system. | Implemented |
| <p>Notes:</p> <p>(a) A detailed Tree Survey Report showing all identified valuable trees and OVT will be undertaken in a separate Tree Preservation and Removal Proposal.</p> <p>(b) Wood resulting from tree removal should be recycled as mulch or soil conditioner for re-use within the Project or in other projects as far as possible e.g. for the construction of soft landscape work, were practical.</p> <p>(c) Contractor is responsible for landscaping during the agreed establishment and maintenance period. Other designated management and maintenance agents to take up maintenance and management of landscaping after end of agreed period</p> <p>(d) Highways Department (HyD) is responsible for maintenance and management of landscaping of public road side slope, Leisure and Cultural Services Department (LCS D) 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 management of landscaping of other areas allocated to FEHD..</p> <p>(e) The landscape mitigation treatment of the future development site shall follow the below frameworks:</p> <ul style="list-style-type: none"> - 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* |
| <p>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.</p> | | | | | | | |
| EM&A Project | | | | | | | |
| S13.1.1.1 | An Independent Environmental Checker needs to be employed as per the EM&A Manual. | Control Performance | Highways Department | All construction sites | Construction phase | • EIAO Guidance Note No.4/2010 • TM-EIAO | Implemented |
| S13.2.1.1 | 1) An Environmental Team needs to be employed as per the EM&A Manual. | Perform environmental monitoring & auditing | Highways Department / Contractor | All construction sites | Construction phase | • EIAO Guidance Note No.4/2010 • TM-EIAO | Implemented |
| S13.4.1.2 | 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. | | | | | | |

Appendix P

Illustrations of Site Activities

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



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. 231448/C1/G/1001 | | Rev. - | |
| Drawn WM | Date 12/16 | Checked AW | Approved DL |
| Scale 1:1000 @A1 | | Status CONTRACT | |

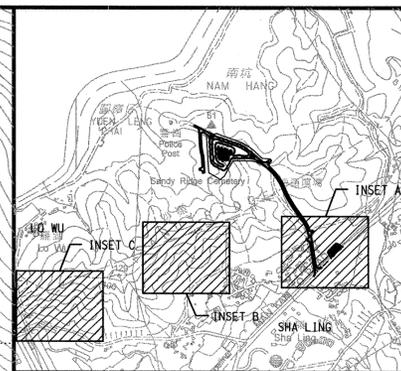
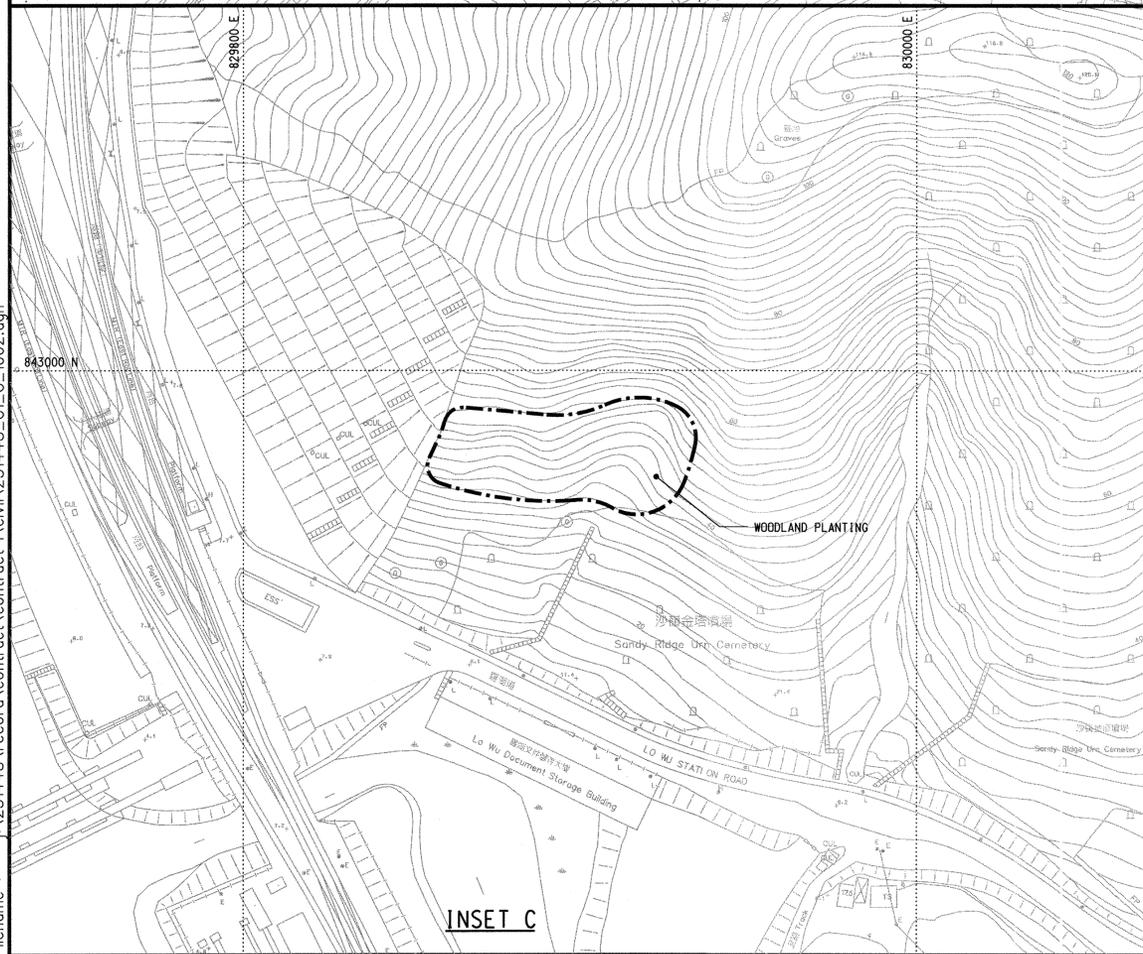
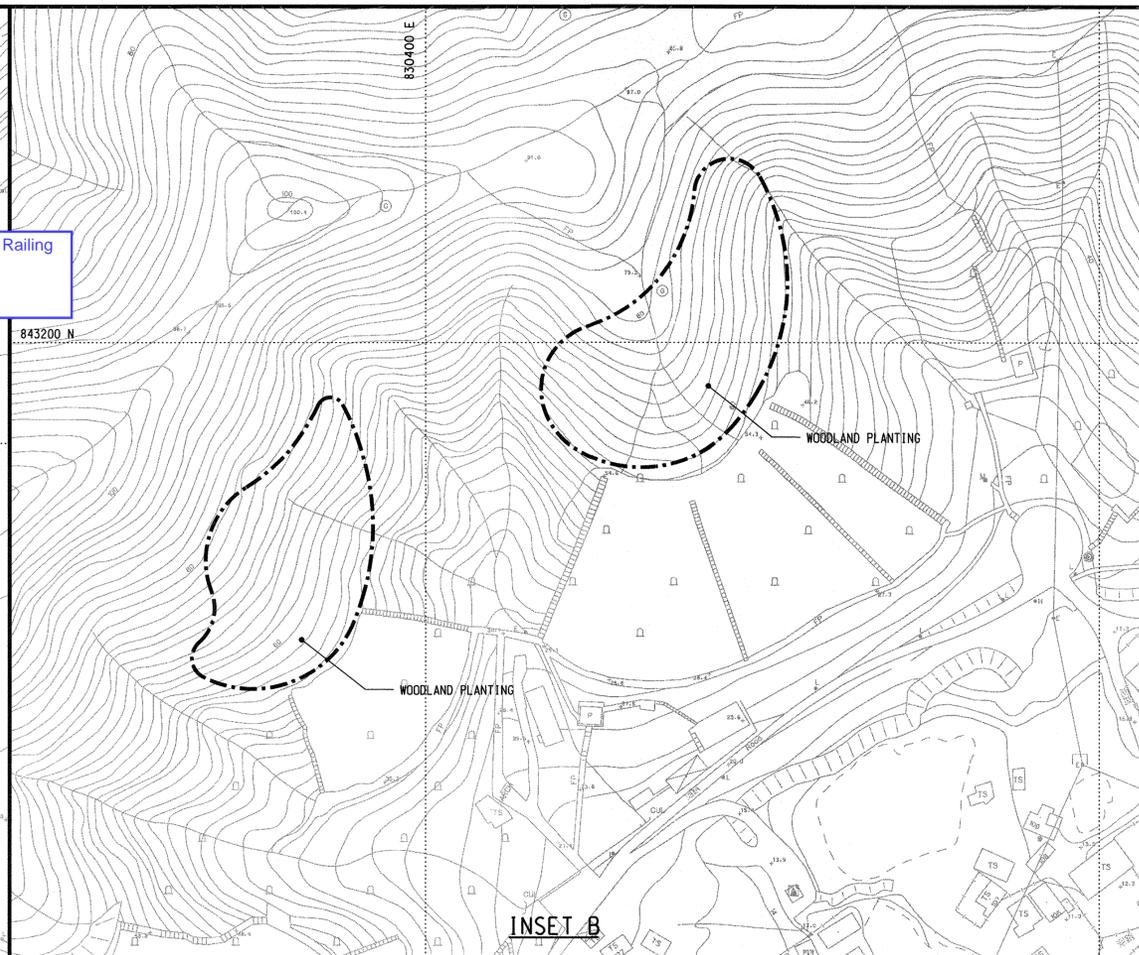
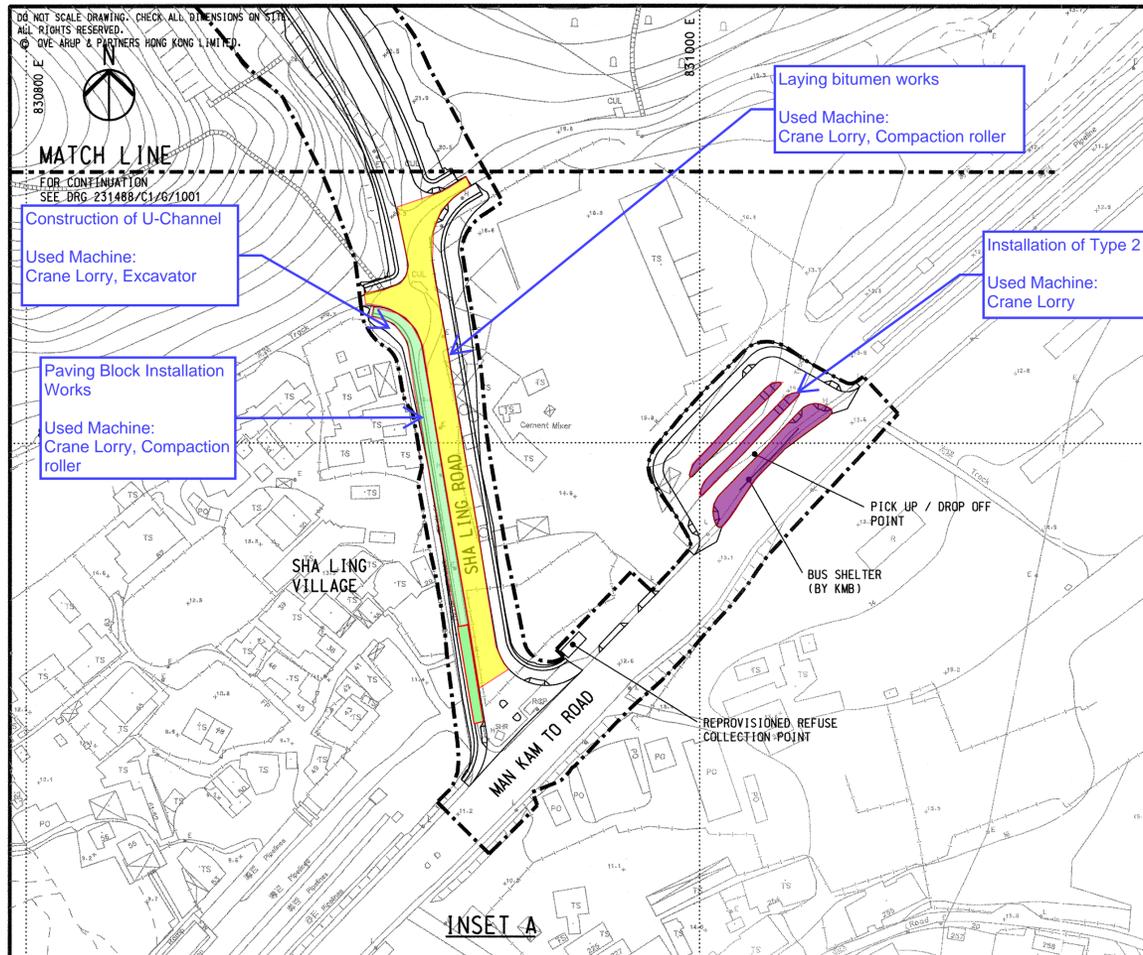
COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and Development Department

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

MATCH LINE
 FOR CONTINUATION
 SEE DRG 231448/C1/G/1002
 INSET A



KEY PLAN

LEGEND:
- - - - - PROPOSED WORKS SITE

| Rev | Description | By | Date |
|-----|-------------|----|------|
| | | | |
| | | | |

Consultant
ARUP

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

Drawing title
GENERAL LAYOUT
(SHEET 2 OF 3)

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

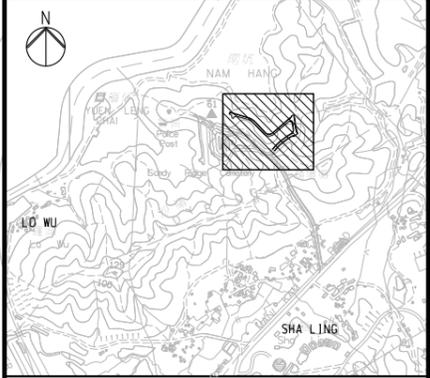
COPYRIGHT RESERVED



土木工程拓展署
Civil Engineering and Development Department

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

DO NOT SCALE DRAWING. CHECK ALL DIMENSIONS ON SITE.
 ALL RIGHTS RESERVED.
 © DVE 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 1 OF 5)**

| | | | |
|--|---------------|-------------------------|----------------|
| Drawing no. 231448/C2/G/1001 | | Rev. - | |
| 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

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

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

844400 N



844200 N

844000 N

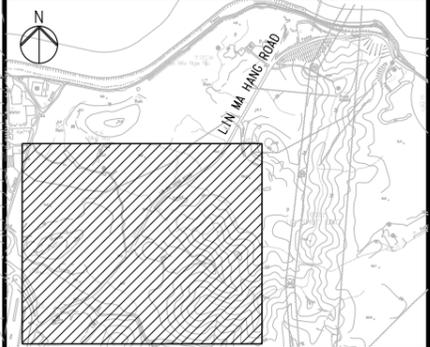
831800 E

832000 E

832200 E

MATCH LINE
 FOR CONTINUATION SEE
 DRG. 231448/C2/G/104

Construction of footpath
 Plant: Excavator, dump truck,



KEY PLAN

NOTE:

- PART(S) OF THE SITE WHICH IS/ARE LOCATED IN THE PUBLIC ROADS AND FOOTPATH SHALL ONLY BE OCCUPIED BY THE CONTRACTOR FOR THE EXECUTION OF THE WORKS WITH PRIOR APPROVAL FROM RELEVANT GOVERNMENT AUTHORITIES INCLUDING ACQUIRING EXCAVATION PERMITS ISSUED BY THE HIGHWAYS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO ACQUIRE APPROVAL OF HIS TEMPORARY TRAFFIC ARRANGEMENT SCHEMES AND ALL NECESSARY EXCAVATION PERMITS FROM RELEVANT AUTHORITIES.
- THE DEMARCATION AND EXTENT OF THE PART(S) OF THE SITE AS SHOWN ARE APPROXIMATE ONLY AND SHALL BE CONFIRMED ON SITE BY THE PROJECT MANAGER / SUPERVISOR.

LEGEND:

- PART A1
- PART A2
- PART A3
- PART A4
- PART B
- PART C1
- PART C2
- PART D
- PART E

| | | | |
|-----|----------------|----|-------|
| Rev | Description | By | Date |
| - | TENDER DRAWING | AW | 11/17 |

Consultant
ARUP

Contract No. and Title:
 Contract No. CV/2017/02
 Development of Columbarium
 at Sandy Ridge Cemetery -
 Infrastructural Works at
 Man Kam To Road and
 Lin Ma Hang Road

Drawing title
**PART OF THE SITE
 (SHEET 3 OF 5)**

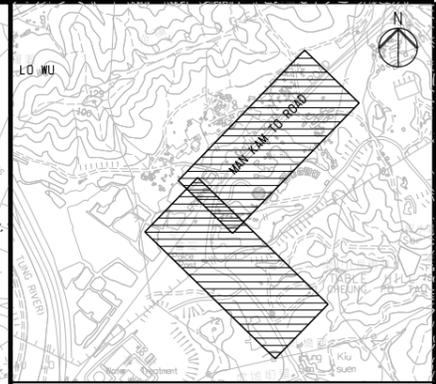
| | | | |
|--|---------------|-------------------------|----------------|
| Drawing no. 231448/C2/G/1013 | | Rev. - | |
| Drawn WM | Date 07/17 | Checked AW | Approved DL |
| Scale 1:1000 @A1 | | Status TENDER | |

COPYRIGHT RESERVED



Printed by : 12/27/2017
 Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1013.dgn

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

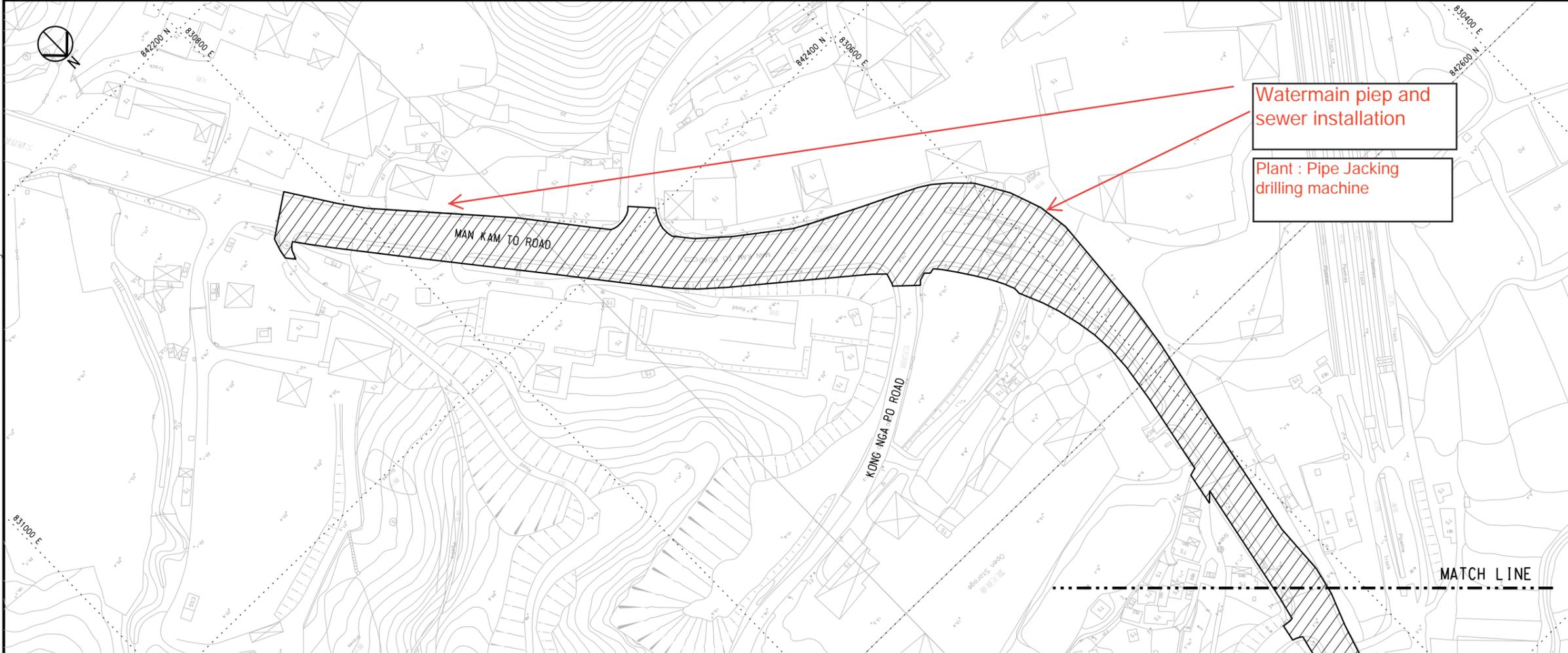


KEY PLAN

- NOTE:**
- PART(S) OF THE SITE WHICH IS/ARE LOCATED IN THE PUBLIC ROADS AND FOOTPATH SHALL ONLY BE OCCUPIED BY THE CONTRACTOR FOR THE EXECUTION OF THE WORKS WITH PRIOR APPROVAL FROM RELEVANT GOVERNMENT AUTHORITIES INCLUDING ACQUIRING EXCAVATION PERMITS ISSUED BY THE HIGHWAYS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE TO ACQUIRE APPROVAL OF HIS TEMPORARY TRAFFIC ARRANGEMENT SCHEMES AND ALL NECESSARY EXCAVATION PERMITS FROM RELEVANT AUTHORITIES.
 - THE DEMARCATION AND EXTENT OF THE PART(S) OF THE SITE AS SHOWN ARE APPROXIMATE ONLY AND SHALL BE CONFIRMED ON SITE BY THE PROJECT MANAGER / SUPERVISOR.

LEGEND:

| | |
|--|---------|
| | PART A1 |
| | PART A2 |
| | PART A3 |
| | PART A4 |
| | PART B |
| | PART C1 |
| | PART C2 |
| | PART D |
| | PART E |



Watermain piep and sewer installation
 Plant : Pipe Jacking drilling machine

| | | | | |
|-----|-------------|----------------|------|-------|
| - | | 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
PART OF THE SITE (SHEET 2 OF 5)

| | | | |
|--|---------------|-------------------------|----------------|
| Drawing no. 231448/C2/G/1012 | | Rev. - | |
| Drawn WM | Date 07/17 | Checked AW | Approved DL |
| Scale 1:1000 @A1 | | Status TENDER | |

COPYRIGHT RESERVED

土木工程拓展署
 Civil Engineering and Development Department

Printed by : 12/27/2017
 Filename : J:\231448\ARUP\Civil\CONTRACT 2\231448_C2_G_1012.dgn