JOB NO.: TCS00881/18

CEDD CONTRACT CV/2016/10
SITE FORMATION AND ASSOCIATED INFRASTRUCTURAL WORKS FOR DEVELOPMENT OF COLUMBARIUM AT SANDY RIDGE CEMETERY

MONTHLY ENVIRONMENTAL MONITORING AND AUDIT REPORT (NO.1) – AUGUST 2018

PREPARED FOR

Hsin Chong Tsun Yip Joint Venture

Date	Reference No.	Prepared By	Certified By
18 September 2018	TCS00881/18/600/R0114v3		
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Version	Date	Remarks
1	10 September 2018	First Submission
2	14 September 2018	Amended according to the IEC's comment on 13 September 2018
3	18 September 2018	Amended according to the IEC's comment on 15 September 2018

EXECUTIVE SUMMARY

ES.01. Civil Engineering and Development Department (hereafter referred as "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"* (hereafter referred as "the Project"). The Project is a Designated Project to be implemented under Environmental Permit No. EP-534/2017. To facilitate the Project management, the Project works were separated into three different Contracts and they are listed below.

- *CEDD Contract No. CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as "*Contract 1*")
- *CEDD 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* (hereafter referred as "*Contract 2*")
- *Other CEDD's Contract as related Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as "*Contract 3*")

ES.02. Hsin Chong Tsun Yip Joint Venture (hereafter referred as "HCTYJV") has been awarded the *CEDD Contract No. CV/2016/10 "Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery"* 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.

ES.03. Action-United Environmental Services & Consulting (hereinafter referred as "AUES") has been commissioned by HCTYJV as an Environmental Team (hereinafter referred as "the ET") to implement the Environmental Monitoring & Audit (EM&A) programme in accordance with the approved EM&A Manual as well as the associated duties.

ES.04. According to the Further Environmental Permit (***FEP-01/534/2017***) and Environmental Permit (***EP-534/2017***) ***Condition 3.3***, Baseline Monitoring Report shall be deposited to EPD at least one month before commencement of the construction of the Project. The coverage of baseline monitoring includes the whole site boundary of EP-534/2017. Baseline monitoring for air quality was conducted from ***25 April 2018*** to ***9 May 2018*** and baseline noise monitoring was conducted from ***25 April 2018*** to ***8 May 2018.*** Due to accessibility to the monitoring point, baseline water quality monitoring was conducted from ***27 April 2018*** to ***23 May 2018*** for Locations M1, M3 and M4. Baseline Monitoring Report (ver.1) which verified by Independent Environmental Checker (IEC) was submitted to Environmental Protection Department (EPD) on 30 May 2018. Upon receipt comment from EPD, baseline water quality monitoring at M2 was carried out from ***12 July 2018*** to ***6 August 2018*** upon the access was available. Baseline Monitoring Report (ver.2) was submitted to EPD on ***8 August 2018*** before commencement of construction activities of the Contract. Further comment was issued by EPD on 15 August 2018 and the Baseline Monitoring Report (Version 3) was submitted to EPD on 13 September 2018 for endorsement.

ES.05. The Baseline Monitoring Report (air, noise and water) has summarized the key findings and the rationale behind determining a set of Action and Limit Levels (A/L Levels) from the baseline data. As notified by HCTYJV, construction works of the Contract 1 was commenced on 16 August 2018 and therefore construction phase impact monitoring was started on 16 August 2018.

ES.06. 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 given in ***Tables ES-1, ES-2*** and ***ES-3*** below.

Table ES-1 Action and Limit Levels of Air Quality Monitoring

Monitoring Stations	Action Level (μg/m^3)		Limit Level (μg/m^3)	
	1-hour	24-hour	1-hour	24-hour
ASR-1	331	181	500	260
ASR-2	316	165	500	260
ASR-3	307	160	500	260

Table ES-2 Action and Limit Levels of Construction Noise Monitoring

Monitoring Location	Action Level	Limit Level
	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 1: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the NCA have to be followed.		

Table ES-3 Action and Limit Levels of Water Quality Monitoring

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

ES.07. In case where exceedance of these environmental criteria occurs, actions should be carried out in accordance with the "Event Action Plan" in the Approved EM&A Manual.

ES.08. This is the **1st** monthly Environmental Monitoring and Audit Report presenting the monitoring results and inspection findings for the period of **16th** to **31st August 2018 (**the Reporting Month).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.09. Environmental monitoring activities under the EM&A program in this Reporting Month is summarized in the following table.

Table ES-4 Environmental monitoring activities in the Reporting Period

Issues	Environmental Monitoring Parameters / Inspection	Monitoring Location under CV/2016/10	Occasions
Air Quality	1-hour TSP	ASR-1	3
	24-hour TSP	ASR-1	3
Construction Noise	Leq (30min) Daytime	CN-1	3
Water Quality	In-situ measurement and Water sampling	M3	7
Ecology	Monthly Monitoring	Transect within site area of CV/2016/10	1*
Landscape & Visual	Monthly Site Inspection	Site area of CV/2016/10	1
Inspection / Audit	ET Regular Environmental Site Inspection	Site area of CV/2016/10	3
	IEC Monthly Environmental Site Audit	Site area of CV/2016/10	1

** Pre-survey was undertaken on 7th August 2018*

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.010. No exceedance of air quality and construction noise monitoring was recorded in this Reporting Month. However, for water quality monitoring, a total of twelve (12) Limit Level exceedances were recorded. Notification of Exceedance (NOE) of water quality was therefore issued. The statistics of environmental exceedance, NOE issued and investigation of exceedance are summarized in the following table.

Table ES-5 Breach of Action and Limit (A/L) Levels in the Reporting Period

Environmental Issues	Monitoring Parameters	Action Level	Limit Level	Event & Action		
				NOE Issued	Investigation findings	Corrective Actions
Air Quality	1-hour TSP	0	0	0	-	-
	24-hour TSP	0	0	0	-	-
Construction Noise	Leq_{30min} Daytime	0	0	0	-	-
Water Quality	DO	0	0	0	-	-
	Turbidity	**7**	**7**	**7**	Not related to the Contract Works	NA
	SS	0	**5**	**5**	Not related to the Contract Works	NA

Note: NOE – Notification of Exceedance

ES.011. Investigation for the cause of water quality exceedances have been undertaken by ET. Investigation results revealed that the construction activities undertaken by Contract 1 were limited since contract works commencement on 16 August 2018. As water quality mitigation measures, wastewater treatment facilities have been implemented and exposed surface have been covered by cement motar as far as practicable to minimize generation of muddy runoff during rain. In addition, construction of temporary drainage system was on-going. Nevertheless, except for 24th and 25th August 2018, there were continuous heavy rainstorms since the contract commencement. It is considered that the exceedances were related to the rainstorm and unlikely caused by the works under the Contract 1.

ENVIRONMENTAL COMPLAINT

ES.012. No environmental complaint was recorded or received in this Reporting Month. The statistics of environmental complaint are summarized in the following table.

Table ES-6 Environmental Complaint Summaries in the Reporting Month

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
16 – 31 August 2018	0	0	NA

ES.013. In addition, no complaints received and emergency events relating to violation of environmental legislation for illegal dumping and landfilling were received.

NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

ES.014. 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-7 Environmental Summons Summaries in the Reporting Month

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
16 – 31 August 2018	0	0	NA

Table ES-8 Environmental Prosecution Summaries in the Reporting Month

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
16 – 31 August 2018	0	0	NA

REPORTING CHANGE

ES.015. There were no reporting changes in the first Reporting Month.

SITE INSPECTION

ES.016. In this Reporting Period, joint site inspections to evaluate the site environmental performance at ***Contract 1*** have been carried out by the RE, ET and the Contractor on **16th , 23rd and 31st August 2018**. No non-compliance was noted during the site inspection.

FUTURE KEY ISSUES

ES.017. The Contractors should pay special attention on water quality mitigation measures and fully implement according to the ISEMM of the EM&A Manual, in particular in rainy season to prevent surface runoff with high SS content and other pollutants from flowing to local steam and Conservation Area (CA).

ES.018. Moreover, air quality and construction noise are the major environmental issues as under the Project Works. Air quality mitigation measures such as wheel wash facilities, watering of haul roads and covering of dusty materials with tarpaulin sheet should be implemented as far as practicable. Construction noise mitigation measures such as use of movable noise barriers and Quality Powered Mechanical Equipment (QPME) should be properly provided to reduce construction noise impact.

ES.019. Furthermore, daily cleaning and weekly tidiness shall be properly performed and maintained. In addition, mosquito control should be performed to prevent mosquito breeding on site.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Civil Engineering and Development Department 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*" (hereafter referred as "the Project"). The Project is a Designated Project to be implemented under Environmental Permit No. EP-534/2017. The layout plan of the Project is shown in ***Appendix A***. To facilitate the Project management, the Project works were separated into three different Contracts which are described below sub-sections.

1.1.2 *Contract No. CV/2016/10 - Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery* (hereafter referred as "*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.

1.1.3 *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* (hereafter referred as "*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.

1.1.4 *CEDD Contract No. (to be advised)* (hereafter referred as "*Contract 3*"):-

- 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

1.1.5 Hsin Chong Tsun Yip Joint Venture (hereinafter "HCTYJV") has been awarded the *Works Contract 1* on 5 December 2017. According to the Contract requirement, HCTYJV shall take over the responsibility for part of 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. Major works to be executed under the Project shall include to the following:

A Designated Works under EP-534/2017

(i) Site formation of about 8 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 600m) including a section of viaduct connecting the platform for Crematorium and Man Kam To Road and the pick-up/drop-off point at Man Kam To Road.;
(iii) Widening of about 900m of the existing Sha Ling Road;
(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

Non-Designated Works

(i) Construction of a sewage detention tank complete with odour and septicity control mechanism;
(ii) Construction of noise barriers along Sha Ling Road;
(iii) Construction of a new Refuse Collection Point (RCP) near the junction between Man Kam To Road and Sha Ling Road;
(iv) Landscaping works (including both hard and soft landscape works);
(v) Associated tree felling, transplanting and compensatory planting works;
(vi) Associated street lighting, street furniture and road marking, etc.; and
(vii) Other works which are specified in PS of the Contract.

1.1.6 Action-United Environmental Services & Consulting has been commissioned by HCTYJV as an Environmental Team to implement the 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 Environmental Team Leader (ETL) and verified by Independent Environmental Checker (IEC) was submitted to Environmental Protection Department (EPD) on 30 May 2018 and subsequently revised on 8 August 2018 upon comments from EPD. Further comment was issued by EPD on 15 August 2018 and the Baseline Monitoring Report (Version 3) was submitted to EPD on 13 September 2018 for endorsement.

1.1.7 This is the **1st** monthly EM&A report presenting the monitoring results and inspection findings for the reporting period from **16** to **31 August 2018**.

1.2 REPORT STRUCTURE

1.2.1 The Monthly Environmental Monitoring and Audit (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 ORGANIZATION AND CONSTRUCTION PROGRESS OF THE WORKS CONTRACT-1

2.1 WORKS CONTRACT-1 ORGANIZATION AND MANAGEMENT STRUCTURE

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

2.2 CONSTRUCTION PROGRESS

2.1.2 The master and three month rolling construction programs are enclosed in ***Appendix C*** and the major construction activities undertaken in this Reporting Month are listed below:-

- General site clearance and tree felling;
- Construction of temporary drainage works;
- Construction of access road;
- Construction of temporary site office; and
- Sheetpiling works for retaining wall.

2.3 SUMMARY OF ENVIRONMENTAL SUBMISSIONS

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

Table 2-1 Status of Environmental Licenses and Permits

Item	Description	License/Permit Status
1	Air Pollution Control (Construction Dust) Notification	Notified EPD on 20 December 2017
2	Chemical waste Producer Registration (WPN: 5231-641-H3937-01)	Application date: 28 December 2017 Date issued: 27 March 2018
3	Water Pollution Control Ordinance (Discharge License: WT00030795-2018)	Issued date: 9/5/2018 Expire Date: 31/5 2023
4	Billing Account for Disposal of Construction Waste (Account Number: 7029769)	Application no. : NA Date approved: NA

2.4 SUMMARY OF SUBMISSION UNDER THE ENVIRONMENTAL PERMIT REQUIREMENTS

2.1.4 ***Table 2-2*** summarized the submission status under the EP and/or FEP stipulation in the Reporting Month.

Table 2-2 Status of Submission as under EP and/or FEP Stipulation

Item	EP and / or FEP Stipulation	Description	Situation
1	Condition 2.10 of the EP and FEP	Management organization of : i) the main construction companies; ii) ET; and iii) IEC and the supporting team	Submitted on 11 April 2018
2	Condition 2.11 of the EP and FEP	i) Detailed phasing programme of all construction works; and ii) Location plan of all construction works	Submitted on 12 April 2018
3	Condition 2.13 of EP and Condition 2.12 of FEP	Contamination Assessment Plan (CAP)	Still yet submitted
4	Condition 2.14 of EP and Condition 2.13 of FEP	Grassland Reinstatement Plan	Submitted on 28 May 2018
5	Condition 2.15 of EP and Condition 2.14 of FEP	Vegetation Survey Report	Submitted on 21 May 2018
6	Condition 2.16 of EP and Condition 2.15 of FEP	Vegetation Transplantation Proposal	Submitted on 21 May 2018
7	Condition 2.18 of EP and Condition 2.17 of FEP	Woodland Compensation Plan	Submitted on 15 May 2018
8	Condition 2.19 of EP and Condition 2.18 of FEP	Monitoring and Survey Plan for Golden-headed Cisticola	Submitted on 9 May 2018
9	Condition 2.22 of EP and Condition 2.20 of FEP	Landscape & Visual Mitigation and Tree Preservation Plan(s)	Submitted on 18 May 2018
10	Condition 2.24 of EP and	Traffic Noise Mitigation Plan	Submitted on 17 July 2018

Item	EP and / or FEP Stipulation	Description	Situation
	Condition 2.22 of FEP		
11	Condition 3.3 of the EP and FEP	Baseline Monitoring Report (BMR)	BMR (version 1) submitted on 8 May 201; BMR (version 2) submitted on 8 Aug 2018 BMR (version 3 submitted on 13 Sep 2018
12	Condition 4.2 of the EP and FEP	The Contract Internet website	Internet website address has notified EPD on 15 Jun 2018

3 SUMMARY OF IMPACT MONITORING REQUIREMENT

3.1 GENERAL

3.1.1 The Environmental Monitoring and Audit 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; and
- Ecology

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

Table 3-1 Summary of EM&A Requirements

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

3.3 MONITORING LOCATIONS

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

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

Air Quality

3.3.3 There were three (3) air quality monitoring stations / air quality sensitive receivers (ASR) recommended in the Approved EM&A Manual Section 5.6.1.1. The designated air quality monitoring locations were listed in ***Table 3-2*** and illustrated in ***Appendix D***.

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

Location ID	ASR ID in EIA	Description	Location
ASR-1	A1	Village House along Man Kam To Road	Sha Ling Village House No.6
ASR-2	A2	Village House at San Uk Ling	San Uk Ling Village House

Location ID	ASR ID in EIA	Description	Location
			No.1
ASR-3	A3	Village House at Muk Wu Nga Yiu	Muk Wu Nga Yiu House No.28

3.3.4 Site visits were conducted by the Contractor and ET on 6th & 10th April 2018 to review and study sensitive receivers at surrounding and adjacent to the Project. Three (3) designated air quality monitoring locations recommended in the Approved EM&A Manual were identified during the site visit. Moreover, the premises owners for these 3 locations agreed to set up the monitoring equipment for monitoring work.

3.3.5 Based on rationale in Section 3.3.2, the Contract-related air quality monitoring location under construction phase of Contract 1 is shown in ***Table 3-3***.

Table 3-3 Air Quality Monitoring Location as Related the Works Contract-1

Location ID	ASR ID in EIA	Description	Location
ASR-1	A1	Village House along Man Kam To Road	Sha Ling Village House No.6

3.3.6 If the designated monitoring location is required to relocate, alternative monitoring location shall meet the following criterias:

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.

3.3.7 Alternative monitoring location shall agree with IEC and seek for EPD approval.

Construction Noise

3.3.8 There were are four (4) noise monitoring locations / noise sensitive receivers (NSR) recommended in the Approved EM&A Manual Section 6.5.1.1. Site visits were conducted by the Contractor and ET on 6th & 10th April 2018 to review and study sensitive receivers at surrounding and adjacent to the Project. Four designated noise monitoring locations recommended in the Approved EM&A Manual were identified during the site visits. They were listed in ***Table 3-4*** and shown in ***Appendix D***.

Table 3-4 Designated Construction Noise Monitoring Location under the Project

Location ID	NSR ID in EIA	Description	Location
CN-1	N5-2	Village house to the west of Sha Ling Road	Village house to the west of Sha Ling Road (free field condition)
CN-2	N9-1	Village house to the north of Man Kam To Road	Sha Ling Village House No. 25 (free field condition)
CN-3	N18-5	Village house near San Uk Ling	San Uk Ling Village House No. 18 (free field condition)
CN-4	N21-4	Village house of Muk Wu	Muk Wu Village House No. 267 (1m façade from the building)

3.3.9 Based on rationale in Section 3.3.2, the Contract-related noise monitoring location under construction phase of Contract 1 is listed in ***Table 3-5***.

Table 3-5 Noise Monitoring Location as Related the Works Contract-1

Location ID	ASR ID in EIA	Description	Location
CN-1	N5-2	Village house to the west of Sha Ling Road	Village house to the west of Sha Ling Road (free field condition)
CN-2	N9-1	Village house to the north of Man Kam To Road	Sha Ling Village House No. 25 (free field condition)

Water Quality

3.3.10 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 3-6*** and illustrated in ***Appendix D***.

Table 3-6 Designated Water Quality Monitoring Stations under the Project

Proposed Location ID	Co-ordinates		Description
	North	East	
M1	843 431	831 308	Midstream of Nam Hang Stream
M2	843 840	831 101	Downstream of Nam Hang Stream
M3	843 509	830 040	Wetland in the Conservation Area (CA) near Yuen Leng Chai
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

3.3.11 Based on rationale in Section 3.3.2, the Contract-related water quality monitoring station under construction phase of Contract 1 is listed in ***Table 3-7***.

Table 3-7 Water Quality Monitoring Station as Related the Works Contract-1

Proposed Location ID	Co-ordinates		Description
	North	East	
M3	843 509	830 040	Wetland in the Conservation Area (CA) near Yuen Leng Chai

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 — Once 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 were proposed by the ET and verified by the IEC prior to the commencement of the monitoring.

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 3-8***.

Table 3-8 Air Quality Monitoring Equipment

Equipment	Model
24-Hr 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	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 3-9***.

Table 3-9 Noise Monitoring Equipment

Equipment	Model
Integrating Sound Level Meter	B&K Type 2238
Calibrator	B&K Type 4231
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 3-10*** below.

Table 3-10 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 550A / YSI Pro 20
pH meter	AZ8685 pH meter
Turbidimeter	Hach 2100Q
Salinometer	Atago refractometer Atago S Salinity Meter / AZ8371 Salinity Meter
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 a local HOKLAS-accredited laboratory - *ALS Technichem (HK) Pty Ltd*.

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 in two month 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 3-11, 3-12*** and ***3-13*** below.

Table 3-11 Action and Limit Levels for Air Quality Monitoring

Monitoring Stations	Action Level ($\mu g/m^3$)		Limit Level ($\mu g/m^3$)	
	1-hour	24-hour	1-hour	24-hour
ASR-1	331	181	500	260

Table 3-12 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hours on normal weekdays	When one documented complaint is received	> 75* dB(A)

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

Table 3-13 Action and Limit Levels for Water Quality

Monitoring Location	DO (mg/L)		Turbidity (NTU)		SS (mg/L)	
	Action Level	Limit Level	Action Level	Limit Level	Action Level	Limit Level
M3	4.58	4.49	5.6	5.9	9.3	9.5

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 Air quality impact monitoring including 1-hour TSP and 24-hour TSP were commenced on 17 August and 16 August 2018 respectively. Before commencement of construction phase impact monitoring, impact monitoring schedule was submitted to relevant party on ***30 July 2018*** which shown in ***Appendix G***.

4.1.2 In this Reporting Month, 3 occasions of air quality monitoring were undertaken at designated air quality monitoring location ASR-1. The monitoring results for 24-hour and 1-hour TSP are summarized in ***Table 4-1***. The database of 24-hour TSP is shown in ***Appendix H*** and the graphical plots of 24-hour and 1-hour TSP result are shown in ***Appendix I***.

Table 4-1 Summary of 24-hour and 1-hour TSP Monitoring Results at ASR-1

Date	24-hour TSP (μg/m^3)	1-hour TSP (μg/m^3)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
16-Aug-18	34	17-Aug-18	9:26	41	42	45
22-Aug-18	74	23-Aug-18	9:39	74	76	81
28-Aug-18	40	29-Aug-18	9:43	60	63	65
Average (Range)	**49 (34 - 74)**	Average (Range)		**61 (41 – 81)**		

4.1.3 The meteorological data during the impact monitoring days are summarized in ***Appendix J***.

4.2 MONITORING RESULTS EXCEEDANCE

4.2.1 As shown in ***Table 4-1***, the monitoring results of 24-hour and 1-hour TSP monitoring in the Reporting Month were well below the Action Level. No Notification of Exceedance (NOE) of air quality monitoring criteria was issued and therefore corrective action was not required.

5 CONSTRUCTION NOISE

5.1 RESULTS

5.1.1 Noise impact monitoring was commenced on 17 August 2018. Before commencement of construction phase impact monitoring, impact monitoring schedule was submitted to relevant party on ***30 July 2018*** which shown in ***Appendix G***.

5.1.2 In this Reporting Month, three (3) occasions of noise monitoring were undertaken at designated noise monitoring location CN-1. The sound level were set in a free field situation, and therefore a façade correction of +3dB(A) has been added according to acoustical principles and EPD guidelines. Since the distance of current construction works of Contract 1 over 300m from CN-2, noise monitoring was not performed at that location in this Reporting Month. The monitoring result of noise monitoring is show in ***Table 5-1*** and the graphical plots are shown in ***Appendix I***.

Table 5-1 Summary of Construction Noise Monitoring Results, dB(A)

Date	Start Time	1st Leq_{5min}	2nd Leq_{5min}	3rd Leq_{5min}	4th Leq_{5min}	5th Leq_{5min}	6th Leq_{5min}	Leq_{30min}	Corrected* Leq_{30min}
17-Aug-18	9:35	62.6	61.5	73.8	69.4	60.3	65.0	68	***71***
23-Aug-18	9:45	62.5	62.6	60.5	59.8	58.4	67.0	63	***66***
29-Aug-18	9:47	65.9	61.1	66.3	62.2	60.0	63.0	64	***67***
Limit Level		**-**						**75**	

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

5.1.3 Prior and after noise monitoring, the accuracy of the sound level meter has been checked by an acoustic calibrator to ensure the measurement within acceptance range of ±0.5dB. Moreover, wind speed checked by portable wind speed meter has been performed before noise monitoring. Noise measurements should not be 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 ***Table 5-1***, no noise monitoring results exceeded the Limit Level in the Reporting Month. No Notification of Exceedance (NOE) of construction noise criterion was issued and no corrective action was therefore required.

6 WATER QUALITY

6.1 RESULTS

6.1.1 Water quality impact monitoring was commenced on 16 August 2018. Before commencement of construction phase impact monitoring, impact monitoring schedule was submitted to relevant party on ***30 July 2018*** which shown in ***Appendix G***.

6.1.2 In the Reporting Month, a total of 7 monitoring days were carried out at designated monitoring station M3 for water quality impact monitoring. The monitoring result of key parameters including Dissolved Oxygen, Turbidity and Suspended Solids are summarized in ***Table 6-1***. 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

Date	Parameters		
	DO (Averaged) (mg/L)	Turbidity (Averaged) (NTU)	Suspended Solids (Averaged) (mg/L)
16-Aug-18	6.46	**17.8**	**23.0**
18-Aug-18	5.57	**17.1**	8.5
20-Aug-18	5.80	**14.4**	9.0
22-Aug-18	5.43	**16.3**	**13.5**
24-Aug-18	5.80	**19.8**	**10.5**
28-Aug-18	5.61	**16.9**	**11.5**
30-Aug-18	7.02	**104.0**	**36.0**

Remarks: bold and underline indicated Limit Level exceedance

6.1.3 During the Reporting Month, field measurements at M3 showed that temperature of stream water were within 25.3°C to 29.6°C, the salinity concentrations within 0.1 to 0.2 ppt, pH values within 6.8 to 8.6 and the stream flow velocity between 0.1 and 0.2 m/sec. During the period of water quality monitoring, except for 24th and 25th August 2018, all monitoring days were rainy.

6.2 WATER QUALITY MONITORING EXCEEDANCE

6.2.1 In this Reporting Period, a total of twelve (12) Limit Level exceedances, including seven (7) Limit Level exceedances of turbidity and five (5) Limit Level exceedances of Suspended Solids were recorded at M3 they are summarized in ***Table 6-2***.

Table 6-2 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
M3	0	0	0	**7**	0	**5**	0	**12**	0	0

6.2.2 Investigation for the cause of water quality exceedances have been undertaken by ET. Investigation results revealed that the construction activities undertaken by Contract 1 were limited since contract works commencement on 16 August 2018. Water quality mitigation measures, wastewater treatment facilities have been implemented and exposed surface have been covered by cement motar and tarpaulin as far as practicable to minimize generation of muddy runoff during rain. In addition, construction of temporary drainage system was on-going. Nevertheless, except for 24th and 25th August 2018, there were continuous heavy rainstorms since the contract commencement. It is considered that the exceedances were related to the rainstorm and unlikely caused by the works under the Contract 1.

6.2.3 Notifications of Exceedance (NOE) were issued to relevant parties upon confirmation of the monitoring result. The exceedance investigation findings are summarized in ***Table 6-3***.

Table 6-3 Summary of Investigation Finding of Water Quality Exceedance in the Reporting Period

Date of Exceedance	Exceeded Parameter	Cause of Water Quality Exceedance In Brief
16 August 2018	NTU & SS	HCTYJV had implemented water quality mitigation measures and there was no adverse water quality impact observed during the site inspection. It is considered that the exceedances were related to the rainstorm and unlikely caused by the works under the Project.
18 and 20 August 2018	NTU	HCTYJV had implemented water quality mitigation measures and there was no adverse water quality impact observed during the site inspection. In addition, there were no exceedances of Suspended Solids recorded on 18 and 20 August 2018. It is considered that the exceedances were related to the rainstorm and unlikely caused by the works under the Project.
22, 24 and 28 August 2018	NTU & SS	In our investigation, HCTYJV had implemented water quality mitigation measures. Having reviewed the baseline monitoring result at M3, higher value of Suspended Solids (23.5mg/L) was obtained during rainy condition. It is considered that the exceedances were related to the rainstorm and unlikely caused by the works under the Project.
30 August 2018	NTU & SS	The water quality at M3 was appeared turbid. There were continuous heavy rainstorms on 29 August and 30 August in which two occasions of Amber Rainstorm Warning Signal and one occasion of Red Amber Rainstorm Warning Signal and landslip warning were issued by the Observatory on 29 August. Moreover, special announcement on flooding in the northern New Territories was in force during 29 and 30 August. On 30 August, landslip at hillside and soil erosion was observed. In view of continuous heavy rainstorms, the water quality of the seasonal watercourse was highly affected by the stirred up sediment and soil erosion from the surrounding environment. Preliminary investigation concluded that the exceedances were likely related to the rainstorm.

6.2.4 Although the exceedances were concluded as not related the works under Contract 1, the Contractor was reminded to fully implement water quality mitigation measures such as exposed surface and area with low operation frequency should be covered by impervious sheeting. Moreover, temporary drainage and collection system for site runoff should be fully accomplished as soon as possible which could highly reduce water quality impact to the surrounding watercourse and ecosystem.

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)	√	√	√	√	√	√	√	√	√	√	√	√
Birds (night)				√	√	√	√	√	√	√		
Herpetofauna				√	√	√	√	√	√	√		
Dragonflies			√	√	√	√	√	√	√	√		
Butterflies			√	√	√	√	√	√	√	√		
Aquatic fauna	√	√	√	√	√	√	√	√	√	√	√	√

Mammal Survey

7.2.4 Mammal surveys will be conducted along the proposed transects (shown in Appendix D of the survey report) 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 D of the survey report) 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 D of the survey report) 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 D of the survey report) 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

7.3.1 Before construction work commencement, one-off pre-survey of ecological monitoring was undertaken on **7th *August 2018***. The weather was fine. The survey included day and night sections, covering wetland and non-wetland areas. The survey was conducted by transect and fixed points. All species seen will be identified and counted as accurately as possible. Results of the pre-surveys are presented below:

Mammal

7.3.2 As unknown bat was found in the project site.

Birds Survey in daytime and nighttime

7.3.3 There were a total of 24 bird individuals from 17 species recorded during the survey. Some species of conservation interests were recorded in the monitoring area: *Milvus migrans*, Black Kite (黑鳶), *Chalcophaps indica*, Common Emerald Dove (綠翅金鳩), *Halcyon smyrnensis*, White-throated Kingfisher (白胸翡翠) *Garrulax canorus*, Chinese Hwamei (畫眉).

Herpetofauna

7.3.4 There were a total of 4 individuals from 2 species of reptile recorded. There were a total of 6 amphibian individuals from 4 species were recorded, including a species of conservation interests, *Rana taipehensis,* Two-striped Grass Frog (台北蛙).

Dragonfly

7.3.5 For Dragonfly Survey, there were a total of 5 odonate individuals from 4 species, a species of conservation interests, *Urothemis signata,* Scarlet Basker (赤斑曲鈎脈蜻) was found in upland glass land.

Butterfly

7.3.6 There were a total of 7 butterfly individuals from 5 species recorded.

Aquatic Fauna Survey (Freshwater communities)

7.3.7 A crab of conservation importance *Somanniathelphusa zanklon* (鐮刀束腰蟹) was found in marsh.

7.3.8 The summaries of faunal pre-survey result are shown in ***Tables 7-4***, ***7-5***, ***7-6***, ***7-8*** and ***7-9***.

Table 7-4 Result of Avifauna Survey

Scientific Name	English Name	Chinese Name	Conservation Status	Non-wetland	Wetland
Milvus migrans	Black Kite	黑鳶	Fellowes et al. (2002): RC; Appendix 2 of CITES	1	
Chalcophaps indica	Common Emerald Dove	綠翅金鳩	China Red Data Book Status: (Vulnerable)		1
Eudynamys scolopaceus	Asian Koel	噪鵑			1
Caprimulgus affinis	Savanna Nightjar	林夜鷹		1	
Apus nipalensis	House Swift	小白腰雨燕		4	
Halcyon smyrnensis	White-throated Kingfisher	白胸翡翠	Fellowes et al. (2002): LC		1
Lanius schach	Long-tailed Shrike	棕背伯勞			1
Dicrurus macrocercus	Black Drongo	黑卷尾			1
Pycnonotus sinensis	Chinese Bulbul	白頭鵯		3	
Pycnonotus aurigaster	Sooty-headed Bulbul	白喉紅臀鵯		5	
Hirundo rustica	Barn Swallow	家燕		1	
Prinia flaviventris	Yellow-bellied Prinia	黃腹鷦鶯		1	
Garrulax canorus	Chinese Hwamei	畫眉	Appendix 2 of CITES	1	
Garrulax perspicillatus	Masked Laughingthrush	黑臉噪鶥			2

Table 7-5 Result of Reptile Survey

Scientific Name	English Name	Chinese Name	Non-wetland	Wetland
Calotes versicolor	Changeable Lizard	變色樹蜥, 雞冠蛇	1	
Hemidactylus bowringii	Bowring's Gecko	原尾蜥虎	3	

Table 7-6 Result of Amphibian Survey

Scientific Name	English Name	Chinese Name	Conservation Status	Non-wetland	Wetland
Kaloula pulchra	Asiatic Painted Frog	花狹口蛙		3	
Microhyla pulchra	Marbled Pigmy Frog	花姬蛙			1
Rana taipehensis	Two-striped Grass Frog	台北蛙	Fellowes et al. (2002): LC		1
Polypedates megacephalus	Brown Tree Frog	斑腿泛樹蛙		1	

Table 7-7 Result of Butterfly Survey

Scientific Name	English Name	Chinese Name	Non-wetland	Wetland
Ampittia dioscorides	Bush Hopper	黃斑弄蝶		1
Parnara bada	Oriental Straight Swift	么紋稻弄蝶	1	
Deudorix epijarbas	Cornelian	玳灰蝶	1	
Spindasis lohita	Long-banded Silverline	銀線灰蝶	1	
Abisara echerius	Plum Judy	蛇目褐蜆蝶	3	

Table 7-8 Result of Odonate Survey

Scientific Name	English Name	Chinese Name	Conservation Status	Non-wetland	Wetland
Brachydiplax chalybea	Blue Dasher	藍額疏脈蜻			1
Orthetrum glaucum	Common Blue Skimmer	黑尾灰蜻		2	
Urothemis signata	Scarlet Basker	赤斑曲鈎脈蜻	Fellowes et al. (2002): LC	1	
Ceriagrion auranticum	Orange-tailed Sprite	琉球橘黃蟌		1	

Table 7-9 Result of Freshwater Communities Survey in the Reporting Month

Scientific Name	English Name	Chinese Name	Conservation Status	Non-wetland	Wetland
Somanniathelphusa zanklon		鐮刀束腰蟹	Fellowes et al. (2002): GC	1	

7.3.9 The detailed survey report is attached in ***Appendix K***.

7.4 CONCLUSION OF PRE-SURVEY

7.4.1 Before construction work commencement, one-off pre-survey of ecological monitoring for sensitive habitat was undertaken on 7th August 2018t.

7.4.2 The tentative ecology inspection and monitoring in the next reporting period (September 2018) is scheduled on 11th September 2018.

8 LANDSCAPE AND VISUAL

8.1 REQUIREMENT

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

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

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

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

8.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH

8.2.1 In the Reporting Period, landscape & Visual inspection was carried out by the Registered Landscape Architect (RLA) on ***29 August 2018***. The findings / deficiencies observed during the inspection are presented below:

Date	Findings / Deficiencies
29 August 2018	Observation: 1. No hoarding and barrier was provided for demarcating the construction site. 2. No Tree Protection Zone (TPZ) was provided for some of the retained trees. 3. Earth bund was set up to filter the runoff from the construction site, however, muddy water was stilled observed which may affect the nearby natural streams or river. Moreover, no precautionary control measures were provided to protect the wet woodland.
	Reminder: 1. Construction works were being started. Contractor was reminded to provide TPZ with robust fence at the dripline of all retained trees. No works were allowed to undertake within the TPZ. 2. Proper precautionary control measures should be implemented to protect natural streams and rivers from adverse impact.

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 Period 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	Quantity	Disposal Location
C&D Materials (Inert) (m^3)	0	-
Reused in this Contract (Inert) (m^3)	0	-
Reused in other Projects (Inert) (m^3)	0	-
Disposal as Public Fill (Inert) (m^3)	0	-

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

Type of Waste	Quantity	Disposal Location
Recycled Metal (kg)	0	-
Recycled Paper / Cardboard Packing (kg)	0	-
Recycled Plastic (kg)	0	-
Chemical Wastes (kg)	0	-
General Refuses (m^3)	2.094	NENT Landfill

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

10 SITE INSPECTION

10.1 REQUIREMENT

10.1.1 According to the approved Environmental Monitoring and Audit Manual, environmental site inspection should be formulated by the ET Leader. Regular environmental site inspections shall be carried out to assess the environmental performance once per week.

10.2 FINDINGS / DEFICIENCIES DURING SITE INSPECTION IN THE REPORTING MONTH

10.2.1 In the Reporting Period, joint site inspections to evaluate the site environmental performance were carried out by the RE, ET and the Contractor on ***17, 21*** and ***31 August 2018*** during the Contract's work commenced. Moreover, IEC attended a joint site inspection on ***21 August 2018***. No non-compliance was noted.

10.2.2 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
16 August 2018	• General wastes was observed on the ground at new site office. The Contractor should dispose it regularly and provide proper storage area.	• Not required for reminder.
21 August 2018	• Dry dusty haul road was observed. The Contractor should keep the haul road clean and spray the haul road with water more frequently for dust suppression. • A gap which may allow the surface runoff bypass the temporary desilting barrier at retaining wall RW1 was observed. The Contractor should fill up the gap to ensure all the runnoff water was diverted to the barrier for desilting.	• Water spraying was provided regularly for dust suppression. • The gap at the desilting barrier at retaining wall RW1 was blocked.
31 August 2018	• Insufficient capacity of silt trap at the drainage channel was observed. The Contractor should increase the capacity of the desilting facilities (e.g. add sedimentation tank and WetSep) to ensure all the treated runoff fulfills the discharge requirement of the discharge licence. • Generation of turbid water was observed in the temporary catchpit due to water flow. The Contractor should modify the catchpit to avoid generation of turbid water. • Soil bund without proper covered was observed. The Contractor should cover the soil bund with tarpaulin sheet to reduce runoff with high soil content during rainy days.	• To be followed. • Sediement in the catchpit was cleaned and no turbid runoff was observed. • To be followed.

10.2.3 The Contractor was reminded to clear the stagnant water within the site areas after raining to prevent mosquito breeding. Moreover, temporary drainage and collection system for runoff shall be fully accomplished as soon as possible. The areas with exposed soil and have low operation frequency shall be covered by impervious sheeting. Furthermore, regularly maintenance should be provided for all wastewater treatment facilities (WetSed) to ensure it functions properly.

11 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

11.1 ENVIRONMENTAL COMPLAINT, SUMMONS AND PROSECUTION

11.1.1 In the Reporting Period, no environmental complaint was received. 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***.

Table 11-1 Statistical Summary of Environmental Complaints

Reporting Period	Environmental Complaint Statistics		
	Frequency	Cumulative	Complaint Nature
16 – 31 August 2018	0	0	NA

Table 11-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
16 – 31 August 2018	0	0	NA

Table 11-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
16 – 31 August 2018	0	0	NA

11.1.2 In addition, no complaints received and emergency events 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 and they are summarized presented in ***Appendix N***.

12.1.2 The Works of Contract 1 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***.

Table 12-1 Environmental Mitigation Measures

Issues	Environmental Mitigation Measures
Water Quality	• Provided efficient silt removal facilities to reduce SS level before effluent discharge. • Provided ditches, earth bunds or sand bag barriers to minimize polluted runoff. • Temporary drainage was provided to prevent runoff going through site surface and minimize polluted runoff. • Provided perimeter cut-off drains at site boundaries to intercept storm runoff from crossing the site. • Exposed slopes surface were compacted and covered with tarpaulin or similar means • Provided portable chemical toilets on site.
Air Quality	• Maintain damp / wet surface on access road. • Maintain low vehicular speed within the works areas. • Provided vehicle wheel washing facilities at each construction site exit; • Provided water spraying for all active works area. • Stockpiles of dusty material were covered with impervious sheeting. • Provided workers to clear dusty materials at the vehicle entrance or exit regularly. • Stockpile more than 20 bags of cement or dry pulverized fuel ash (PFA) has been covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.
Noise	• Restricted operation time of plants from 07:00 to 19:00 on any working day except for Public Holiday and Sunday. • Keep good maintenance of plants • Placed noisy plants away from residence and school • Provided noise barriers or hoarding to enclose the noisy plants or works • Shut down the plants when not in used.
Waste and Chemical Management	• Provided on-site sorting prior to disposal • Followed requirements and procedures of the “Trip-ticket System” • Predicted required quantity of concrete accurately • Collected the unused fresh concrete at designated locations in the sites for subsequent disposal
General	• The site was generally kept tidy and clean.

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:

(i) General Site Clearance
(ii) Construction of Access Road
(iii) Construction of Temporary Site Office
(iv) Forming a cut slope and installation of soil nailing
(v) Sheetpiling works for retaining wall
(vi) Construction of retaining wall

12.3 KEY ISSUES FOR THE COMING MONTH

12.3.1 Key issues to be considered in the coming month for the works of Contract 1 include:

- Implementation of control measures for rainstorm;
- Regular clearance of stagnant water during wet season;
- Implementation of dust suppression measures at all times;
- Potential wastewater quality impact due to surface runoff;
- Potential fugitive dust quality impact due from the dry/loose/exposure soil surface/dusty material;
- Ensure dust suppression measures are implemented properly;
- Sediment catch-pits and silt removal facilities should be regularly maintained;
- Discharge of site effluent to the nearby wetland is prohibited;
- Nearby wetland prohibited stockpiling and/or disposal of materials;
- Follow-up of improvement on general waste management issues; and
- Implementation of construction noise preventative control measures.

13 CONCLUSIONS AND RECOMMENTATIONS

13.1 CONCLUSIONS

13.1.1 This is the **1st** monthly Environmental Monitoring and Audit Report presenting the monitoring results and inspection findings for the period of **16th** to **31st August 2018**.

13.1.2 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 No noise complaint (which is an Action Level exceedance) was received and no construction noise measurement result that exceeded the Limit Level was recorded in this Reporting Month. No NOEs or the associated corrective actions were therefore issued.

13.1.4 For water quality monitoring, a total of 12 Limit Level (LL) exceedances, namely 7 LL exceedance of turbidity and 5 LL exceedances of SS were recorded at designated monitoring location M3. Investigation for the cause of water quality exceedances have been undertaken by ET. Investigation results revealed that the construction activities undertaken by Contract 1 were limited since contract works commencement on 16 August 2018. As water quality mitigation measures, wastewater treatment facilities have been implemented and exposed surface have been covered by cement motar as far as practicable to minimize generation of muddy runoff during rain. In addition, construction of temporary drainage system was on-going. Nevertheless, except for 24th and 25th August 2018, there were continuous heavy rainstorms since the contract commencement. It is considered that the exceedances were related to the rainstorm and unlikely caused by the works under the Contract 1.

13.1.5 Before construction work commencement, one-off pre-survey of ecological monitoring for sensitive habitat within the site area of Contract 1 was undertaken on ***7th August 2018***. Moreover, Landscape and visual inspection was undertaken by the RLA on ***29th August 2018***.

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

13.1.7 In the Reporting Period, joint site inspections to evaluate the site environmental performance were carried out by the RE, ET and the Contractor on ***17th, 21st*** and ***31st August 2018*** and IEC attended joint site inspection on ***21st August 2018***. No non-compliance of environmental issue was recorded. In general, it was reminded that water quality mitigation measures should be fully implemented and good housekeeping practice should be maintained.

13.2 RECOMMENDATIONS

13.2.1 The Contractors should pay special attention on water quality mitigation measures and fully implement according to the ISEMM of the EM&A Manual, in particular in rainy season to prevent surface runoff with high SS content and other pollutants from flowing to local steam and Conservation Area (CA).

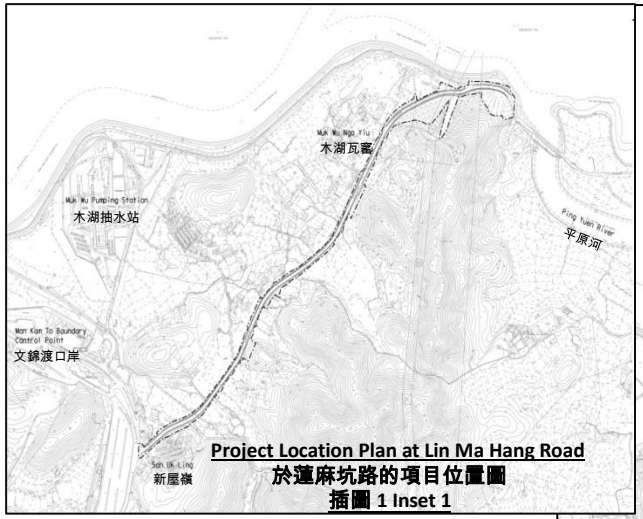
13.2.2 Construction noise would be a key environmental issue during construction phase of the Project. Noise mitigation measures such as using quiet plants should be implemented in accordance with the EM&A requirement.

13.2.3 Since construction site under the Works of Contract 1 of the Project is located near villages, HCTYJV should fully implement air quality mitigation measures to reduce construction dust emission.

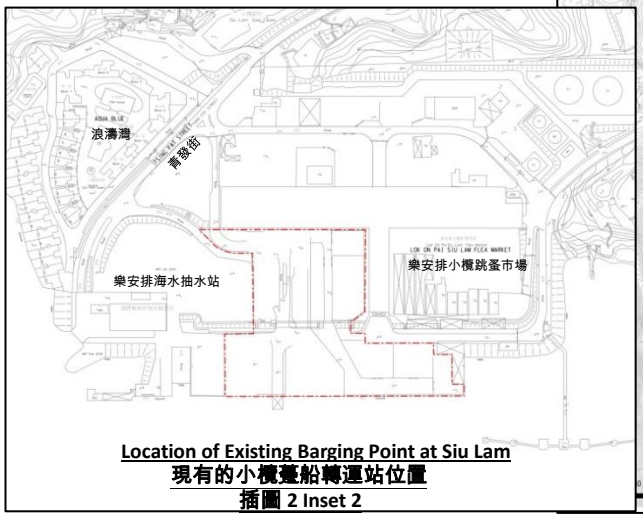
13.2.4 Furthermore, daily cleaning and weekly tidiness shall be properly performed and maintained. In addition, mosquito control should be performed to prevent mosquito breeding on site.

Appendix A

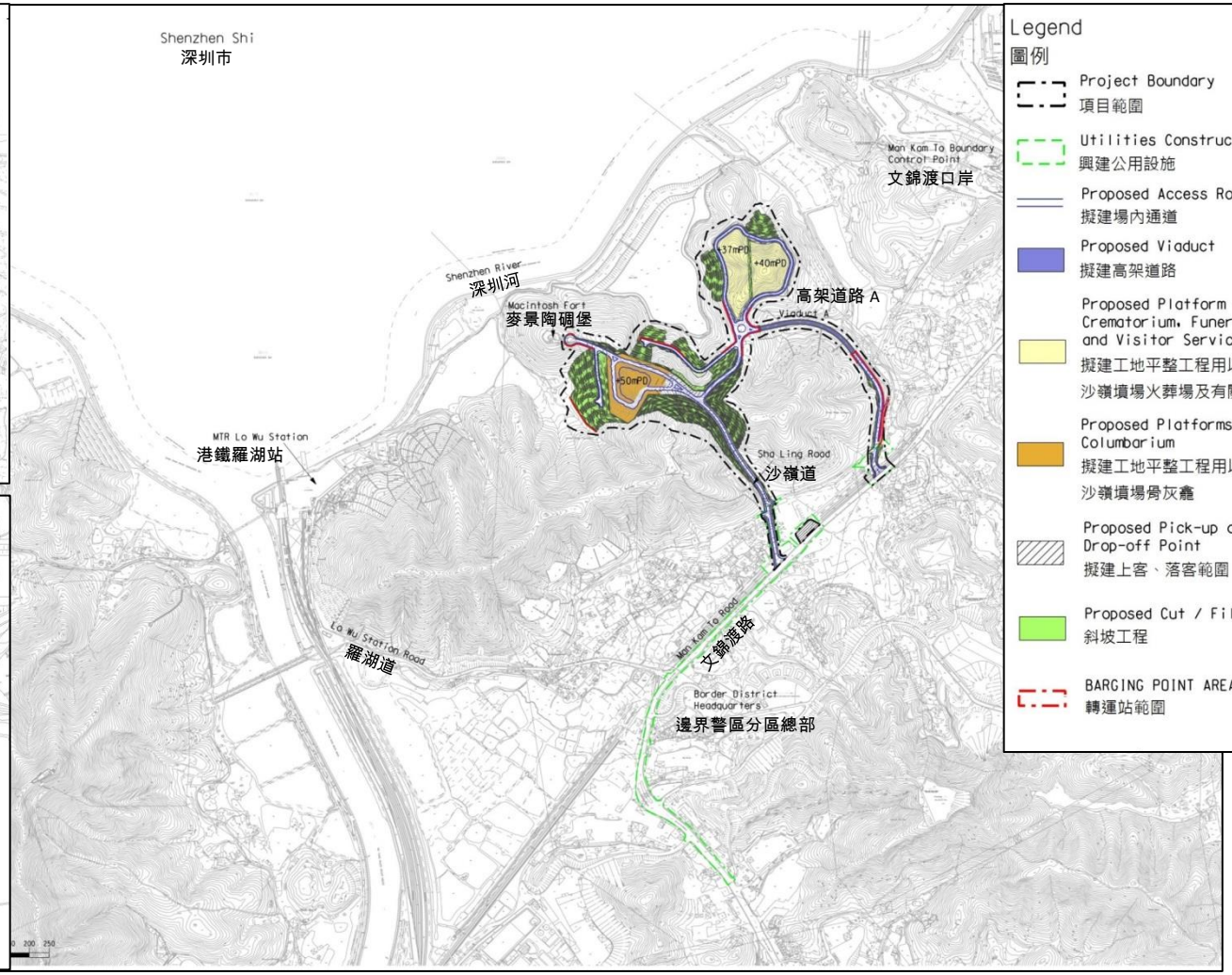
Layout Plan of the Project



Project Location Plan at Lin Ma Hang Road
於蓮麻坑路的項目位置圖
插圖 1 Inset 1



Location of Existing Barging Point at Siu Lam
現有的小欖躉船轉運站位置
插圖 2 Inset 2



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

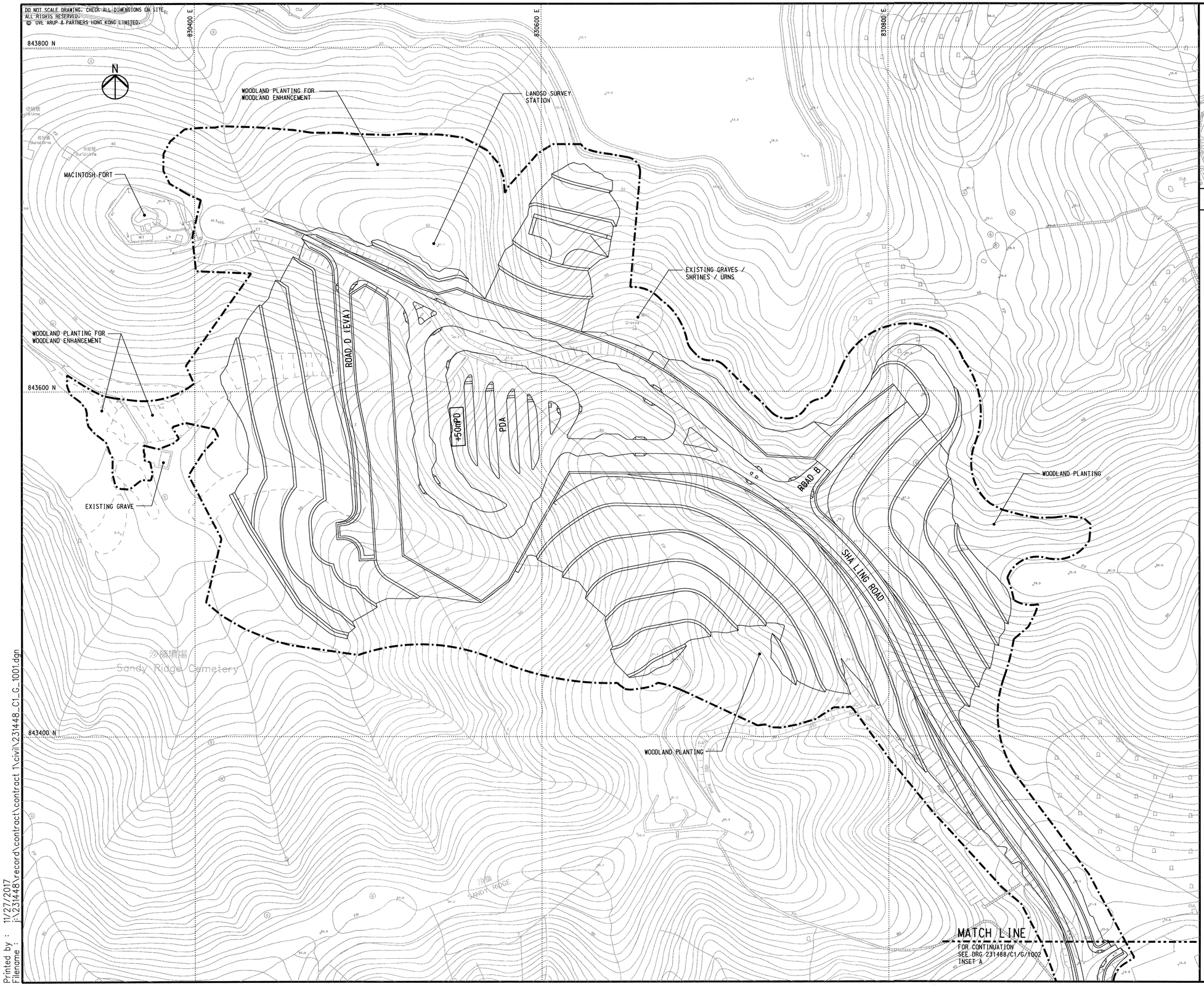
工程名稱：沙嶺墳場興建骨灰龕、火葬場及有關設施的工地平整及相關基建工程

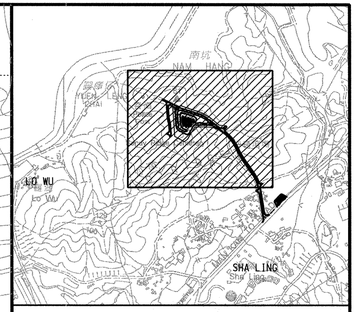
Figure 1: Project Location Plan

圖 1：項目位置圖

(This figure was prepared based on Figures 1.1-1.3 of the Approved EIA Report No. AEIAR-198/2016)
(本圖是根據環境影響評估報告編號 AEIAR-198/2016，圖 1.1-1.3 編制)

Environmental Permit No.: EP-534/2017
環境許可證編號：EP-534/2017





KEY PLAN

LEGEND:

PROPOSED WORKS SITE

+50mPD — SITE FORMATION LEVEL

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

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

Drawing title

GENERAL LAYOUT
(SHEET 1 OF 3)

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

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

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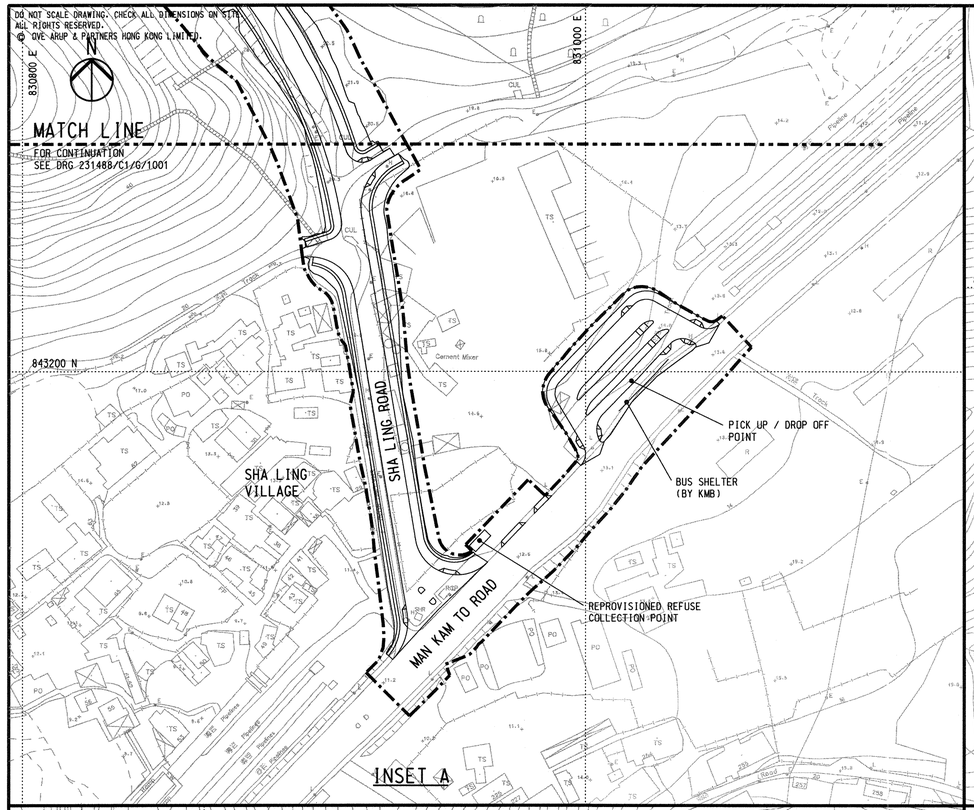

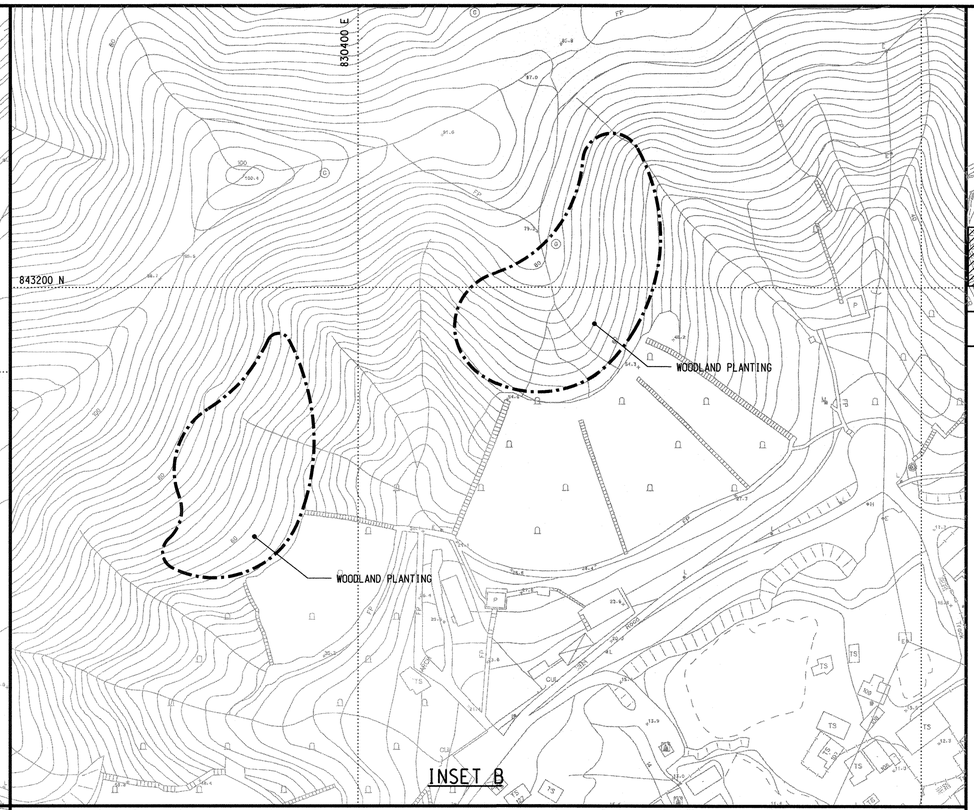

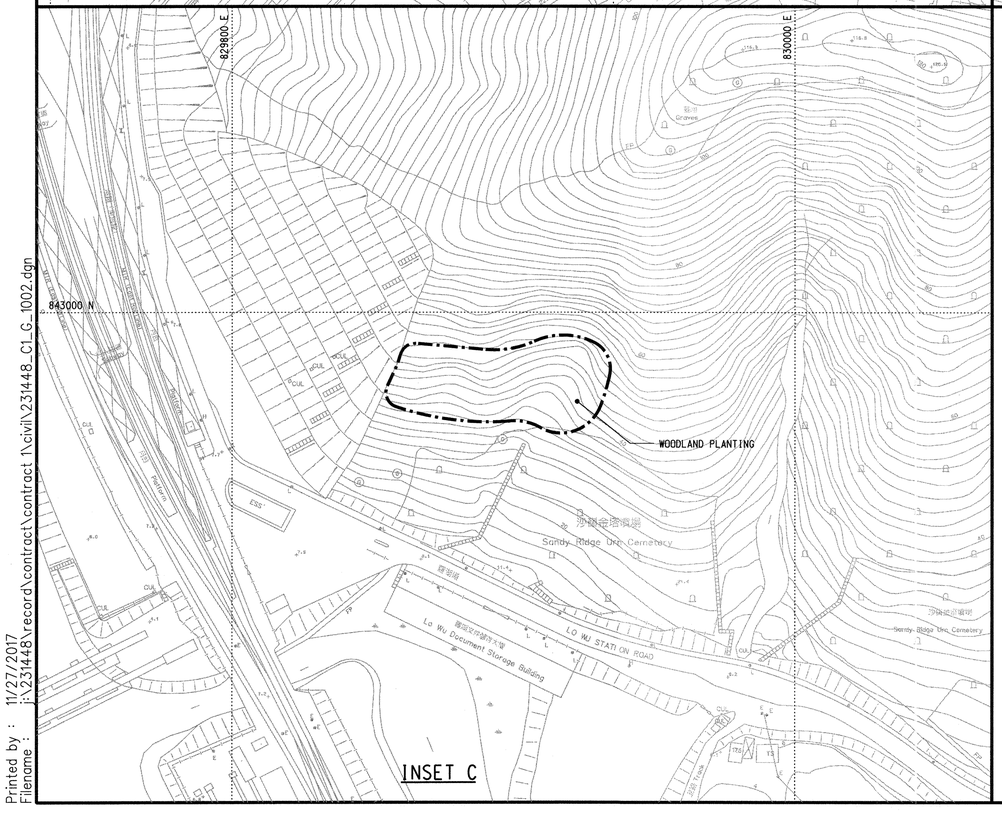

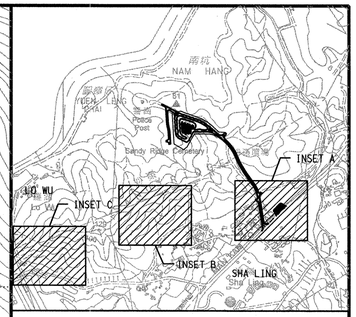

KEY PLAN

LEGEND:

PROPOSED WORKS SITE

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

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

Drawing title

GENERAL LAYOUT
(SHEET 2 OF 3)

Drawing no.	Rev.
231448/C1/G/1002	-

Drawn	Date	Checked	Approved
WM	12/16	AW	DL

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Status: CONTRACT

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

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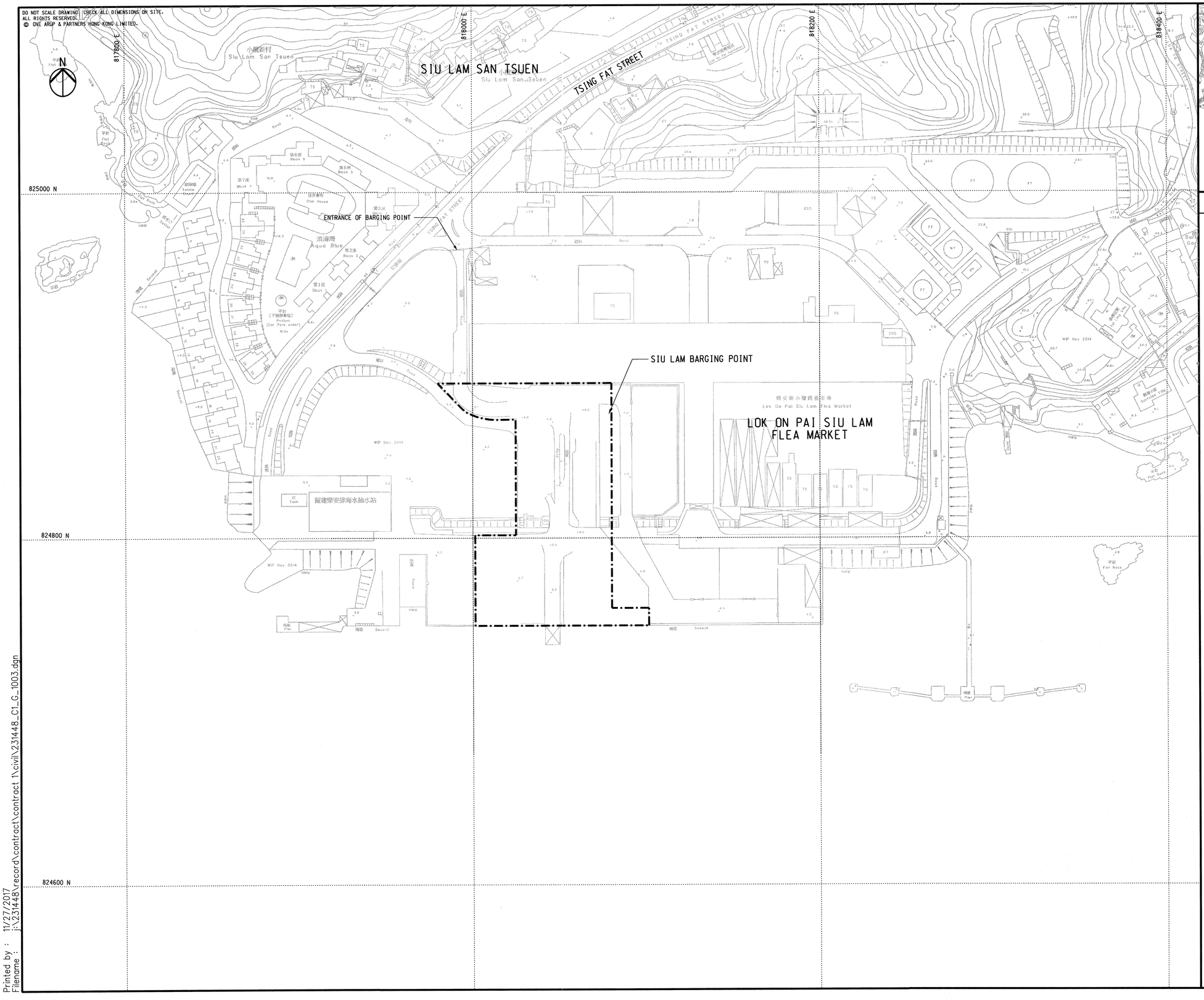

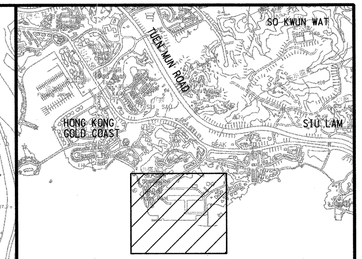

KEY PLAN

LEGEND:

PROPOSED WORKS SITE

Rev	Description	By	Date

Consultant

ARUP

Contract No. and Title:

Contract No. CV/2016/10

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

Drawing title

GENERAL LAYOUT
(SHEET 3 OF 3)

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

Drawn	Date	Checked	Approved
WM	12/16	AW	DL

Scale: 1:1000 @A1

Status: CONTRACT

土木工程拓展署
Civil Engineering and Development Department

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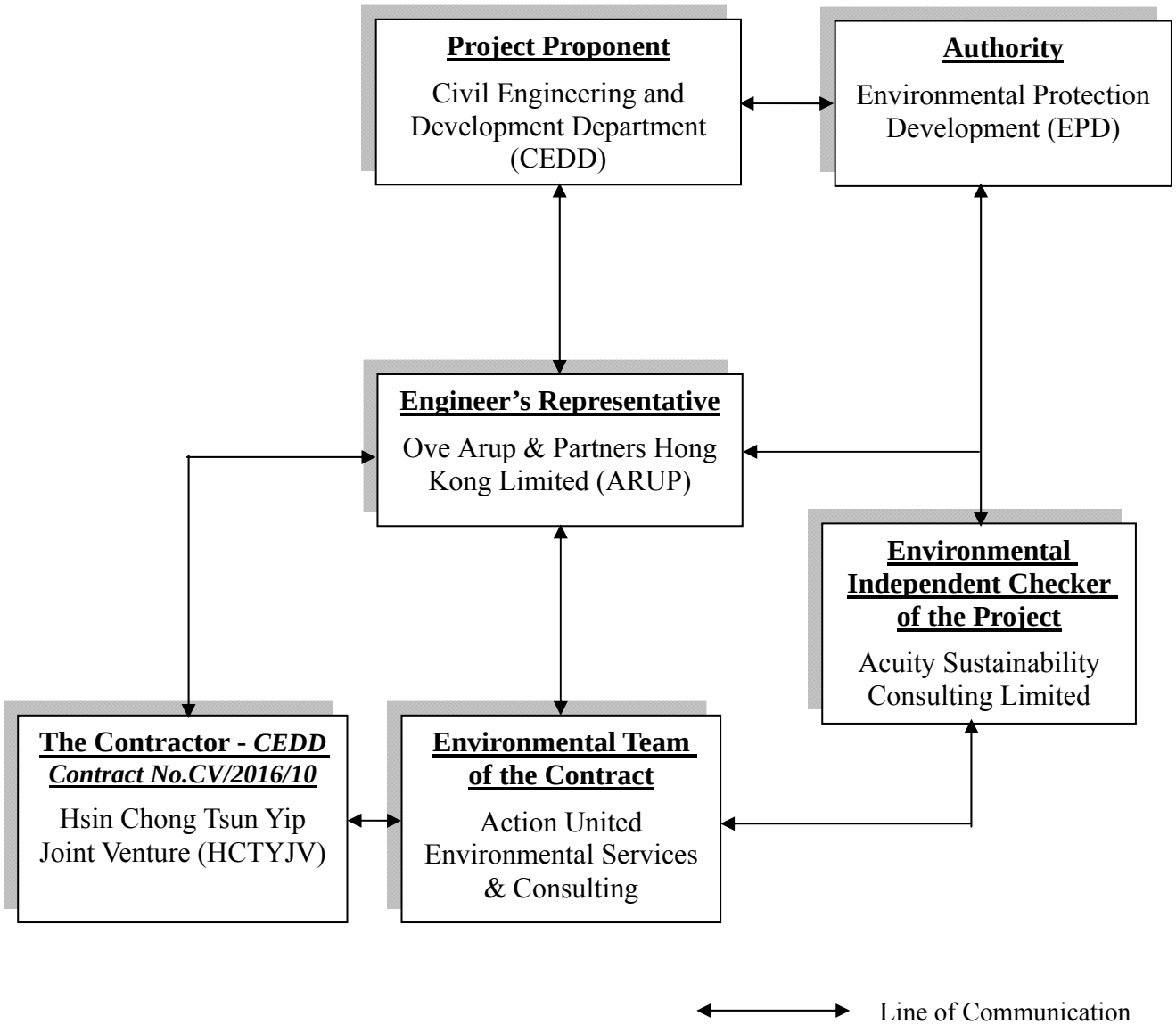
Appendix B

Organization Structure and Contact Details of Relevant Parties

The Contract's Environmental Management Organization



Head Office

Site Office

- **Project Director** — Mr. Benjamin Chow, 6111 0980
- **Project Director** — Mr. KAN Kwok Cheung, 9495 2408
- **Commercial Manager** — Mr. Eddie LEUNG, 9495 2408
- **Construction Manager** — Mr. Kwong Yuk Kin, Keniel, 9863 0020
- **Safety Manager** — Mr. Joe TANG, 9861 3818
- **Env. Manager** — Mr. Anthony CHAN, 2579 8315
- **Assistant Commercial Manager** — Mr. Leung Hon Chung, 9282 6338
- **Programme Manger** — Mr. Cheng Chung Ming, Nelson, 9302 5927
- **Geotechnical Team Leader** — Mr. Ho Ka Fai, Kelvin, 9161 7039
- **Site Agent** — Mr. Ho Man To, 9507 9634
- **Civil Team Leader** — Mr. Chan Man Chi, Alex, 9197 1521
- **Risk Manger** — Mr. Li Hoi Wing, 5948 6289
- **Environmental Team Leader** — Action-United Environmental Services & Consulting
- **Project Quantity Surveyor** — Mr Lawrence LAW, 9191 7132
- **Deputy Site Agent** — Mr. Dennis Chan, 9756 8016
- **Land Surveyor** — Mr. Cheung Hon Kit, Ronny, 9081 2304
- **Senior Quantity Surveyor** — Mr Law Wing Keung, 9121 8689
- **Traffic Management Manager** — Mr. Lam Wai On, Frankie, 6159 1140
- **Geotechnical Engineer** — TBC
- **Site Engineer** — Mr. Rex Cheung, 9049 1669
- **Safety Officer** — Mr Kam Chak Hay, Martin, 9202 5243
- **Environmental Officer** — Mr. Lam Wai On, Frankie, 6159 1140
- **Site Superintendent** — TBC
- **Assistant Surveyor** — TBC
- **Quantity Surveyor** — Mr Leung Pak Sum, 9437 3606
- **Civil Engineering Graduate** — Mr. Sam Liu; Mr. James Leung
- **Safety Supervisor** — Mr Yuen Siu Lun, 9701 0304
- **Environmental Supervisor** — Mr. Yuen Tse Kin, 9578 8343
- **Utilities Interface Coordinator** — Mr. Lee Yuk Wah, Jock, 9271 9822
- **Foreman (Road and Drainage)** — Mr. Y. F. Chan
- **Foreman (Slope Works)** — Mr. W. B. Lai
- **Technician Apprentice** — Mr. Yuen Tse Kin; Mr. Yuen Sui Lun; Mr. Eric Tsui
- **First Aider** — Mr Lam Wai On, Frankie, 6159 1140; Ms Mini L K Wong, 6224 1677
- **Tree Work Supervisor** — TBC
- **Contractor Labour Officer** — Ms Mini L K Wong, 62241677
- **Independent Drainage and Sewerage Checker (IDSC)** — TBC
- **Public Relation Officer** — TBC
- **Independent Checking Engineer (Civil/ Geotechnical)** — TBC
- **Site Clerk** — Ms. Cheung Chi Mei; Ms. Lai Suk Fong

Hsin Chong Tsun Yip Joint Venture

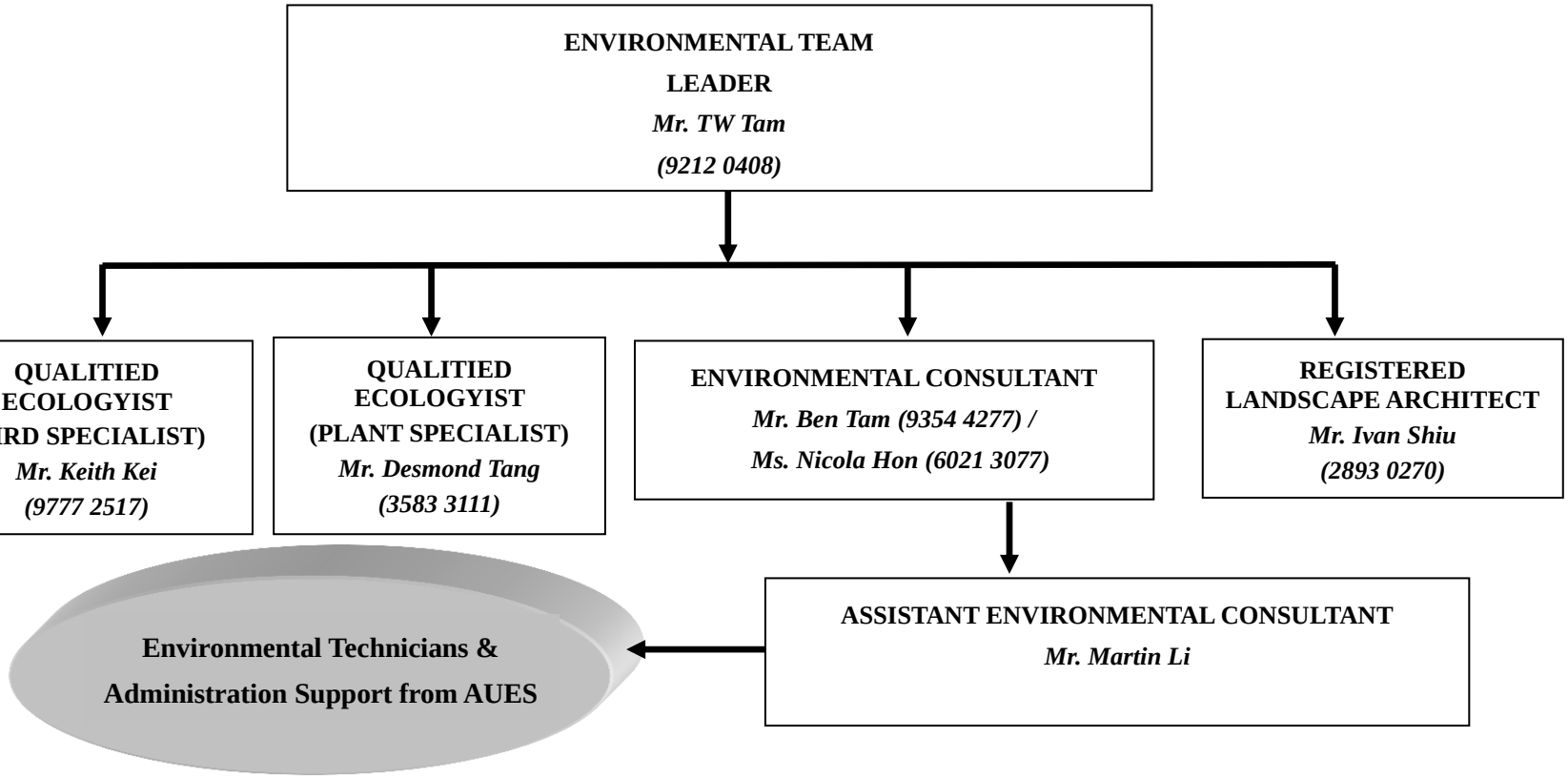
Organization Chart for Contract No. CV/2016/10 (Main Contractor)

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

[Rev.02] [7 May 2018]

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

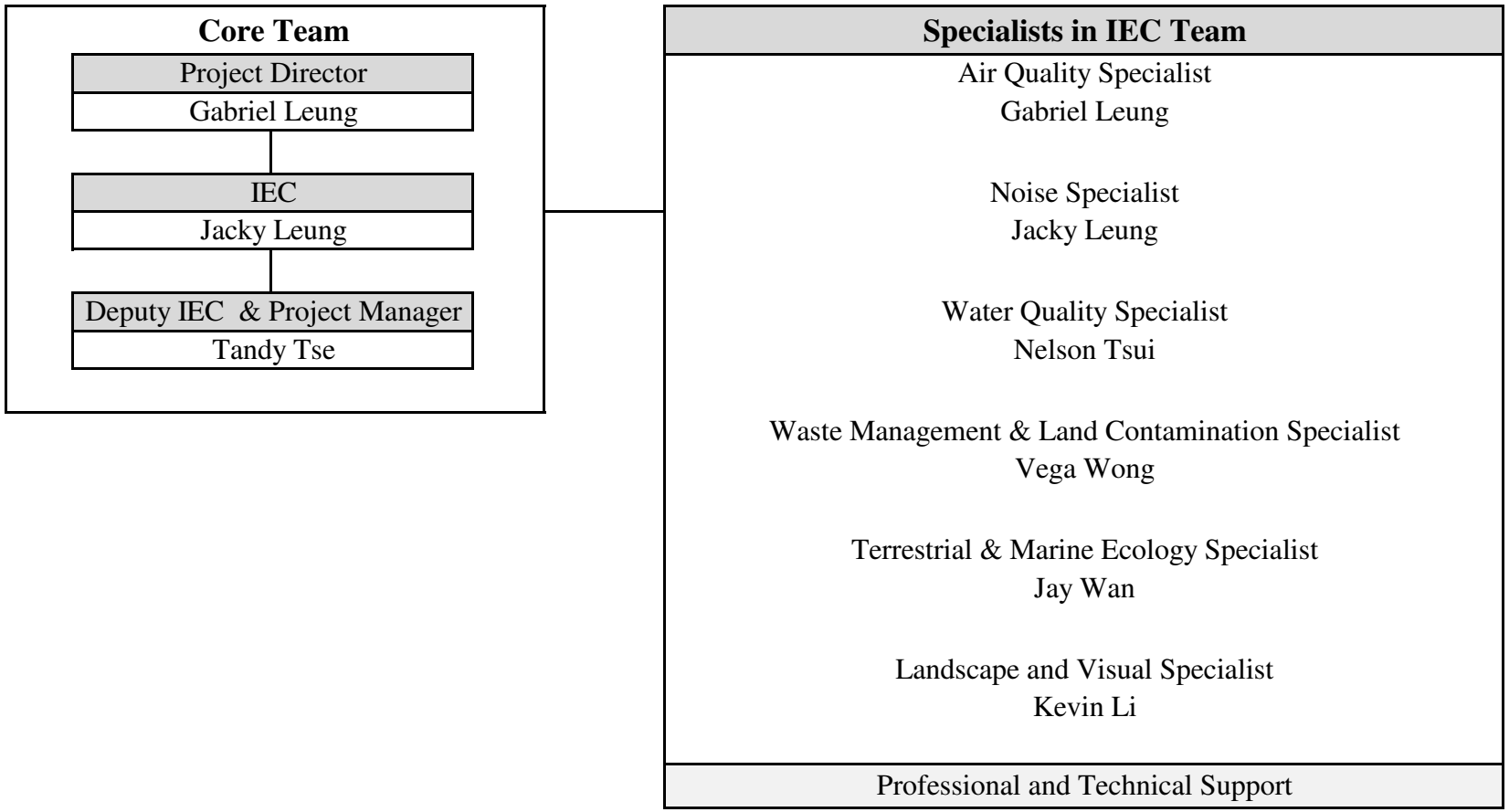
AUES



Organization Chart of the Environmental Team

Contact details
Unit A, 20/F, Gold King Industrial Building
35-41 Tai Lin Pai Road, Kwai Chung, New Territories, Hong Kong
T: +852 2959 6059 | F: +852 2959 6079

Organisation Chart of IEC Team



Contact Details of Key Personnel

Organization	Project Role	Name of Key Staff	Tel No.	Fax No.
CEDD	Employer	Joseph Wong	2762-5658	2714-0079
ARUP	Engineer's Representative	Steve Tang	6190-1513	2268-3950
ACUITY	Independent Environmental Checker	Ir. Leung CH Jacky	2698-6833	2698-9383
HCTYJV	Project Director	Mr. Kan Kwok Cheung	2358-2888	2633-4691
HCTYJV	Project Manager	Mr. Keniel Kwong	9863-0020	2633-4691
HCTYJV	Site Agent	Mr. Ho Man To	9620-9794	2633-4691
HCTYJV	Site Engineer	Mr. James Leung	9308-1537	2633-4691
HCTYJV	Environmental Officer	Mr. Frankie Lam	6159-1140	2633-4691
HCTYJV	Safety Officer	Mr. Martin Kum	9202-5243	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

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*

Appendix C

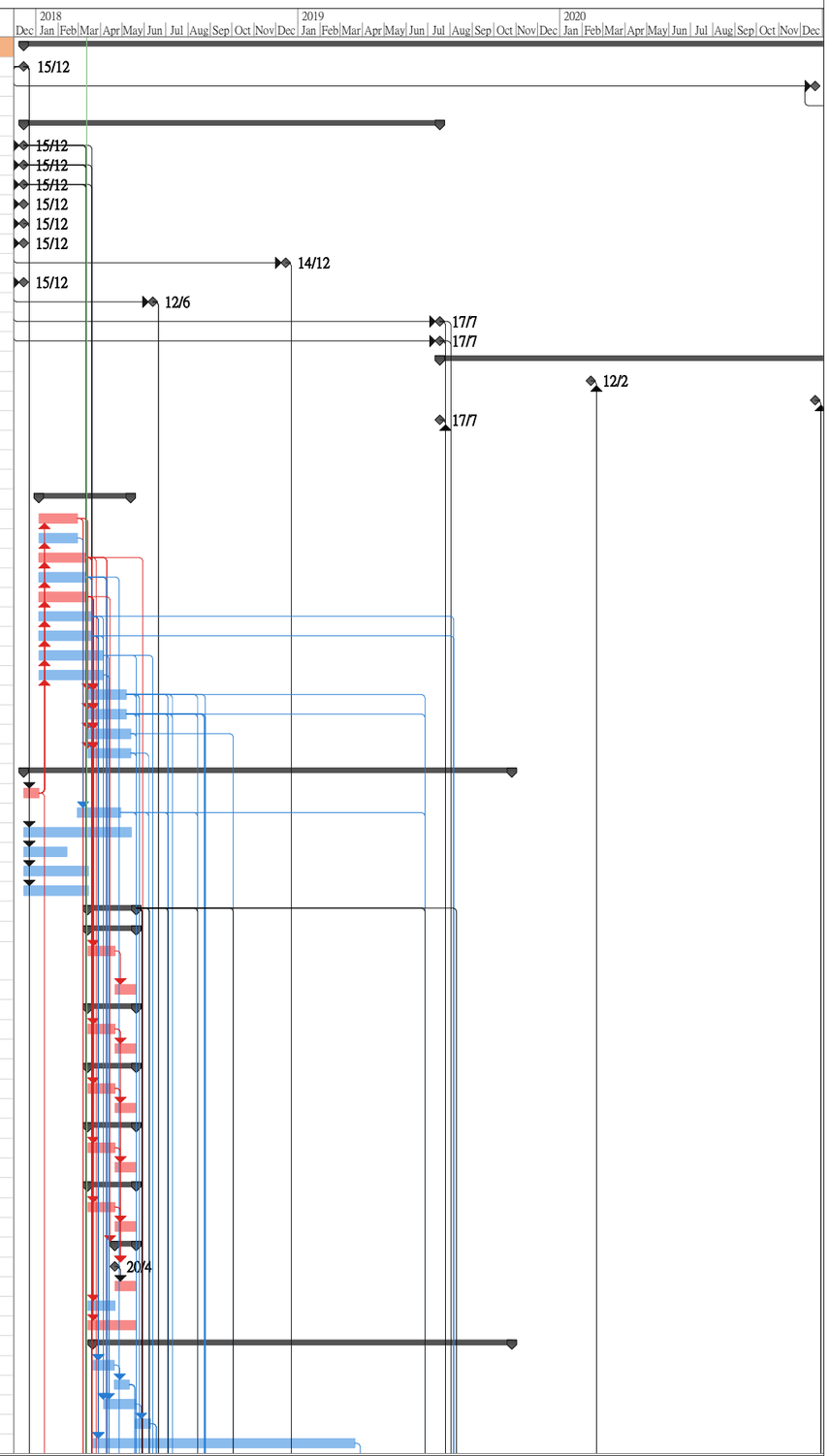
Master Construction Program and Three Months rolling Program

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

Master Programme Rev.0a

Hsin Chong Tsun Yip Joint Venture

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Key Dates**	**2199 days**	**Fri 15/12/17**	**Fri 22/12/23**	
2	Contract Starting Date	0 days	Fri 15/12/17	Fri 15/12/17	
3	Contract Completion Date for Sections 1, 2 and 3	0 days	Mon 21/12/20	Mon 21/12/20	2SS+1103 days
4	Contract Completion Date for Sections 4, 5 and 6 (Establishment Works)	0 days	Fri 22/12/23	Fri 22/12/23	3SS+1096 days
5	**Access Dates**	**580 days**	**Fri 15/12/17**	**Wed 17/7/19**	
6	Part A1	0 days	Fri 15/12/17	Fri 15/12/17	2SS
7	Part A2	0 days	Fri 15/12/17	Fri 15/12/17	2SS
8	Part A3	0 days	Fri 15/12/17	Fri 15/12/17	2SS
9	Part B1	0 days	Fri 15/12/17	Fri 15/12/17	2SS
10	Part B2	0 days	Fri 15/12/17	Fri 15/12/17	2SS
11	Part C	0 days	Fri 15/12/17	Fri 15/12/17	2SS
12	Part D	0 days	Fri 14/12/18	Fri 14/12/18	2SS+365 days
13	Part E	0 days	Fri 15/12/17	Fri 15/12/17	2SS
14	Part F	0 days	Tue 12/6/18	Tue 12/6/18	2SS+180 days
15	Part G1	0 days	Wed 17/7/19	Wed 17/7/19	2SS+580 days
16	Part G2	0 days	Wed 17/7/19	Wed 17/7/19	2SS+580 days
17	**Section Completion Date**	**1619 days**	**Wed 17/7/19**	**Fri 22/12/23**	
18	Section 1 (Parts A1, A2 & A3)	0 days	Wed 12/2/20	Wed 12/2/20	89
19	Section 2 (Parts B1, B2, C, D, F, G1 & G2)	0 days	Mon 21/12/20	Mon 21/12/20	155
20	Section 3 (Part E)	0 days	Wed 17/7/19	Wed 17/7/19	432
21	Section 4 (Establishment Works within Parts A1, A2 & A3)	0 days	Sun 12/2/23	Sun 12/2/23	485
22	Section 5 (Establishment Works within Parts B1, B2, C, D, F, G1 & G2)	0 days	Fri 22/12/23	Fri 22/12/23	487
23	Section 6 (Establishment Works within Part E)	0 days	Sun 17/7/22	Sun 17/7/22	491
24	**Subletting**	**128 days**	**Fri 5/1/18**	**Sat 12/5/18**	
25	Subletting of Tree Specialist	54 days	Fri 5/1/18	Tue 27/2/18	39
26	Subletting of Conditon Survey	54 days	Fri 5/1/18	Tue 27/2/18	39
27	Subletting of Ground Investigation Work	66 days	Fri 5/1/18	Sun 11/3/18	39
28	Subletting of Geotechnical Instrumentation	66 days	Fri 5/1/18	Sun 11/3/18	39
29	Subletting of Environmental Team and ET Leader	68 days	Fri 5/1/18	Tue 13/3/18	39
30	Subletting of Temporary Works Design	75 days	Fri 5/1/18	Tue 20/3/18	39
31	Subletting of Independent Checking Engineer	75 days	Fri 5/1/18	Tue 20/3/18	39
32	Subletting of Site Hoarding	90 days	Fri 5/1/18	Wed 4/4/18	39
33	Subletting of Barging Point Construction	90 days	Fri 5/1/18	Wed 4/4/18	39
34	Subletting of Slopeworks & Drainage Works on Slope	54 days	Wed 14/3/18	Sun 6/5/18	29,25,27,28
35	Subletting of Fill Transportation	54 days	Wed 14/3/18	Sun 6/5/18	29,25,27,28
36	Subletting of Testing Laboratory	60 days	Wed 14/3/18	Sat 12/5/18	25,27,28,29
37	Subletting of Retaining Wall	60 days	Wed 14/3/18	Sat 12/5/18	25,27,28,29
38	**Preliminary Works**	**680 days**	**Fri 15/12/17**	**Fri 25/10/19**	
39	Submission and Approval of Subletting and Procurement Procedure	21 days	Fri 15/12/17	Thu 4/1/18	2
40	Condition Survey and Report Submission	60 days	Wed 28/2/18	Sat 28/4/18	26
41	Initial Site Survey and Setting out of the Site	150 days	Fri 15/12/17	Sun 13/5/18	2
42	Submission and Approval of Subcontractor Management Plan	60 days	Fri 15/12/17	Mon 12/2/18	2
43	Submission and Approval of Safety Plan	90 days	Fri 15/12/17	Wed 14/3/18	2
44	Submission and Approval of Environmental Management Plan	90 days	Fri 15/12/17	Wed 14/3/18	2
45	**Submission and Approval Required at Environmental Permit for Commencement of Construction**	**68 days**	**Wed 14/3/18**	**Sun 20/5/18**	
46	**Vegetation Survey Report and Transplantation Proposal**	**68 days**	**Wed 14/3/18**	**Sun 20/5/18**	
47	Vegetation Survey (Including Baseline Flora Survey Reports) Reports Submission and Transplantation Proposal Submission to EPD	38 days	Wed 14/3/18	Fri 20/4/18	29
48	EPD Approval	30 days	Sat 21/4/18	Sun 20/5/18	47
49	**Woodland Compensation Plan**	**68 days**	**Wed 14/3/18**	**Sun 20/5/18**	
50	Woodland Compensation Plan Preparation and Submission to EPD	38 days	Wed 14/3/18	Fri 20/4/18	29
51	EPD Approval	30 days	Sat 21/4/18	Sun 20/5/18	50
52	**Golden-headed Cisticola Monitoring and Survey Plan**	**68 days**	**Wed 14/3/18**	**Sun 20/5/18**	
53	Golden-headed Cisticola Monitoring and Survey Plan Submission to EPD	38 days	Wed 14/3/18	Fri 20/4/18	29
54	EPD Approval	30 days	Sat 21/4/18	Sun 20/5/18	53
55	**Landscape and Visual Mitigation and Tree Preservation Plan**	**68 days**	**Wed 14/3/18**	**Sun 20/5/18**	
56	Landscape and Visual Mitigation and Tree Preservation Plan Submission to EPD	38 days	Wed 14/3/18	Fri 20/4/18	29
57	EPD Approval	30 days	Sat 21/4/18	Sun 20/5/18	56
58	**Traffic Noise Mitigation Plan**	**68 days**	**Wed 14/3/18**	**Sun 20/5/18**	
59	Traffic Noise Mitigation Plan Submission to EPD	38 days	Wed 14/3/18	Fri 20/4/18	29
60	EPD Approval	30 days	Sat 21/4/18	Sun 20/5/18	59
61	**Grassland Reinstatement Plan**	**30 days**	**Fri 20/4/18**	**Sun 20/5/18**	**29**
62	Grassland Reinstatement Plan Submission to EPD (by Others)	0 days	Fri 20/4/18	Fri 20/4/18	50,53,56,59
63	EPD Approval	30 days	Sat 21/4/18	Sun 20/5/18	62
64	Environmental Baseline Monitoring and Report Submission to EPD	38 days	Wed 14/3/18	Fri 20/4/18	29
65	Other Requirement at Environmental Permits for Commencement of Works	68 days	Wed 14/3/18	Sun 20/5/18	29
66	**Contractor's Design and Major Temporary Works Design**	**584 days**	**Wed 21/3/18**	**Fri 25/10/19**	
67	Temporary Drainage Design	30 days	Wed 21/3/18	Thu 19/4/18	30,31
68	Approval of Temporary Drainage Design	21 days	Fri 20/4/18	Thu 10/5/18	67
69	Design of Siu Lam Barging Point	45 days	Thu 5/4/18	Sat 19/5/18	30,31,33
70	Approval of Siu Lam Barging Point Design	21 days	Sun 20/5/18	Sat 9/6/18	69
71	Design of Noise Barrier Superstructure, and Liasion with WSD for Construction of Noise Barrier	365 days	Wed 21/3/18	Wed 20/3/19	30,31



Project: Master Programme Rev.0a
Date: Tue 13/3/18

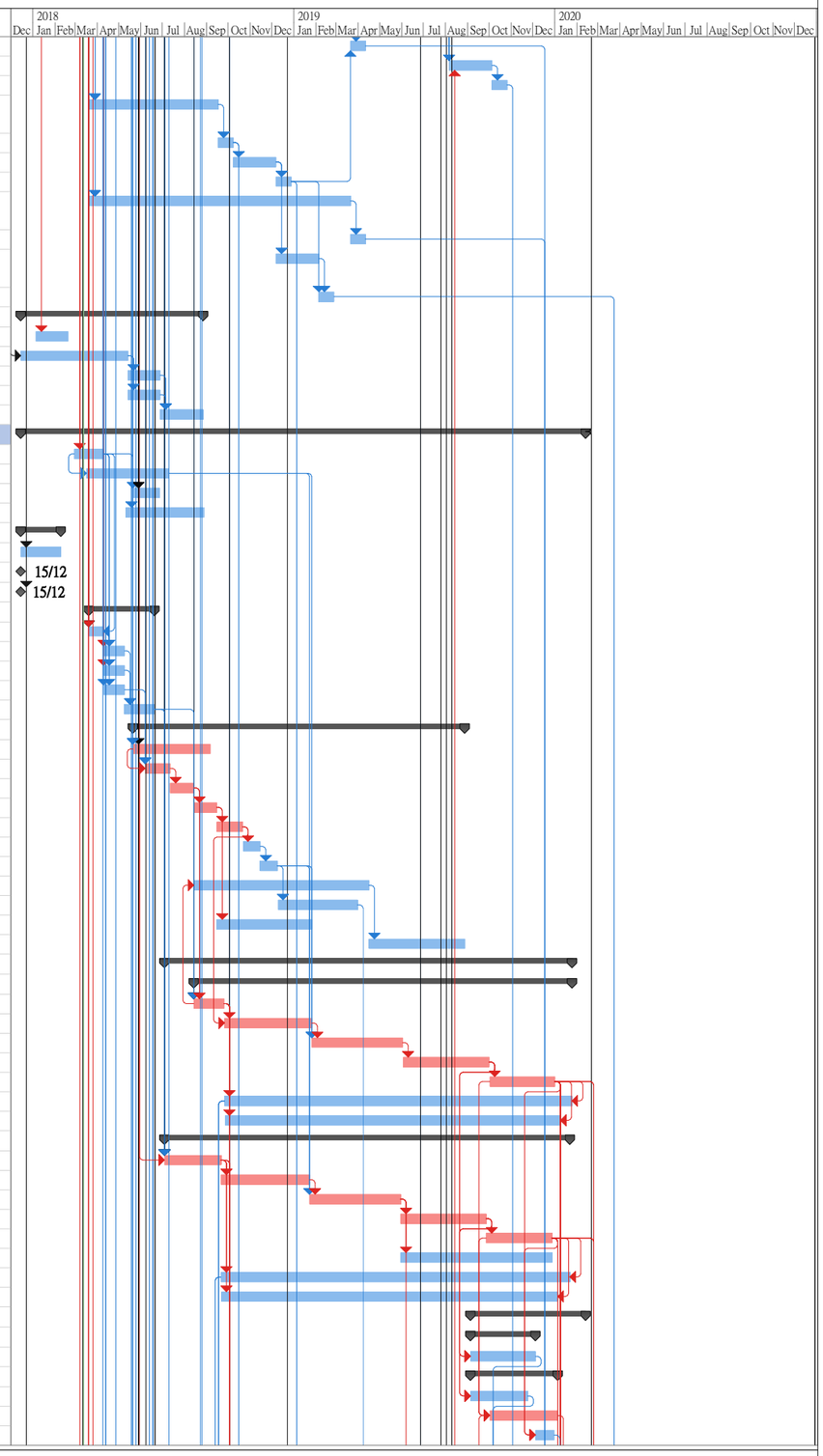
Task | Summary | Inactive Milestone | Duration-only | Start-only | External Milestone | Critical Split
Split | Project Summary | Inactive Summary | Manual Summary Rollup | Finish-only | Deadline | Progress
Milestone | Inactive Task | Manual Task | Manual Summary | External Tasks | Critical | Manual Progress

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

Master Programme Rev.0a

Hsin Chong Tsun Yip Joint Venture

ID	Task Name	Duration	Start	Finish	Predecessors
72	Approval of Noise Barrier Superstructure Design	21 days	Thu 21/3/19	Wed 10/4/19	78,71
73	Temporary Works Design for Retaining Wall RW11 Construction	60 days	Tue 6/8/19	Fri 4/10/19	30,31,231
74	Approval of Temporary Works Design for Retaining Wall RW11 Construction	21 days	Sat 5/10/19	Fri 25/10/19	73
75	Temporary Works Design for RCP Construction between DongJiang Water Mains, Liasion and Submisison Approval from WSD	180 days	Wed 21/3/18	Sun 16/9/18	30,31
76	Approval of Temporary Works Design for RCP Construction between DongJiang Water Mains	21 days	Mon 17/9/18	Sun 7/10/18	75
77	Design of E&M Works for Reprovisioned Government Refuse Collection Point (RCP)	60 days	Mon 8/10/18	Thu 6/12/18	76
78	Approval of RCP E&M Design	21 days	Fri 7/12/18	Thu 27/12/18	77
79	Temporary Works Design for Sewerage Across DongJiang Water Mains, Liasion and Submission Approval from WSD	365 days	Wed 21/3/18	Wed 20/3/19	30,31
80	Approval of Temporary Works Design for Sewerage Across DongJiang Water Mains	21 days	Thu 21/3/19	Wed 10/4/19	79
81	Design of Ventilation and De-odourisation Sytem (VDS) and Air Mixing System (AMS) of Sewage Detention Tank	60 days	Fri 7/12/18	Mon 4/2/19	77
82	Approval of VDS and AMS Design for Sewage Detention Tank	21 days	Tue 5/2/19	Mon 25/2/19	81,78
83	**Project Manager's Site Accommodation**	**255 days**	**Fri 15/12/17**	**Sun 26/8/18**	
84	Set up of Secondary Site Office	45 days	Fri 5/1/18	Sun 18/2/18	39
85	Application for Land Allocation of Site Accommodation	150 days	Fri 15/12/17	Sun 13/5/18	2SS
86	Subletting, Procurement and Design for Site Accomodation	45 days	Mon 14/5/18	Wed 27/6/18	85
87	Site Clearance for Site Accomodation	45 days	Mon 14/5/18	Wed 27/6/18	85
88	Construction of Site Accommodation	60 days	Thu 28/6/18	Sun 26/8/18	86,87
89	**Section 1 of the Works (Parts A1, A2 & A3)**	**790 days**	**Fri 15/12/17**	**Wed 12/2/20**	
90	Tree Survey and Report Submission	31 days	Wed 28/2/18	Mon 9/4/18	25
91	Tree Felling and Tree Transplant	90 days	Sat 17/3/18	Mon 9/7/18	90SS+15 days
92	Erection of Site Hoarding	30 days	Mon 21/5/18	Tue 26/6/18	32,45
93	Temporary Drainage Works	90 days	Fri 11/5/18	Mon 27/8/18	68
94	**Utilities Diversion/Protection Works**	**45 days**	**Fri 15/12/17**	**Thu 8/2/18**	
95	Enquiries of Utilities As-built Record from UU Companies	45 days	Fri 15/12/17	Thu 8/2/18	2
96	**CLP**	**0 days**	**Fri 15/12/17**	**Fri 15/12/17**	
97	Removal / Diversion of Existing 11kV Overhead Cable (By CLP)	0 days	Fri 15/12/17	Fri 15/12/17	2
98	**Ground Investigation and Geotechnical instrumentation for Commencement of Slopework**	**72 days**	**Tue 20/3/18**	**Tue 19/6/18**	
99	Mobilization of GI Rig and Preparation Works	14 days	Tue 20/3/18	Mon 9/4/18	6,7,8,27,90FF
100	Verification Drillholes (8 Nos., VDH1, 2,7-9, 16-18)	24 days	Tue 10/4/18	Tue 8/5/18	27,90,99
101	Inspection Pits (4 Nos., IP1-4)	24 days	Tue 10/4/18	Tue 8/5/18	27,90,99
102	Geotechnical Instrumentation Required for Commencement of Slope Works	24 days	Tue 10/4/18	Tue 8/5/18	99,28
103	Report Submission and Verification of the Design of Cut and Fill Slope by PM	42 days	Wed 9/5/18	Tue 19/6/18	100,101
104	**Retaining Wall RW1**	**378 days**	**Mon 21/5/18**	**Tue 27/8/19**	
105	Site Clearance, Excavation to Formation Level, Plate Load Test and Blinding Layer	90 days	Mon 21/5/18	Wed 5/9/18	45,90,36,37
106	Bay 1, Bay 3 and Bay 5	28 days	Thu 7/6/18	Wed 11/7/18	105SS+14 days,37,102,40
107	Bay 2, Bay 4 and Bay 6	28 days	Thu 12/7/18	Mon 13/8/18	106
108	Bays 7-12 (1st pour)	28 days	Tue 14/8/18	Fri 14/9/18	107
109	Bays 7-12 (2nd pour)	28 days	Sat 15/9/18	Sat 20/10/18	108
110	Bay 13, Bay 15 and Bay 17	21 days	Mon 22/10/18	Wed 14/11/18	109
111	Bay 14 and Bay 16	21 days	Thu 15/11/18	Sat 8/12/18	110
112	Filter Layer behind RW1	200 days	Tue 14/8/18	Mon 15/4/19	118SS
113	Erosion Control Mat at RW1	90 days	Mon 10/12/18	Sat 30/3/19	111
114	Drainage and Maintenance Access in front of RW1	108 days	Sat 15/9/18	Fri 25/1/19	108
115	Drainage and Maintenance Access on top of RW1	108 days	Tue 16/4/19	Tue 27/8/19	112
116	**Fill Slope FS1**	**466 days**	**Wed 4/7/18**	**Fri 24/1/20**	
117	**Fill Slope FS1 South (Section 12 at Drawing C1/GE/1030)**	**431 days**	**Tue 14/8/18**	**Fri 24/1/20**	
118	FS1 South Backfilling Stage 1 (~2.5m, Section 12 up to +20 mPD)	36 days	Tue 14/8/18	Mon 24/9/18	40,45,103,107,34,35
119	FS1 South Backfilling Stage 2 (~7.5m, Section 12 up to +27.5 mPD)	100 days	Wed 26/9/18	Fri 25/1/19	118,109FS-20 days
120	FS1 South Backfilling Stage 3 (~7.5m height, Section 12 up to ~+35mPD)	100 days	Sat 26/1/19	Sat 1/6/19	119,91,111
121	FS1 South Backfilling Stage 4 (~7.4m height, Section 12 up to +42.4mPD)	100 days	Mon 3/6/19	Mon 30/9/19	120
122	FS1 South Backfilling Stage 5 (~7.6m height, Section 12 up to Proposed Platform, +50mPD)	75 days	Wed 2/10/19	Tue 31/12/19	121
123	Drainage and Maintenance Access	395 days	Wed 26/9/18	Fri 24/1/20	122FF+12 days,118
124	Geotechnical Instrumentation Works	380 days	Thu 27/9/18	Wed 8/1/20	118,122FF+6 days
125	**Fill Slope FS1 North (Section 14 at Drawing C1/GE/1030)**	**463 days**	**Wed 4/7/18**	**Tue 21/1/20**	
126	FS1 North Backfilling Stage 1 (~5m height, Section 14 up to ~+20 mPD)	68 days	Wed 4/7/18	Thu 20/9/18	40,45,103,106SS+21 days,34,35
127	FS1 North Backfilling Stage 2 (~7.5m height, Section 14 up to ~+27.5 mPD)	100 days	Fri 21/9/18	Tue 22/1/19	126
128	FS1 North Backfilling Stage 3 (~7.5m height, Section 14 up to ~+35 mPD)	100 days	Wed 23/1/19	Wed 29/5/19	127,91,111
129	FS1 North Backfilling Stage 4 (~7.5m height, Section 14 up to +42.5 mPD)	100 days	Thu 30/5/19	Thu 26/9/19	128
130	FS1 North Backfilling Stage 5 (~7.5 m height, Section 14 up to Proposed Platform)	75 days	Fri 27/9/19	Fri 27/12/19	129
131	Existing Slope Feature 3NW-C/F37 Upgrading Re-compaction	175 days	Thu 30/5/19	Fri 27/12/19	128
132	Drainage and Maintenance Access	395 days	Fri 21/9/18	Tue 21/1/20	130FF+12 days,126
133	Geotechnical Instrumentation Works	380 days	Sat 22/9/18	Sat 4/1/20	126,130FF+6 days
134	**Road D and Pickup/Drop-Off Area**	**129 days**	**Thu 5/9/19**	**Wed 12/2/20**	
135	**Waterworks**	**75 days**	**Thu 5/9/19**	**Wed 4/12/19**	
136	Watermains FW2	75 days	Thu 5/9/19	Wed 4/12/19	121FS-21 days,129FS-18 days
137	**Drainage and Utilities Works**	**99 days**	**Thu 5/9/19**	**Sat 4/1/20**	
138	Drainage at Road D	66 days	Thu 5/9/19	Sat 23/11/19	121FS-21 days,129FS-18 days
139	Drainage at Pick-up/Drop Off	78 days	Wed 2/10/19	Sat 4/1/20	122SS,130SS+3 days
140	HKT Cable Installation	20 days	Thu 5/12/19	Mon 30/12/19	130FS-18 days,122FS-21 days



Project: Master Programme Rev.0a
Date: Tue 13/3/18

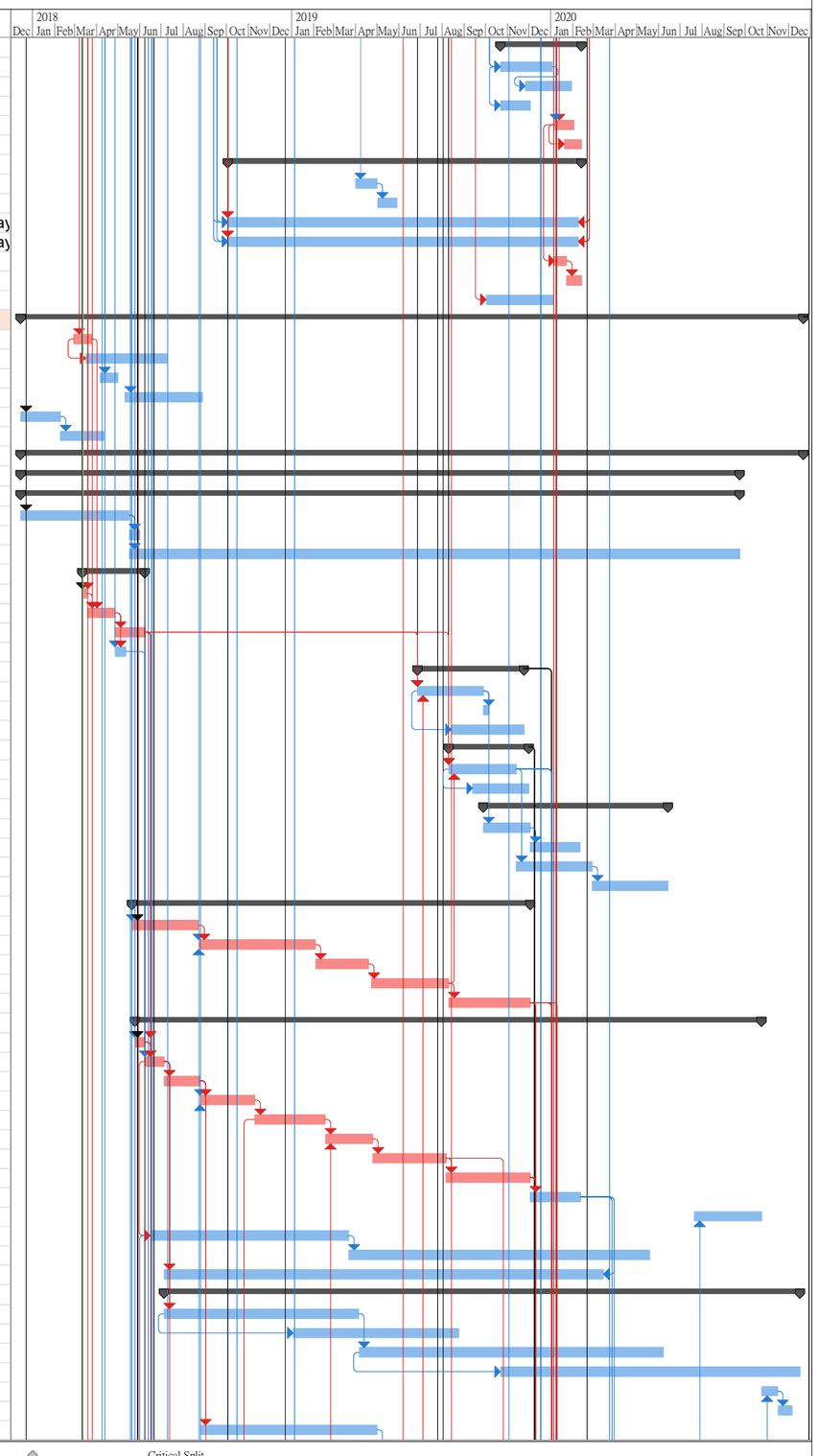
Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Critical | Critical Split | Progress | Manual Progress

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

Master Programme Rev.0a

Hsin Chong Tsun Yip Joint Venture

ID	Task Name	Duration	Start	Finish	Predecessors
141	**Carriageway and Footway**	**92 days**	**Tue 22/10/19**	**Wed 12/2/20**	
142	Backfilling to Formation Level at Road D	60 days	Tue 22/10/19	Thu 2/1/20	136FS-38 days,138FS-33 days
143	Carriageway, Pavement, Road Marking and Street Furniture at Road D	50 days	Tue 26/11/19	Wed 29/1/20	142FS-30 days
144	Road Lighting Civil Works Provision	36 days	Tue 22/10/19	Mon 2/12/19	142SS
145	Backfilling to Formation Level at Pick-up/Drop Off	21 days	Mon 6/1/20	Sat 1/2/20	139,140
146	Pavement, Road Marking and Street Furniture at Pick-up/Drop Off	18 days	Mon 20/1/20	Wed 12/2/20	145SS+12 days
147	**Landscape Works**	**403 days**	**Wed 3/10/18**	**Wed 12/2/20**	
148	Planter E2 Construction at RW1	22 days	Mon 1/4/19	Tue 30/4/19	113
149	Shrubs Planting at RW1	22 days	Thu 2/5/19	Tue 28/5/19	148
150	Woodland Planting at Fill Slope	400 days	Wed 3/10/18	Sat 8/2/20	118,126,122FF+30 days,130FF+30 day
151	Hydroseeding at Fill Slope	400 days	Wed 3/10/18	Sat 8/2/20	118,126,122FF+30 days,130FF+30 day
152	Planter E2 Construction at Pick-up/Drop Off	15 days	Mon 6/1/20	Wed 22/1/20	145SS
153	Shrubs Planting at Planter E2 at Pick-up/Drop Off	15 days	Thu 23/1/20	Wed 12/2/20	152
154	Irrigation System and Water Points (Except Water Connection)	78 days	Wed 2/10/19	Sat 4/1/20	139SS
155	**Section 2 of the Works (Parts B1, B2, C, D, F, G1 & G2)**	**1103 days**	**Fri 15/12/17**	**Mon 21/12/20**	
156	Tree Survey and Report Submission	22 days	Wed 28/2/18	Sat 24/3/18	25
157	Tree Felling and Tree Transplant	90 days	Sat 17/3/18	Mon 9/7/18	156SS+15 days
158	Erection of Site Hoarding	21 days	Fri 6/4/18	Mon 30/4/18	32
159	Temporary Drainage Works	90 days	Fri 11/5/18	Mon 27/8/18	68
160	Enquiries of Utilities As-built Record from UU Companies	45 days	Fri 15/12/17	Thu 8/2/18	2
161	Uilities Detection and Reports Submission	45 days	Fri 9/2/18	Tue 10/4/18	160
162	**Part B1**	**894 days**	**Fri 15/12/17**	**Mon 21/12/20**	
163	**Utilities Diversion/Protection Works**	**820 days**	**Fri 15/12/17**	**Tue 22/9/20**	
164	**HKT**	**820 days**	**Fri 15/12/17**	**Tue 22/9/20**	
165	Liaison with HKT for Diversion/Supporting of Existing Cable	120 days	Fri 15/12/17	Wed 16/5/18	2
166	Trial Pits for HKT Cable	12 days	Thu 17/5/18	Thu 31/5/18	165
167	Supporting / Diversion of Existing HKT Cable	700 days	Thu 17/5/18	Tue 22/9/20	165
168	**Ground Investigation and Geotechnical instrumentation for Commencement of Slopework**	**70 days**	**Mon 12/3/18**	**Thu 7/6/18**	
169	Mobilization of GI Rig and Preparation Works	6 days	Mon 12/3/18	Sat 17/3/18	6,7,8,27
170	Verification Drillholes (10 Nos., VDH3,6,11-14, 19 & 20)	30 days	Mon 19/3/18	Thu 26/4/18	156FS-6 days,169
171	Report Submission and Verification of the Design of Cut and Fill Slope by PM	42 days	Fri 27/4/18	Thu 7/6/18	170
172	Geotechnical Instrumentation Required for Commencement of Slope Works	12 days	Fri 27/4/18	Fri 11/5/18	170,28
173	**Cut Slopes CS1 & CS2**	**125 days**	**Thu 27/6/19**	**Sat 23/11/19**	
174	Excavate to Proposed Toe Level	78 days	Thu 27/6/19	Fri 27/9/19	171,40,45,458,34,35
175	Geotechnical Instrumentation Works	6 days	Sat 28/9/19	Sat 5/10/19	174
176	Drainage and Maintenance Access	85 days	Wed 14/8/19	Sat 23/11/19	174SS+40 days
177	**Cut Slope CS3**	**94 days**	**Sat 10/8/19**	**Sat 30/11/19**	
178	Excavate to Proposed Toe Level	78 days	Sat 10/8/19	Tue 12/11/19	171,189,45
179	Drainage and Maintenance Access	65 days	Fri 13/9/19	Sat 30/11/19	178SS+29 days
180	**Landscape Works at Cut Slopes CS1, CS2 & CS3**	**209 days**	**Sat 28/9/19**	**Sat 13/6/20**	
181	Planter W2 Construction at CS1 & CS2	54 days	Sat 28/9/19	Mon 2/12/19	174
182	Shrub Planting at Planter W2 at CS1 & CS2	54 days	Tue 3/12/19	Mon 10/2/20	181
183	Planter W2 Construction at CS3	86 days	Wed 13/11/19	Thu 27/2/20	178
184	Shrub Planting at Planter W2 at CS3	86 days	Fri 28/2/20	Sat 13/6/20	183
185	**Temporary Excavation to Proposed Platform at Future PDA**	**458 days**	**Mon 21/5/18**	**Mon 2/12/19**	
186	Excavate to +80 mPD	78 days	Mon 21/5/18	Wed 22/8/18	40,45
187	Excavate to +71 mPD	135 days	Thu 23/8/18	Sat 2/2/19	186,421,35
188	Excavate to +64 mPD	60 days	Mon 4/2/19	Thu 18/4/19	187
189	Excavate to +56 mPD	90 days	Tue 23/4/19	Fri 9/8/19	188
190	Excavate to +50 mPD	95 days	Sat 10/8/19	Mon 2/12/19	189
191	**Cut Slopes CS11 & CS12**	**719 days**	**Fri 25/5/18**	**Fri 23/10/20**	
192	Mobilization of Plant and Equipment	12 days	Fri 25/5/18	Thu 7/6/18	171FS-12 days,45,34
193	Excavate to +94 mPD	21 days	Fri 8/6/18	Wed 4/7/18	171,192,172
194	Excavate to +87 mPD, and Soil Nails (59 nos. of Soil Nail)	44 days	Thu 5/7/18	Fri 24/8/18	193
195	Excavate to +79.5mPD, Soil Nails and Raking Drains (78 Nos. of Soil Nail)	63 days	Sat 25/8/18	Fri 9/11/18	194,421,35
196	Excavate to +72mPD, Soil Nails and Raking Drains (99 Nos. of Soil Nail)	79 days	Sat 10/11/18	Sat 16/2/19	195
197	Excavate to +64.5 mPD, Soil Nails and Raking Drains (124 Nos. of Soil Nail)	53 days	Mon 18/2/19	Wed 24/4/19	196,229
198	Excavate to +57 mPD, Soil Nails and Raking Drains (439 nos. of Soil Nail, 62 nos. of Raking Drain)	84 days	Thu 25/4/19	Mon 5/8/19	197
199	Excavate to +49.5 mPD, Soil Nails and Raking Drains (433 nos. of Soil Nail, 65 nos. of Raking Drain)	99 days	Tue 6/8/19	Mon 2/12/19	198
200	Excavate to Toe Level, Soil Nails and Raking Drains (168 nos. of Soil Nail, 33 nos of Raking Drain)	55 days	Tue 3/12/19	Tue 11/2/20	199
201	Backfilling Behind Retaining Wall RW11 (max. 5.8m)	80 days	Tue 21/7/20	Fri 23/10/20	222
202	Drainage and Maintenance Access up to +72 mPD	228 days	Sat 16/6/18	Thu 21/3/19	193SS+7 days
203	Drainage and Maintenance Access from +72 mPD to Toe Level	340 days	Fri 22/3/19	Mon 18/5/20	202
204	Geotechnical Instrumentation Works	505 days	Thu 5/7/18	Sat 14/3/20	200FF+6 days,193
205	**Landscape Works at Cut Slopes CS11 & CS12**	**731 days**	**Thu 5/7/18**	**Wed 16/12/20**	
206	Planter W2 Construction Stage 1 up to +72 mPD	226 days	Thu 5/7/18	Thu 4/4/19	193
207	Shrub Planting at Planter W2 Stage 1 up to +72 mPD	189 days	Thu 3/1/19	Fri 23/8/19	206SS+150 days
208	Planter W2 Construction Stage 2 from +72 mPD to Toe Level	345 days	Sat 6/4/19	Sat 6/6/20	206
209	Shrub Planting at Planter W2 Stage 2 from +72 mPD to Toe Level	345 days	Tue 22/10/19	Wed 16/12/20	208SS+160 days
210	Planter E2 Construction	18 days	Sat 24/10/20	Sat 14/11/20	223
211	Shrub Planting at Planter E2	18 days	Mon 16/11/20	Sat 5/12/20	210
212	Hydroseeding Stage 1 up to +72 mPD	200 days	Sat 25/8/18	Tue 30/4/19	194



Project: Master Programme Rev.0a
Date: Tue 13/3/18

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Critical | Critical Split | Progress | Manual Progress

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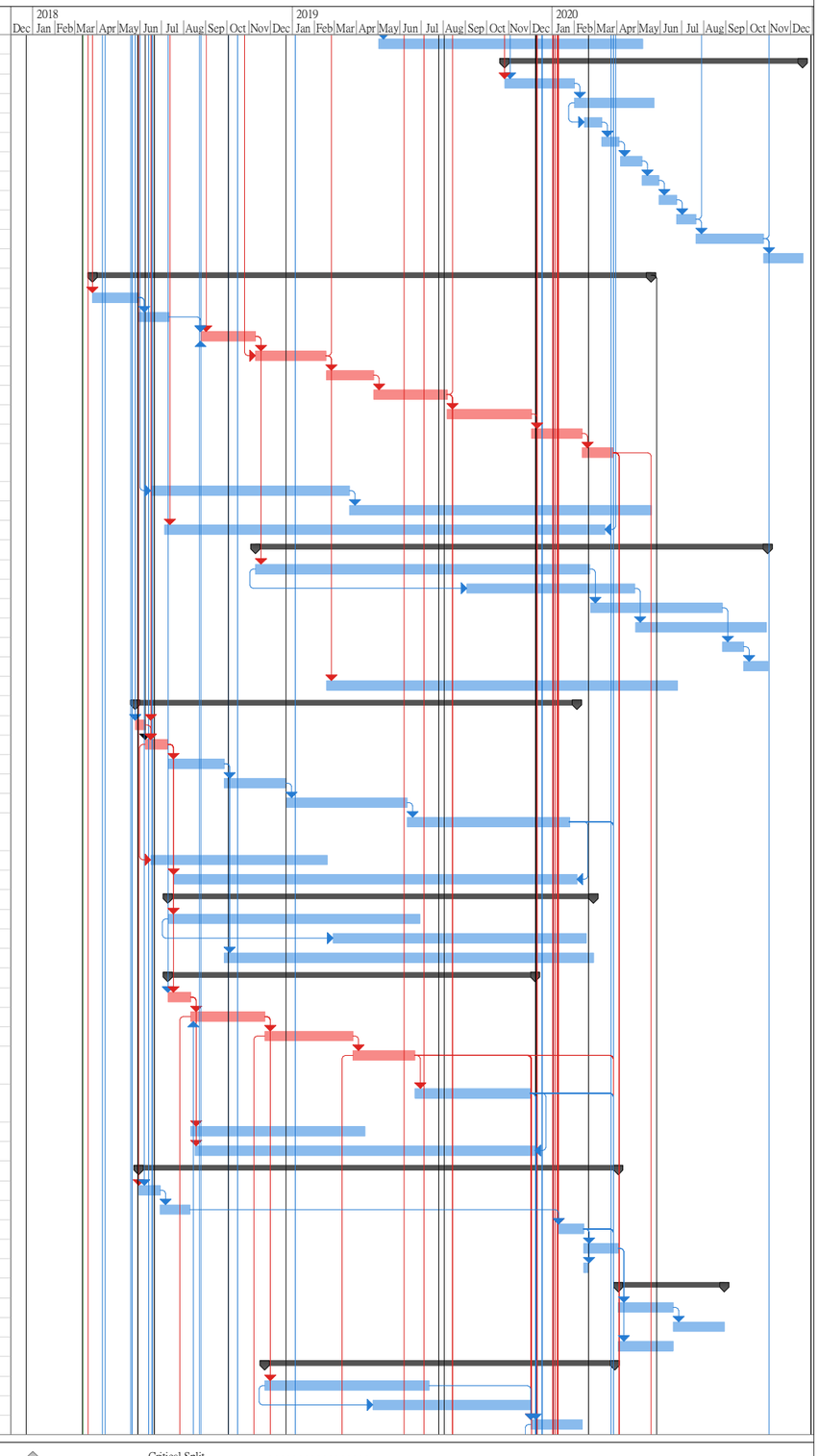
ID	Task Name	Duration	Start	Finish	Predecessors
213	Hydroseeding Stage 2 from +72 mPD tp Toe Level	300 days	Thu 2/5/19	Wed 6/5/20	212
214	**Retaining Wall RW11**	**342 days**	**Sat 26/10/19**	**Thu 17/12/20**	
215	Installation of Temporary Works	78 days	Sat 26/10/19	Fri 31/1/20	198FS+60 days,74
216	Excavation to Formation Level, Plate Load Test and Blinding Layer	90 days	Sat 1/2/20	Fri 22/5/20	215
217	Bay 3	21 days	Sat 15/2/20	Tue 10/3/20	216SS+12 days
218	Bay 4	21 days	Wed 11/3/20	Fri 3/4/20	217
219	Bay 5	21 days	Mon 6/4/20	Tue 5/5/20	218
220	Bay 2	21 days	Wed 6/5/20	Fri 29/5/20	219
221	Bay 1	21 days	Sat 30/5/20	Tue 23/6/20	220
222	Bay 6	21 days	Wed 24/6/20	Mon 20/7/20	221
223	Backfilling behind Retaining Wall	80 days	Tue 21/7/20	Fri 23/10/20	222
224	Drainage and Maintenance Access	46 days	Sat 24/10/20	Thu 17/12/20	223
225	**Cut Slope CS13**	**633 days**	**Mon 26/3/18**	**Mon 18/5/20**	
226	Trial Pit Excavation	50 days	Mon 26/3/18	Tue 29/5/18	27FS+12 days
227	Verification of Design by Supervisor	42 days	Wed 30/5/18	Tue 10/7/18	226
228	Excavate to +79.5mPD and Soil Nails (6 Nos. of Soil Nail)	63 days	Sat 25/8/18	Fri 9/11/18	227,194,421,34,35
229	Excavate to +72mPD and Soil Nails (16 Nos. of Soil Nail)	79 days	Sat 10/11/18	Sat 16/2/19	196SS,228
230	Excavate to +64.5 mPD and Soil Nails (68 nos. of Soil Nail)	53 days	Mon 18/2/19	Wed 24/4/19	229
231	Excavate to +57 mPD, Soil Nails and Raking Drains (82 nos. of Soil Nail, 34 nos. of Raking Drain)	84 days	Thu 25/4/19	Mon 5/8/19	230
232	Excavate to +49.5 mPD, Soil Nails and Raking Drains (152 nos. of Soil Nail, 34 nos. of Raking Drain)	99 days	Tue 6/8/19	Mon 2/12/19	231
233	Excavate to +42 mPD, Soil Nails and Raking Drains (215 nos. of Soil Nail, 54 nos. of Raking Drain)	55 days	Tue 3/12/19	Tue 11/2/20	232
234	Excavate to Proposed Toe Level, Soil Nails and Raking Drains (199 nos. of Soil Nail, 82 nos. of Raking Drain)	38 days	Wed 12/2/20	Thu 26/3/20	233
235	Drainage and Maintenance Access up to +72 mPD	228 days	Sat 16/6/18	Thu 21/3/19	202SS
236	Drainage and Maintenance Access from +72 mPD to Toe Level	340 days	Fri 22/3/19	Mon 18/5/20	235
237	Geotechnical Instrumentation Works	505 days	Thu 5/7/18	Sat 14/3/20	200FF+6 days,193
238	**Landscape Works at Cut Slope CS13**	**583 days**	**Sat 10/11/18**	**Thu 29/10/20**	
239	Planter W2 Construction	380 days	Sat 10/11/18	Sat 22/2/20	228
240	Shrub Planting at Planter W2	190 days	Tue 3/9/19	Sat 25/4/20	239SS+240 days
241	Planter W1 Construction	151 days	Mon 24/2/20	Wed 26/8/20	239
242	Shrub Planting at Planter W1	151 days	Mon 27/4/20	Tue 27/10/20	240
243	Planter W3 Construction	26 days	Thu 27/8/20	Fri 25/9/20	241
244	Shrub Planting at Planter W3	26 days	Sat 26/9/20	Thu 29/10/20	243
245	Hydroseeding	400 days	Mon 18/2/19	Wed 24/6/20	229
246	**Cut Slope CS15**	**504 days**	**Fri 25/5/18**	**Tue 4/2/20**	
247	Mobilization of Plant and Equipment	12 days	Fri 25/5/18	Thu 7/6/18	171FS-12 days,34,35
248	Excavate to +69.5 mPD, Soil Nails and Raking Drains (25 nos. of Soil Nail)	25 days	Fri 8/6/18	Mon 9/7/18	171,247,192,45
249	Excavate to +62mPD, Soil Nails and Raking Drains (78 nos. of Soil Nail, 31 nos. of Raking Drain)	67 days	Tue 10/7/18	Wed 26/9/18	248
250	Excavate to +54.5 mPD, Soil Nails and Raking Drains (88 nos. of Soil Nail, 38 nos. of Raking Drain)	73 days	Thu 27/9/18	Sat 22/12/18	249
251	Excavate to +47mPD, Soil Nails and Raking Drains (302 nos. of Soil Nail, 45 nos. of Raking Drain)	132 days	Mon 24/12/18	Mon 10/6/19	250
252	Excavate to +39.5mPD, Soil Nails and Raking Drains and Excavate to Proposed Toe Level (386 nos. of Soil Nail, 68 nos. of Raking Drain)	189 days	Tue 11/6/19	Fri 24/1/20	251
253	Drainage and Maintenance Access	201 days	Sat 16/6/18	Mon 18/2/19	248SS+7 days
254	Geotechnical Instrumentation Works	460 days	Wed 18/7/18	Tue 4/2/20	248,252FF+6 days
255	**Landscape Works at Cut Slope CS15**	**487 days**	**Tue 10/7/18**	**Thu 27/2/20**	
256	Planter W2 Construction	288 days	Tue 10/7/18	Fri 28/6/19	248
257	Shrub Planting at Planter W2	288 days	Wed 27/2/19	Mon 17/2/20	256SS+190 days
258	Hydroseeding	420 days	Thu 27/9/18	Thu 27/2/20	249
259	**Cut Slopes CS16 and CS17**	**423 days**	**Tue 10/7/18**	**Sat 7/12/19**	
260	Excavate to +62 mPD, Soil Nails and Raking Drains (23 Nos. of Soil Nail, 6 Nos. of Raking Drain)	28 days	Tue 10/7/18	Fri 10/8/18	248,34,35
261	Excavate to +54.5 mPD, Soil Nails and Raking Drains (136 nos. of Soil Nail, 20 Nos. of Raking Drain)	86 days	Sat 11/8/18	Thu 22/11/18	260,421
262	Excavate to +47mPD, Soil Nails and Raking Drains (200 nos. of Soil Nail, 28 nos. of Raking Drain)	100 days	Fri 23/11/18	Tue 26/3/19	261
263	Excavate to +41mPD, Soil Nails and Raking Drains, and Excavate to Proposed Toe Level at CS17 (96 nos. of Soil Nail, 26 nos. of Raking Drain)	68 days	Wed 27/3/19	Fri 21/6/19	262
264	Excavate to +41mPD, Soil Nails and Raking Drains, and Excavate to Proposed Toe Level at CS16 (58 nos. of Soil Nail, 13 nos. of Raking Drain)	135 days	Sat 22/6/19	Sat 30/11/19	263
265	Drainage and Maintenance Access	200 days	Sat 11/8/18	Fri 12/4/19	260
266	Geotechnical Instrumentation Works	390 days	Fri 17/8/18	Sat 7/12/19	260,264FF+6 days
267	**Fill Slope FS17**	**550 days**	**Wed 30/5/18**	**Thu 2/4/20**	
268	Trial Pits Excavation	25 days	Wed 30/5/18	Thu 28/6/18	27FS+12 days,226
269	Verification of Design by Supervisor	42 days	Fri 29/6/18	Thu 9/8/18	268
270	Backfill to Proposed Ground Level (Max. 2.5m)	27 days	Fri 10/1/20	Thu 13/2/20	190FS+30 days,269
271	Drainage and Maintenance Access	42 days	Fri 14/2/20	Thu 2/4/20	270
272	Geotechnical Instrumentation Works	6 days	Fri 14/2/20	Thu 20/2/20	270
273	**Landscape Works at Fill Slope FS17**	**120 days**	**Fri 3/4/20**	**Sat 29/8/20**	
274	Planter E2 Construction	60 days	Fri 3/4/20	Thu 18/6/20	271
275	Shrub Planting at Planter E2	60 days	Fri 19/6/20	Sat 29/8/20	274
276	Hydroseeding	60 days	Fri 3/4/20	Thu 18/6/20	271
277	**Landscape Works at Cut Slopes CS16 and CS17**	**399 days**	**Fri 23/11/18**	**Sat 28/3/20**	
278	Planter W2 Construction Stage 1	184 days	Fri 23/11/18	Thu 11/7/19	261
279	Shrub Planting at Planter W2 Stage 1	184 days	Wed 24/4/19	Mon 2/12/19	278SS+120 days
280	Planter W1 Construction Stage 1	56 days	Mon 2/12/19	Tue 11/2/20	278,263,264



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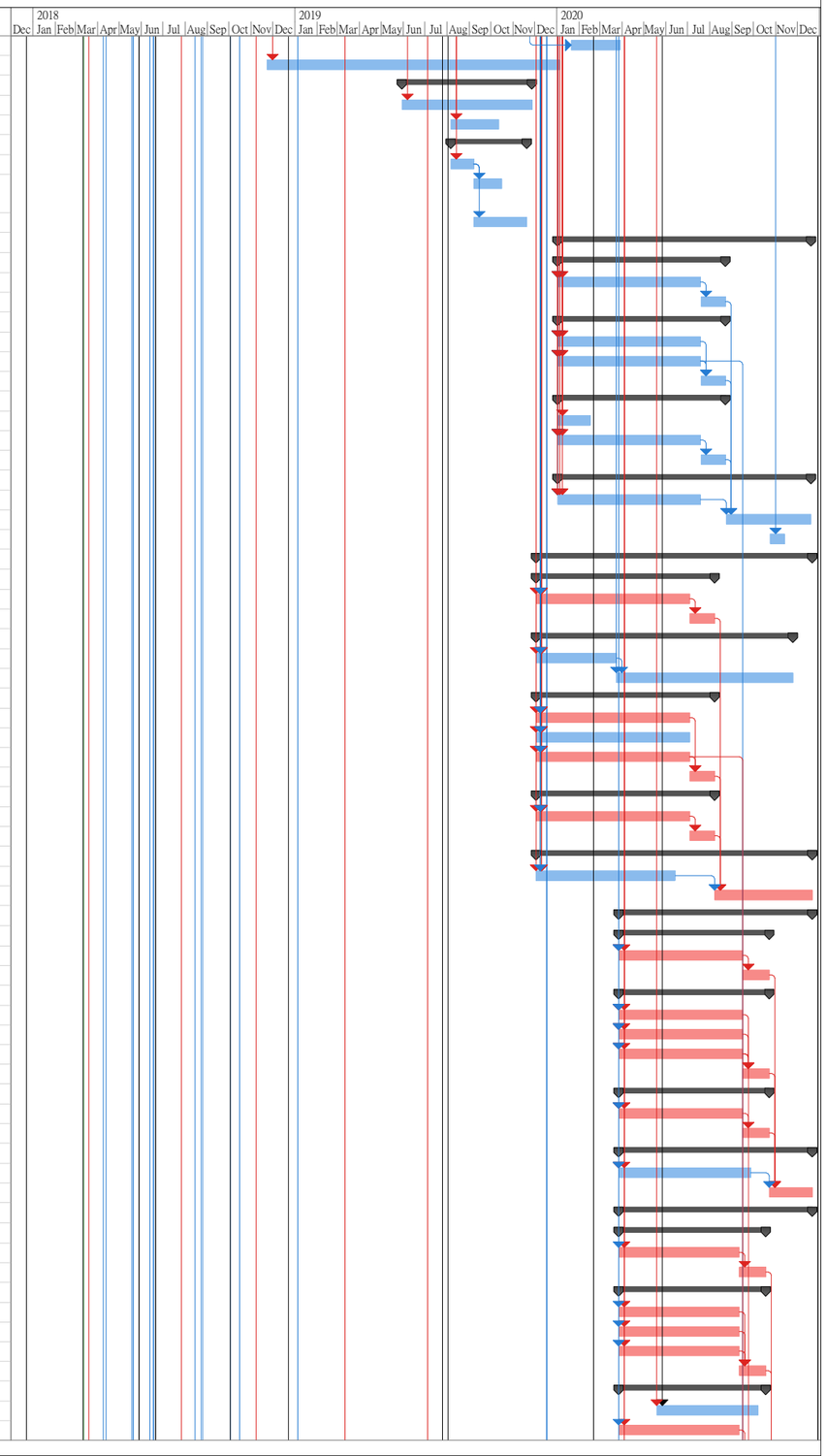
ID	Task Name	Duration	Start	Finish	Predecessors
281	Shrub Planting at Planter W2 Stage 1	56 days	Tue 21/1/20	Sat 28/3/20	280SS+40 days
282	Hydroseeding	330 days	Fri 23/11/18	Sat 4/1/20	261
283	**Existing Slope Upgrading Works**	**150 days**	**Thu 30/5/19**	**Tue 26/11/19**	
284	Existing Feature 3NW-C/F37 Upgrading Re-compaction	150 days	Thu 30/5/19	Tue 26/11/19	128
285	Existing Feature 3NW-C/C256 Rock Joint Mapping, drainage and maintenance access	55 days	Tue 6/8/19	Fri 11/10/19	231
286	**Existing Feature 3NW-C/C258 Slope Upgrading Works**	**88 days**	**Tue 6/8/19**	**Tue 19/11/19**	
287	Excavate to +48.5 mPD and Soil Nails (14 Nos. of Soil Nail)	28 days	Tue 6/8/19	Fri 6/9/19	231
288	Excavate to Proposed Ground Level, Soil Nails and Raking Drains (14 Nos. of Soil Nail, 8 Nos. of Raking Drain)	30 days	Sat 7/9/19	Tue 15/10/19	287
289	Drainage and Maintenance Access	60 days	Sat 7/9/19	Tue 19/11/19	287
290	**Sha Ling Road (M001 CH +620 to +820), M011, M014 and PDA**	**289 days**	**Thu 2/1/20**	**Sat 19/12/20**	
291	**Sewerage and Drainage**	**190 days**	**Thu 2/1/20**	**Sat 22/8/20**	
292	Drainage and Sewerage Works (Except at RW11)	160 days	Thu 2/1/20	Sat 18/7/20	130,122,178,173,190
293	Backfilling to Formation Level	30 days	Mon 20/7/20	Sat 22/8/20	292
294	**Utilities and Watermains Works**	**190 days**	**Thu 2/1/20**	**Sat 22/8/20**	
295	HKT Cable Installation	160 days	Thu 2/1/20	Sat 18/7/20	122,130,178,173,190
296	Watermains Works	160 days	Thu 2/1/20	Sat 18/7/20	130,122,178,173,190
297	Backfilling to Formation Level	30 days	Mon 20/7/20	Sat 22/8/20	295,296
298	**Landscape Works**	**190 days**	**Thu 2/1/20**	**Sat 22/8/20**	
299	Tree Planting	36 days	Thu 2/1/20	Sat 15/2/20	122
300	Irrigation System and Water Points	160 days	Thu 2/1/20	Sat 18/7/20	122,130,178,173,190
301	Backfilling to Formation Level	30 days	Mon 20/7/20	Sat 22/8/20	300
302	**Roadworks**	**289 days**	**Thu 2/1/20**	**Sat 19/12/20**	
303	Road Lighting Civil Works Provision	160 days	Thu 2/1/20	Sat 18/7/20	122,130,178,173,190
304	Carriageway, Pavement, Road Marking and Street Furniture	99 days	Mon 24/8/20	Sat 19/12/20	293,297,301,303
305	Road and Drainage Works after Completion of RW11	16 days	Sat 24/10/20	Thu 12/11/20	223
306	**Sha Ling Road (M001 CH +480 to +620), M008 & Road B M005**	**313 days**	**Tue 3/12/19**	**Mon 21/12/20**	
307	**Sewerage and Drainage**	**200 days**	**Tue 3/12/19**	**Fri 7/8/20**	
308	Drainage and Sewerage Works	170 days	Tue 3/12/19	Fri 3/7/20	199,190,263,264,177
309	Backfilling to Formation Level	30 days	Sat 4/7/20	Fri 7/8/20	308
310	**Sewage Detention Tank**	**290 days**	**Tue 3/12/19**	**Tue 24/11/20**	
311	Sewage Detention Tank Civil and Structural Works	90 days	Tue 3/12/19	Mon 23/3/20	199,190,263,264,177
312	VDS and AMS for Sewage Detention Tank	200 days	Tue 24/3/20	Tue 24/11/20	311,82
313	**Utilities and Watermains Works**	**200 days**	**Tue 3/12/19**	**Fri 7/8/20**	
314	HKT Cable Installation	170 days	Tue 3/12/19	Fri 3/7/20	263,264,199,190,177
315	Town Gas Installation	170 days	Tue 3/12/19	Fri 3/7/20	263,264,199,190,177
316	Watermains Works	170 days	Tue 3/12/19	Fri 3/7/20	263,264,199,190,177
317	Backfilling to Formation Level	30 days	Sat 4/7/20	Fri 7/8/20	314,316
318	**Landscape Works**	**200 days**	**Tue 3/12/19**	**Fri 7/8/20**	
319	Irrigation System and Water Points	170 days	Tue 3/12/19	Fri 3/7/20	263,264,199,190,177
320	Backfilling to Formation Level	30 days	Sat 4/7/20	Fri 7/8/20	319
321	**Roadworks**	**313 days**	**Tue 3/12/19**	**Mon 21/12/20**	
322	Road Lighting Civil Works Provision	155 days	Tue 3/12/19	Sat 13/6/20	263,264,199,190,177
323	Carriageway, Pavement, Road Marking and Street Furniture	113 days	Sat 8/8/20	Mon 21/12/20	309,317,320,322
324	**Sha Ling Road (M001 CH +340 to +480)**	**220 days**	**Fri 27/3/20**	**Mon 21/12/20**	
325	**Sewerage and Drainage**	**170 days**	**Fri 27/3/20**	**Thu 22/10/20**	
326	Drainage and Sewerage Works	140 days	Fri 27/3/20	Tue 15/9/20	200,252,263,264,234
327	Backfilling to Formation Level	30 days	Wed 16/9/20	Thu 22/10/20	326
328	**Utilities and Watermains Works**	**170 days**	**Fri 27/3/20**	**Thu 22/10/20**	
329	HKT Cable Installation	140 days	Fri 27/3/20	Tue 15/9/20	200,252,263,264,234
330	Town Gas Installation	140 days	Fri 27/3/20	Tue 15/9/20	200,252,263,264,234
331	Watermains Works	140 days	Fri 27/3/20	Tue 15/9/20	200,252,263,264,234
332	Backfilling to Formation Level	30 days	Wed 16/9/20	Thu 22/10/20	329,331,330
333	**Landscape Works**	**170 days**	**Fri 27/3/20**	**Thu 22/10/20**	
334	Irrigation System and Water Points	140 days	Fri 27/3/20	Tue 15/9/20	200,252,263,264,234
335	Backfilling to Formation Level	30 days	Wed 16/9/20	Thu 22/10/20	334
336	**Roadworks**	**220 days**	**Fri 27/3/20**	**Mon 21/12/20**	
337	Road Lighting Civil Works Provision	150 days	Fri 27/3/20	Sat 26/9/20	200,252,263,264,234
338	Carriageway, Pavement, Road Marking and Street Furniture	50 days	Fri 23/10/20	Mon 21/12/20	327,332,335,337
339	**Sha Ling Road (M001 CH +180 to +340)**	**220 days**	**Fri 27/3/20**	**Mon 21/12/20**	
340	**Sewerage and Drainage**	**166 days**	**Fri 27/3/20**	**Sat 17/10/20**	
341	Drainage and Sewerage Works	136 days	Fri 27/3/20	Thu 10/9/20	234,270
342	Backfilling to Formation Level	30 days	Fri 11/9/20	Sat 17/10/20	341
343	**Utilities and Watermains Works**	**166 days**	**Fri 27/3/20**	**Sat 17/10/20**	
344	HKT Cable Installation	136 days	Fri 27/3/20	Thu 10/9/20	234,270
345	Town Gas Installation	136 days	Fri 27/3/20	Thu 10/9/20	234,270
346	Watermains Works	136 days	Fri 27/3/20	Thu 10/9/20	234,270
347	Backfilling to Formation Level	30 days	Fri 11/9/20	Sat 17/10/20	344,346,345
348	**Landscape Works**	**166 days**	**Fri 27/3/20**	**Sat 17/10/20**	
349	Tree Planting	117 days	Tue 19/5/20	Tue 6/10/20	234,225
350	Irrigation System and Water Points	136 days	Fri 27/3/20	Thu 10/9/20	234,270



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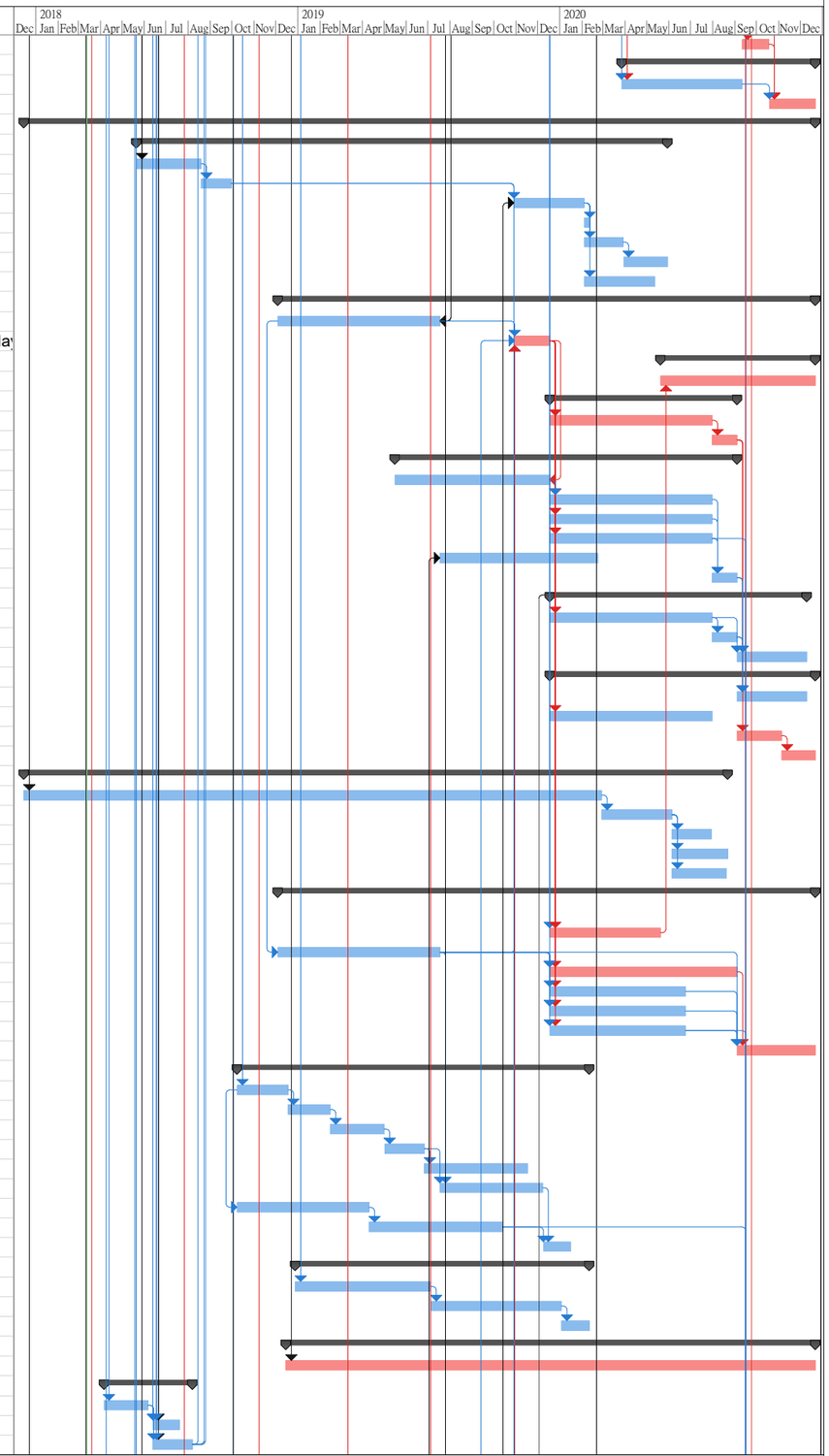
ID	Task Name	Duration	Start	Finish	Predecessors
351	Backfilling to Formation Level	30 days	Fri 11/9/20	Sat 17/10/20	350
352	**Roadworks**	**220 days**	**Fri 27/3/20**	**Mon 21/12/20**	
353	Road Lighting Civil Works Provision	136 days	Fri 27/3/20	Thu 10/9/20	234,270
354	Carriageway, Pavement, Road Marking and Street Furniture	54 days	Mon 19/10/20	Mon 21/12/20	342,347,351,353
355	**Part B2**	**894 days**	**Fri 15/12/17**	**Mon 21/12/20**	
356	**Slope Works (CS14, FS14)**	**600 days**	**Mon 21/5/18**	**Fri 29/5/20**	
357	Trial Pit Excavation	75 days	Mon 21/5/18	Sat 18/8/18	45
358	Verification of Design by Supervisor	42 days	Sun 19/8/18	Sat 29/9/18	357
359	Slope Works at CS14, FS14	78 days	Tue 29/10/19	Mon 3/2/20	428SS,358
360	Geotechnical Instrumentation Works	6 days	Tue 4/2/20	Mon 10/2/20	359
361	Planter E2 Construction	47 days	Tue 4/2/20	Sat 28/3/20	359
362	Shrubs Planting at E2	47 days	Mon 30/3/20	Fri 29/5/20	361
363	Drainage and Maintenance Access	78 days	Tue 4/2/20	Mon 11/5/20	359
364	**Sha Ling Road (M001 CH +40 to +180)**	**608 days**	**Tue 4/12/18**	**Mon 21/12/20**	
365	TTA and XP Application for Relocation of Sha Ling Road	180 days	Tue 4/12/18	Wed 17/7/19	15FF,16FF
366	Relocation of Existing Temporary Sha Ling Road to Parts G1 and G2	42 days	Wed 30/10/19	Tue 17/12/19	365,396,427SS+30 days,426FS+31 da
367	**Noise Barrier**	**180 days**	**Wed 20/5/20**	**Mon 21/12/20**	
368	Noise Barrier Construction Bay 3 to Bay 8	180 days	Wed 20/5/20	Mon 21/12/20	395
369	**Sewerage and Drainage**	**210 days**	**Wed 18/12/19**	**Thu 3/9/20**	
370	Drainage and Sewerage Works	180 days	Wed 18/12/19	Thu 30/7/20	366
371	Backfilling to Formation Level	30 days	Fri 31/7/20	Thu 3/9/20	370
372	**Utilities and Watermains Works**	**390 days**	**Thu 16/5/19**	**Thu 3/9/20**	
373	Existing HKT Pole Relocation (By Others)	180 days	Thu 16/5/19	Tue 17/12/19	366FF
374	HKT Cable Installation	180 days	Wed 18/12/19	Thu 30/7/20	366,373
375	Town Gas Installation	180 days	Wed 18/12/19	Thu 30/7/20	366
376	Watermains Works	180 days	Wed 18/12/19	Thu 30/7/20	366
377	CLP Structure Relocation (By Others)	180 days	Thu 18/7/19	Sat 22/2/20	422SS
378	Backfilling to Formation Level	30 days	Fri 31/7/20	Thu 3/9/20	374,376,375
379	**Roadworks**	**290 days**	**Wed 18/12/19**	**Wed 9/12/20**	
380	Road Lighting Civil Works Provision	180 days	Wed 18/12/19	Thu 30/7/20	366
381	Backfilling to Formation Level	30 days	Fri 31/7/20	Thu 3/9/20	380
382	Carriageway, Pavement, Road Marking and Street Furniture	80 days	Fri 4/9/20	Wed 9/12/20	371,378,381,380
383	**Landscape Works**	**300 days**	**Wed 18/12/19**	**Mon 21/12/20**	
384	Tree Planting	80 days	Fri 4/9/20	Wed 9/12/20	371,378,381
385	Irrigation System and Water Points (Except Water Connection)	180 days	Wed 18/12/19	Thu 30/7/20	366
386	Planter Construction	50 days	Fri 4/9/20	Wed 4/11/20	371
387	Shrubs Planting	40 days	Thu 5/11/20	Mon 21/12/20	386
388	**Man Kam To Road Bus Shelter**	**793 days**	**Fri 15/12/17**	**Fri 21/8/20**	
389	Temporary Storage and Secondary Site Office	650 days	Fri 15/12/17	Thu 27/2/20	10
390	Bus Shelter Drainage	78 days	Fri 28/2/20	Thu 4/6/20	389
391	Road Lighting Civil Works Provision	45 days	Fri 5/6/20	Wed 29/7/20	390
392	Carraigeway, Pavement and Street Furniture	65 days	Fri 5/6/20	Fri 21/8/20	390
393	Tree Planting	63 days	Fri 5/6/20	Wed 19/8/20	390
394	**Sha Ling Road (M001 CH+0 to +40), Man Kam To Road Drainage, Sewerage, Watermains and Other Utilities**	**608 days**	**Tue 4/12/18**	**Mon 21/12/20**	
395	Noise Barrier Construction Bay 1 to Bay 2	120 days	Wed 18/12/19	Tue 19/5/20	72,366
396	TTA and XP Application at Man Kam To Road	180 days	Tue 4/12/18	Wed 17/7/19	365SS
397	Drainage and Sewerage Connections	210 days	Wed 18/12/19	Thu 3/9/20	396,366,80
398	HKT Cable Installation	150 days	Wed 18/12/19	Tue 23/6/20	396,366
399	Road Lighting Civil Works Provision	150 days	Wed 18/12/19	Tue 23/6/20	396,366
400	Watermains Works	150 days	Wed 18/12/19	Tue 23/6/20	396,366
401	Sha Ling Road Carriageway and Footway	90 days	Fri 4/9/20	Mon 21/12/20	396,397,398,399,400
402	**Part C**	**397 days**	**Mon 8/10/18**	**Mon 10/2/20**	
403	Installation of Temporary Works	60 days	Mon 8/10/18	Mon 17/12/18	76
404	Excavation to Formation Level and Blinding Layer	45 days	Tue 18/12/18	Thu 14/2/19	403
405	R.C. Structure Up to Ground Floor	60 days	Fri 15/2/19	Tue 30/4/19	404
406	R.C. Structure up to Roof	45 days	Thu 2/5/19	Tue 25/6/19	405
407	ABWF Works	120 days	Wed 26/6/19	Sat 16/11/19	406
408	Drainage and Sewerage Connections	120 days	Thu 18/7/19	Sat 7/12/19	406,396
409	Water Meter Application	150 days	Mon 8/10/18	Tue 9/4/19	403SS
410	Watermain Connection	150 days	Wed 10/4/19	Sat 12/10/19	409
411	Paving Works	30 days	Mon 9/12/19	Wed 15/1/20	408,410
412	**E&M Works**	**330 days**	**Fri 28/12/18**	**Mon 10/2/20**	
413	CLP Meter Application	150 days	Fri 28/12/18	Thu 4/7/19	78
414	CLP Cable Connection	150 days	Fri 5/7/19	Thu 2/1/20	413
415	Electrial and Lighting Works	30 days	Fri 3/1/20	Mon 10/2/20	414
416	**Part D**	**598 days**	**Sat 15/12/18**	**Mon 21/12/20**	
417	Woodland Planting	598 days	Sat 15/12/18	Mon 21/12/20	12
418	**Part F**	**101 days**	**Fri 6/4/18**	**Mon 6/8/18**	
419	Hydrographic Survey and Report Submission	50 days	Fri 6/4/18	Tue 5/6/18	33
420	Erection of Site Hoarding	30 days	Wed 13/6/18	Thu 19/7/18	14,419,70,32
421	Construction of Barging Point Loading Hall	45 days	Wed 13/6/18	Mon 6/8/18	14,419,70

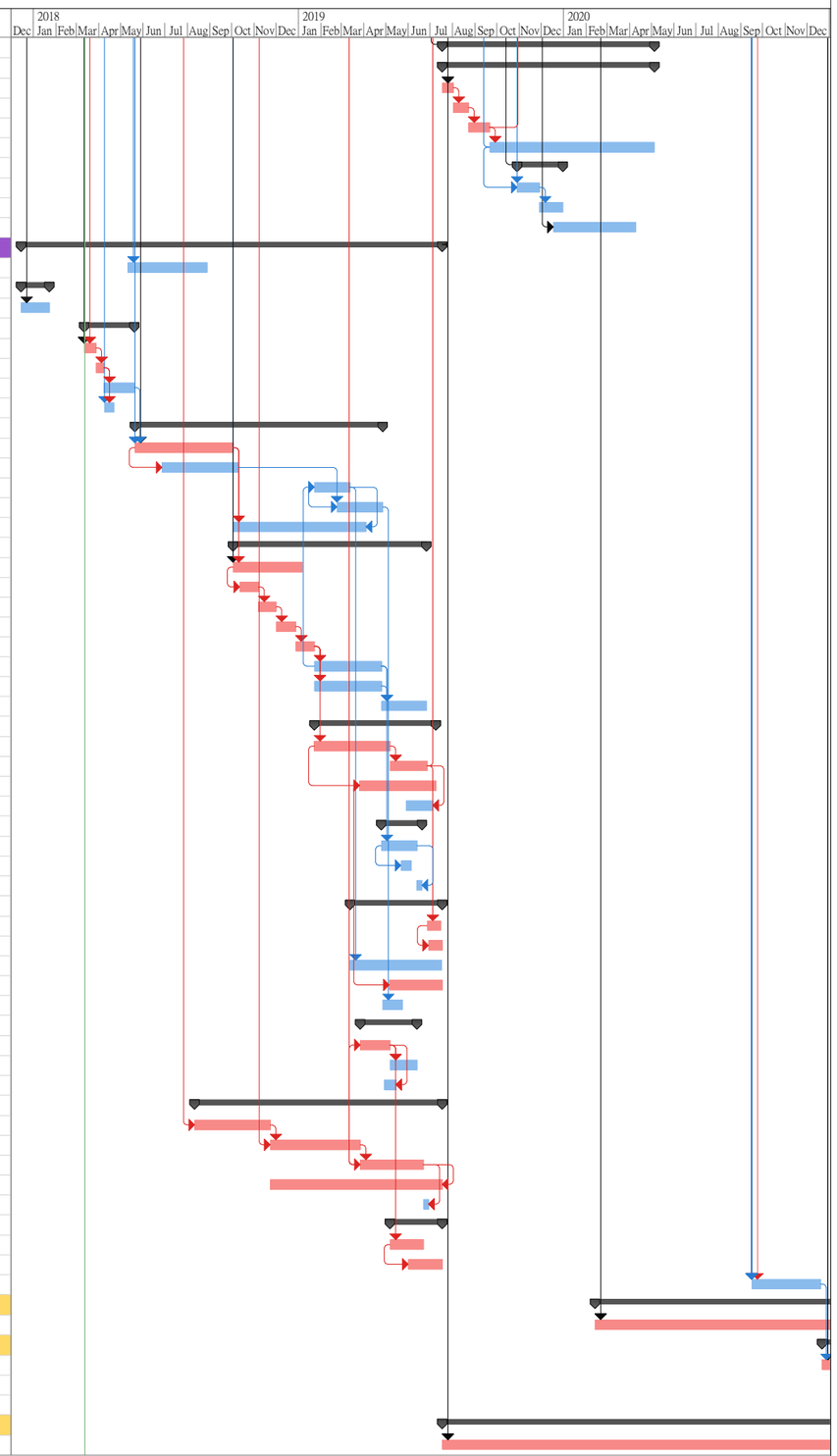


Project: Master Programme Rev.0a
Date: Tue 13/3/18

Task | Summary | Inactive Milestone | Duration-only | Start-only | External Milestone | Critical Split
Split | Project Summary | Inactive Summary | Manual Summary Rollup | Finish-only | Deadline | Progress
Milestone | Inactive Task | Manual Task | Manual Summary | External Tasks | Critical | Manual Progress

Master Programme Rev.0a

ID	Task Name	Duration	Start	Finish	Predecessors
422	**Parts G1 and G2**	**235 days**	**Thu 18/7/19**	**Mon 4/5/20**	
423	**Land Decontamination Works**	**235 days**	**Thu 18/7/19**	**Mon 4/5/20**	
424	Environmental SI for Determination of Decontamination	13 days	Thu 18/7/19	Thu 1/8/19	15,16
425	SI Testing and Report Submission to EPD	18 days	Fri 2/8/19	Thu 22/8/19	424
426	Contamination Assessment Plan and Decontamination Proposal Preparation and Submission to EPD	24 days	Fri 23/8/19	Fri 20/9/19	425
427	Land Decontamination Works	180 days	Sat 21/9/19	Mon 4/5/20	426
428	**Fill Slope FS13**	**52 days**	**Tue 29/10/19**	**Mon 30/12/19**	
429	Backfill to Proposed Ground Level (Max. 2.5m)	27 days	Tue 29/10/19	Thu 28/11/19	427SS+30 days,358
430	Drainage and Maintenance Access	25 days	Fri 29/11/19	Mon 30/12/19	429
431	Roadworks	90 days	Wed 18/12/19	Wed 8/4/20	379SS
432	**Section 3 of the Works (Part E)**	**580 days**	**Fri 15/12/17**	**Wed 17/7/19**	
433	Temporary Drainage Works	90 days	Fri 11/5/18	Mon 27/8/18	68
434	**Utilities Diversion/Protection Works**	**30 days**	**Fri 15/12/17**	**Mon 22/1/18**	
435	Enquiries of As-built Record from UU Companies	30 days	Fri 15/12/17	Mon 22/1/18	2
436	**Ground Investigation and Geotechnical Instrumentation for Commencement of Slopework**	**55 days**	**Mon 12/3/18**	**Sat 19/5/18**	
437	Mobilization of GI Rig	14 days	Mon 12/3/18	Tue 27/3/18	6,7,8,27
438	Verification Drillholes (2 Nos., VDH4-5)	6 days	Wed 28/3/18	Sat 7/4/18	437
439	Report Submission and Verification of the Design of Cut and Fill Slope by PM	42 days	Sun 8/4/18	Sat 19/5/18	438
440	Geotechnical Instrumentation Required for Commencement of Slope Works	12 days	Mon 9/4/18	Sat 21/4/18	28,438
441	**Fill Slope FS3**	**277 days**	**Mon 21/5/18**	**Fri 26/4/19**	
442	Backfilling Stage 1 (~11m, up to +27 mPD at Section 17)	111 days	Mon 21/5/18	Tue 2/10/18	439,34,35,45
443	Drainage, Maintenance Access after Backfilling Stage 1	87 days	Wed 27/6/18	Tue 9/10/18	442SS+30 days
444	Backfilling Stage 2 (~3.6m, up to Proposed Ground)	39 days	Wed 23/1/19	Tue 12/3/19	453SS
445	Drainage, Maintenance Access after Backfilling Stage 2	50 days	Sat 23/2/19	Fri 26/4/19	444SS+24 days,443
446	Geotechnical Instrumentation Works	150 days	Wed 3/10/18	Wed 3/4/19	442,444FF+6 days
447	**Retaining Wall RW4**	**214 days**	**Wed 3/10/18**	**Tue 25/6/19**	
448	Backfilling to Formation Level, Plate Load Test, Blinding Layer	78 days	Wed 3/10/18	Sat 5/1/19	45,442,36
449	Bay 5 and Bay 7	21 days	Fri 12/10/18	Tue 6/11/18	448SS+8 days
450	Bay 6 and Bay 4	21 days	Wed 7/11/18	Fri 30/11/18	449
451	Bay 3 and Bay 1	21 days	Sat 1/12/18	Thu 27/12/18	450
452	Bay 2 and Bay 8	21 days	Fri 28/12/18	Tue 22/1/19	451
453	Backfilling behind RW1 (~7m up to +35.6 mPD)	72 days	Wed 23/1/19	Wed 24/4/19	452
454	Filter Layer behind RW4	72 days	Wed 23/1/19	Wed 24/4/19	452
455	Drainage and Maintenance Access	50 days	Thu 25/4/19	Tue 25/6/19	453,454
456	**Fill Slope FS2**	**132 days**	**Wed 23/1/19**	**Mon 8/7/19**	
457	Backfilling Stage 1 (~8m, up to Maintenance Berm +43 mPD)	81 days	Wed 23/1/19	Mon 6/5/19	452
458	Backfilling Stage 2 (~4m, up to Proposed Ground)	42 days	Tue 7/5/19	Wed 26/6/19	457
459	Drainage, Sewerage and Maintenance Access	82 days	Tue 26/3/19	Mon 8/7/19	457SS+50 days
460	Geotechnical Instrumentation Works	30 days	Wed 29/5/19	Thu 4/7/19	458FF+6 days
461	**Fill Slope FS4**	**45 days**	**Thu 25/4/19**	**Wed 19/6/19**	
462	Backfilling (~3.5m up to Proposed Ground)	39 days	Thu 25/4/19	Wed 12/6/19	453
463	Drainage, Maintenance Access after Backfilling	12 days	Wed 22/5/19	Tue 4/6/19	462SS+21 days
464	Geotechnical Instrumentation Works	6 days	Thu 13/6/19	Wed 19/6/19	462FF+6 days
465	**Landscape Works at Fill Slopes FS2, FS3 and FS4**	**101 days**	**Wed 13/3/19**	**Wed 17/7/19**	
466	Planter E2 Construction	15 days	Thu 27/6/19	Mon 15/7/19	458
467	Shrubs Planting at Planter E2	15 days	Sat 29/6/19	Wed 17/7/19	466SS+2 days
468	Whips and shrubs planting at FS3	100 days	Wed 13/3/19	Tue 16/7/19	444
469	Whips and shrubs planting FS2	60 days	Mon 6/5/19	Wed 17/7/19	459SS+30 days
470	Hydroseeding	21 days	Sat 27/4/19	Thu 23/5/19	445
471	**Cut Slope CS18**	**60 days**	**Wed 27/3/19**	**Wed 12/6/19**	
472	Excavate to proposed roadwork level and raking drains	30 days	Wed 27/3/19	Mon 6/5/19	478SS
473	Drainage and Maintenance Access	30 days	Tue 7/5/19	Wed 12/6/19	472
474	Geotechnical Instrumentation Works	12 days	Mon 29/4/19	Tue 14/5/19	472FF+6 days
475	**Cut Slope CS19**	**275 days**	**Sat 11/8/18**	**Wed 17/7/19**	
476	Excavate to +54.5 mPD	86 days	Sat 11/8/18	Thu 22/11/18	261SS
477	Excavate to +47mPD, Soil Nails and Raking Drains	100 days	Fri 23/11/18	Tue 26/3/19	476,262SS
478	Excavate to +41mPD, Soil Nails, Raking Drains and Excavate to Toe Level	68 days	Wed 27/3/19	Fri 21/6/19	477,263SS
479	Drainage and Maintenance Access	189 days	Fri 23/11/18	Wed 17/7/19	478FF+21 days
480	Geotechnical Instrumentation Works	6 days	Sat 22/6/19	Fri 28/6/19	478FF+6 days
481	**Landscape Works at Cut Slopes C18, CS19**	**59 days**	**Tue 7/5/19**	**Wed 17/7/19**	
482	Planter W2 Construction	38 days	Tue 7/5/19	Fri 21/6/19	472
483	Shrubs Planting at Planter W2	38 days	Sat 1/6/19	Wed 17/7/19	482SS+21 days
484	Water Connections for Watermains (by WSD)	79 days	Wed 16/9/20	Sat 19/12/20	400,410,376,296,316,331
485	**Section 4 of the Works**	**1096 days**	**Thu 13/2/20**	**Sun 12/2/23**	
486	Establishment Works of Parts A1, A2 & A3	1096 days	Thu 13/2/20	Sun 12/2/23	89,18
487	**Section 5 of the Works**	**1096 days**	**Tue 22/12/20**	**Fri 22/12/23**	
488	Establishment Works of Parts B1, B2, C, D, F, G1 & G2	1096 days	Tue 22/12/20	Fri 22/12/23	155,484,19
489	Dummy for Showing the Critical Path of Section 4	313 days	Mon 13/2/23	Fri 22/12/23	486,21
490	Dummy for Showing the Critical Path of Section 6	523 days	Mon 18/7/22	Fri 22/12/23	492,23
491	**Section 6 of the Works**	**1096 days**	**Thu 18/7/19**	**Sun 17/7/22**	
492	Establishment Works of Part E	1096 days	Thu 18/7/19	Sun 17/7/22	432,20

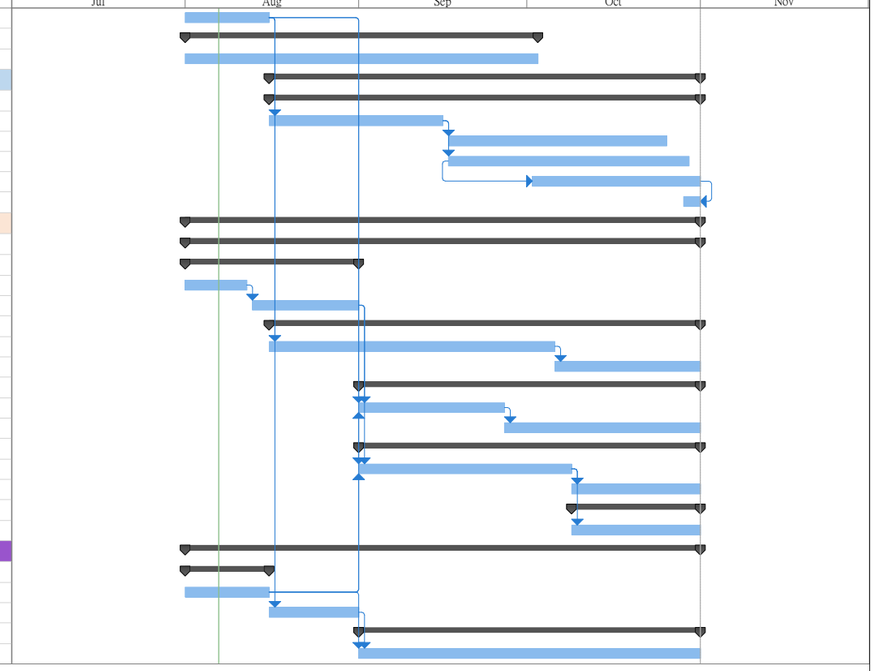


Contract No. CV/2016/10
Site Formation and Associated Infrastructural Works for
Development of Columbarium at Sandy Ridge Cemetery

2018 July Three Months Rolling Programme

Hsin Chong Tsun Yip Joint Venture

ID	Task Name	Duration	Start	Finish	Predecessors	Task Calendar
1	**Submission and Approval Required at Environmental Permit for Commencement of Construction**	13 days	Wed 1/8/18	Wed 15/8/18		**Working Days**
2	**Project Manager's Site Accommodation**	**52 days**	**Wed 1/8/18**	**Tue 2/10/18**		**Working Days**
3	Construction of Site Accommodation	52 days	Wed 1/8/18	Tue 2/10/18		Working Days
4	**Section 1 of the Works (Parts A1, A2 & A3)**	**61 days**	**Thu 16/8/18**	**Wed 31/10/18**		**Working Days**
5	**Retaining Wall RW1**	**61 days**	**Thu 16/8/18**	**Wed 31/10/18**		Working Days
6	Excavation to Formation Level, Plate Load Test and Blinding Layer for Retaining Wall Bays 1-9	27 days	Thu 16/8/18	Sat 15/9/18	1	Working Days
7	Excavation to Formation Level, Plate Load Test and Blinding Layer for Retaining Wall Bays 10-17	29 days	Mon 17/9/18	Thu 25/10/18	6	Working Days
8	Base of Retaining Wall RW1 Bay 1-9	32 days	Mon 17/9/18	Mon 29/10/18	6	Working Days
9	Wall Stem of Retaining Wall Bay 1-3	23 days	Tue 2/10/18	Wed 31/10/18	8SS+11 days	Working Days
10	**Fill Slope FS1 North (Commencement of Deposition)**	3 days	Mon 29/10/18	Wed 31/10/18	9FF	Working Days
11	**Section 2 of the Works (Parts B1, B2, C, D, F, G1 & G2)**	**74 days**	**Wed 1/8/18**	**Wed 31/10/18**		**Working Days**
12	**Part B1**	**74 days**	**Wed 1/8/18**	**Wed 31/10/18**		Working Days
13	**Ground Investigation and Geotechnical instrumentation for Commencement of Slopework**	**27 days**	**Wed 1/8/18**	**Fri 31/8/18**		Working Days
14	Verification Drillholes and Preliminary Results Submission	10 days	Wed 1/8/18	Sat 11/8/18		Working Days
15	Formal Report Submission and Verification of the Design of Cut and Fill Slope by PM	17 days	Mon 13/8/18	Fri 31/8/18	14	Working Days
16	**Temporary Excavation to Proposed Platform at Future PDA**	**61 days**	**Thu 16/8/18**	**Wed 31/10/18**		Working Days
17	Excavate to +80 mPD	42 days	Thu 16/8/18	Fri 5/10/18	1	Working Days
18	Excavate to +77 mPD	19 days	Sat 6/10/18	Wed 31/10/18	17	Working Days
19	**Cut Slope CS11 and CS12**	**47 days**	**Sat 1/9/18**	**Wed 31/10/18**		Working Days
20	Excavate to +94 mPD	21 days	Sat 1/9/18	Wed 26/9/18	15,1,29	Working Days
21	Excavate to +90 mPD and Soil Nails (~28 Nos. of Soil Nail)	26 days	Thu 27/9/18	Wed 31/10/18	20	Working Days
22	**Cut Slope CS15**	**47 days**	**Sat 1/9/18**	**Wed 31/10/18**		Working Days
23	Excavate to +69.5 mPD and Soil Nails (25 nos. of Soil Nail)	30 days	Sat 1/9/18	Mon 8/10/18	15,1,29	Working Days
24	Excavate to +65 mPD and Soil Nails (~5 nos. of Soil Nail)	17 days	Tue 9/10/18	Wed 31/10/18	23	Working Days
25	**Cut Slope CS16/17**	**17 days**	**Tue 9/10/18**	**Wed 31/10/18**		Working Days
26	Excavate to +65 mPD and Soil Nails (~5 nos. of Soil Nail)	17 days	Tue 9/10/18	Wed 31/10/18	23	Working Days
27	**Section 3 of the Works (Part E)**	**74 days**	**Wed 1/8/18**	**Wed 31/10/18**		**Working Days**
28	**Ground Investigation and Geotechnical instrumentation for Commencement of Slopework**	**13 days**	**Wed 1/8/18**	**Wed 15/8/18**		Working Days
29	Formal Report Submission and Verification of the Design of Cut and Fill Slope by PM	13 days	Wed 1/8/18	Wed 15/8/18		Working Days
30	Formation of Temporary Access	14 days	Thu 16/8/18	Fri 31/8/18	1	Working Days
31	**Fill Slope FS3**	**47 days**	**Sat 1/9/18**	**Wed 31/10/18**		Working Days
32	Backfilling from +16 mPD to +20.5 mPD	47 days	Sat 1/9/18	Wed 31/10/18	30,29	Working Days



Project: 201807 3 months rolling pr
Date: 7 Aug 2018

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

Appendix D

Designated Monitoring Locations as Recommended in the Approved EM&A Manual

Legend

- Project Boundary
- Utilities Construction
- Proposed Air Monitoring Stations

Sha Ling Road

ASR-1

Proposed Pick-up and Drop-off Point

Man Kam To Road

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

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

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

0 25 50 METRES

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

Man Kam To Boundary Control Point

Lin Ma Hang Road

ASR-2

San Uk Ling

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

Legend

- Project Boundary
- Proposed Air Monitoring Stations

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

Consultant

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Agreement No. CE 1/2013(CE)

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

Drawing title

0 25 50 METRE

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

Muk Wu Nga Yiu

ASR-3

Lin Ma Hang Road

SHAM CHUN RIVER (SHENZHEN HE)

SHENZHEN SHI

LO SHUE LING

0 25 50 METRES

Legend

Project Boundary

Proposed Air Monitoring Stations

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

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

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

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

Sha Ling Road

Proposed Pick-up and Drop-off Point

CN-1

Man Kam To Road

Legend

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

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

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

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

0 25 50
METRES

Planned

Sandy Ridge Cemetery

CN-2

Man Kam To Road

0 25 50
METRES

Legend

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

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

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

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

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

Man Kam To Boundary Control Point

Lin Ma Hang Road

CN-4

CN-3

San Uk Ling

N

0 25 50
METRES

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

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

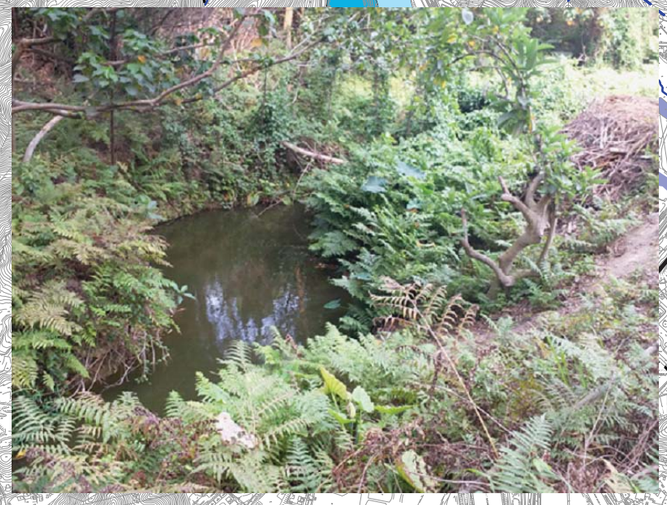
Contract No. and Title:

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

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



Shenzhen River

Ping Yuen River

Lin Ma Hang Road

Man Kam To Boundary Control Point

San Uk Ling

Nam Hang Stream

Ng Tung River

M1

M2

M3

M4

0 100 200 300 400 500
METRES

N

Legend

- Project Boundary
- Utilities Construction
- 500m Assessment Area
- Channelized River
- Pond
- Watercourse
- Conservation Area (CA)
- Wet Woodland
- Seasonal Watercourse
- Water Quality Monitoring Stations in EM&A Manual

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

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

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

Proposed Air Quality Monitoring Location under Contract 1

Legend

- Project Boundary
- Utilities Construction
- Proposed Air Monitoring Stations

Sha Ling Road

ASR-1

Proposed Pick-up and Drop-off Point

Man Kam To Road

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

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

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Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

0 25 50 METRES

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

Proposed Noise Monitoring Location under Contract 1

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

Sha Ling Road

Proposed Pick-up and Drop-off Point

CN-1

Man Kam To Road

Legend

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

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

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

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

0 25 50
METRES

Proposed Water Quality Monitoring Station under Contract 1

N

Shenzhen River

Shenzhen River

Ping Yuen River

Lin Ma Hang Road

Man Kam To Boundary Control Point

M2

M4

San Uk Ling

Nam Hang Stream

M1

M3

M3

Ng Tung River

Ng Tung River

0 100 200 300 400 500
METRES

Legend

- Project Boundary
- Utilities Construction
- 500m Assessment Area
- Channelized River
- Pond
- Watercourse
- Conservation Area (CA)
- Wet Woodland
- Seasonal Watercourse
- Water Quality Monitoring Stations in EM&A Manual

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

Consultant

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

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

Appendix E

Calibration Certificate of Monitoring Equipment and Laboratory Certificate

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Sha Ling Village House No.6	Date of Calibration: 16-Aug-18
Location ID : ASR-1	Next Calibration Date: 16-Oct-18
Name and Model: TISCH HVS Model TE-5170	Technician: Ip Ka Hing

CONDITIONS

Sea Level Pressure (hPa)	1015.8	Corrected Pressure (mm Hg)	761.85
Temperature (ºC)	22.5	Temperature (K)	296

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.02017
Model->	5025A	Qstd Intercept ->	-0.03691
Serial # ->	1612		

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	5.40	5.40	10.8	1.654	52	52.50	Slope = 43.0586
13	4.20	4.20	8.4	1.461	44	44.43	Intercept = -18.9634
10	3.40	3.40	6.8	1.316	37	37.36	Corr. coeff. = 0.9974
7	2.20	2.20	4.4	1.062	25	25.24	
5	1.35	1.35	2.7	0.836	18	18.17	

Calculations :

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

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

Qstd = standard flow rate

IC = corrected chart respones

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K

Pstd = actual pressure during calibration (mm Hg

For subsequent calculation of sampler flow:

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

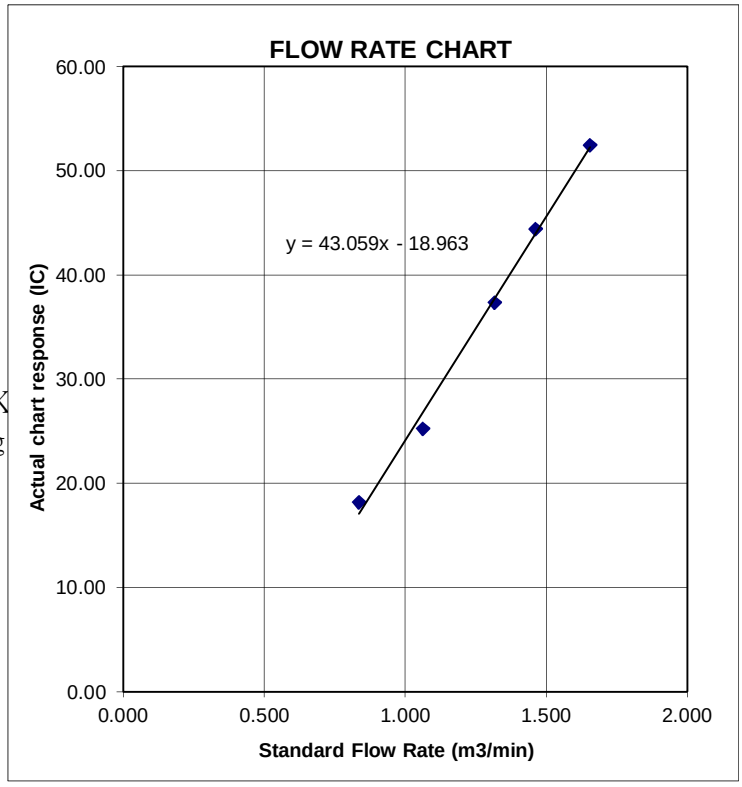
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
February 13, 2019

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	February 13, 2018	**Rootsmeter S/N:** 438320	**Ta:** 293	°K
Operator:	Jim Tisch		**Pa:** 763.3	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	1.3970	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8440	8.7	5.50
5	9	10	1	0.7010	12.6	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0172	0.7281	1.4293	0.9958	0.7128	0.8762
1.0130	1.0130	2.0213	0.9917	0.9917	1.2392
1.0109	1.1358	2.2599	0.9896	1.1120	1.3854
1.0098	1.1964	2.3702	0.9886	1.1713	1.4530
1.0046	1.4331	2.8586	0.9835	1.4030	1.7524
QSTD	**m=**	**2.02017**	**QA**	**m=**	**1.26500**
	b=	**-0.03691**		**b=**	**-0.02263**
	r=	**0.99988**		**r=**	**0.99988**

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

RECALIBRATION

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

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

www.tisch-env.cor
TOLL FREE: (877)263-761(
FAX: (513)467-900

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR BEN TAM	WORK ORDER	: **HK1825892**
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS	: RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 12-APR-2018
		DATE OF ISSUE	: 19-APR-2018
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- Sample(s) were received in ambient condition.
- Sample(s) analysed and reported on an as received basis.
- Calibration was subcontracted to and analysed by Action United Enviro Services.

Signatories

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

Signatories	*Position*
Richard Fung	General Manager

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

Results apply to sample(s) as submitted. 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	: HK1825892
SUB-BATCH	: 1
CLIENT	: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING
PROJECT	: ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK1825892-001	S/N: 456660	Equipments	12-Apr-2018	S/N: 456660

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	456660
Equipment Ref:	EQ117
Job Order	HK1825892

Standard Equipment:

Standard Equipment:	Higher Volume Sampler
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	27 February 2018

Equipment Verification Results:

Calibration Date: 12 & 13 March 2018

Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in mg/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/60min)
2hr07min	9:50 ~ 11:57	19.6	1019.0	0.073	4016	31.7
2hr14min	12:05 ~ 14:19	19.6	1019.0	0.075	4544	33.8
2hr17min	9:50 ~ 12:07	20.9	1016.7	0.075	4912	35.7

Sensitivity Adjustment Scale Setting (Before Calibration) 615 (CPM)

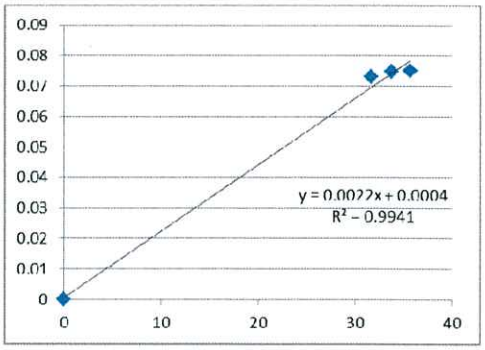
Sensitivity Adjustment Scale Setting (After Calibration) 615 (CPM)

Linear Regression of Y or X

Slope (K-factor): 0.0022

Correlation Coefficient (R) 0.9970

Date of Issue 15 March 2018



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 0.0022 should be apply for TSP monitoring

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

Operator : Martin Li Signature : Date : 15 March 2018

QC Reviewer : Ben Tam Signature : Date : 15 March 2018

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	27-Feb-18
Location ID :	Calibration Room	Next Calibration Date:	27-May-18

CONDITIONS

Sea Level Pressure (hPa)	1017.3	Corrected Pressure (mm Hg)	762.975
Temperature (°C)	19.1	Temperature (K)	292

CALIBRATION ORIFICE

Make->	TISCH	Qstd Slope ->	2.11965
Model->	5025A	Qstd Intercept ->	-0.02696
Calibration Date->	28-Feb-17	Expiry Date->	28-Feb-18

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.694	52	52.63	Slope = 39.8525
13	5.1	5.1	10.2	1.538	46	46.55	Intercept = -14.3322
10	3.9	3.9	7.8	1.346	40	40.48	Corr. coeff. = 0.9974
8	2.6	2.6	5.2	1.101	30	30.36	
5	1.7	1.7	3.4	0.893	20	20.24	

Calculations :

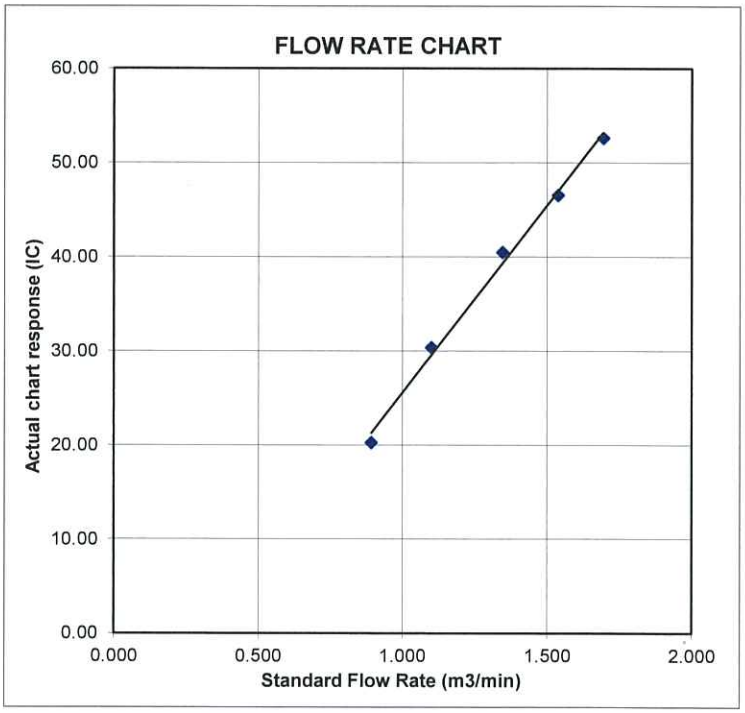
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



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

Certificate of Calibration
校正證書

Certificate No. : C183085
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0867) Date of Receipt / 收件日期 : 28 May 2018

Description / 儀器名稱 : Integrating Sound Level Meter (EQ006)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285762
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 : 10 June 2018

TEST RESULTS / 測試結果

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

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

Tested By 測試 : K C Lee
Engineer

Certified By 核證 : H C Chan
Engineer

Date of Issue 簽發日期 : 11 June 2018

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

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Certificate No. : C183085
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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 using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.

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	C180024
CL281	Multifunction Acoustic Calibrator	PA160023

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
52 - 132	L_{AFP}	A	F	94.00	1	94.1

6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
52 - 132	L_{AFP}	A	F	94.00	1	94.0	± 0.7

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
52 - 132	L_{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

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

Certificate of Calibration
校正證書

Certificate No. : C183085
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
52 - 132	L_{AFP}	A	F	94.00	1	94.0	Ref.
	L_{ASP}		S			94.0	± 0.1
	L_{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
32 - 112	L_{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L_{AFMax}				200 ms	104.9	-1.0 ± 1.0
	L_{ASP}		S		Continuous	106.0	Ref.
	L_{ASMax}				500 ms	102.0	-4.1 ± 1.0

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
52 - 132	L_{AFP}	A	F	94.00	31.5 Hz	55.0	-39.4 ± 1.5
					63 Hz	67.9	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.7	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.9	-1.1 (+1.5 ; -3.0)
					12.5 kHz	89.8	-4.3 (+3.0 ; -6.0)

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

Certificate of Calibration
校正證書

Certificate No. : C183085
證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
52 - 132	L_{CFP}	C	F	94.00	31.5 Hz	91.4	-3.0 ± 1.5
					63 Hz	93.3	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.2	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
					12.5 kHz	87.8	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
32 - 112	L_{Aeq}	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^2$		90	89.5	± 0.5
			60 sec.			$1/10^3$		80	79.2	± 1.0
			5 min.			$1/10^4$		70	69.3	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2812706

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	: 31.5 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
	12.5 kHz	: ± 0.70 dB
104 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB	: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
Burst equivalent level		: ± 0.2 dB (Ref. 110 dB continuous sound level)

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

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

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

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

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

Certificate of Calibration
校正證書

Certificate No. : C183082
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0867) Date of Receipt / 收件日期 : 28 May 2018

Description / 儀器名稱 : Acoustical Calibrator (EQ081)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 4231
Serial No. / 編號 : 2326408
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 : 9 June 2018

TEST RESULTS / 測試結果

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

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

Tested By 測試 : K C Lee
Engineer

Certified By 核證 : H C Chan
Engineer

Date of Issue 簽發日期 : 11 June 2018

Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 — 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
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輝創工程有限公司
Sun Creation Engineering Limited
Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C183082
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	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C181288

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	± 0.2	± 0.2
114 dB, 1 kHz	114.0		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.000 0	1 kHz ± 0.1 %	± 0.1

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

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

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

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T: +852 2610 1044 | F: +852 2610 2021

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1831632
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	25-May-2018
		DATE OF ISSUE:	31-May-2018

COMMENTS

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

Scope of Test:	Dissolved Oxygen and Temperature
Equipment Type:	Dissolved Oxygen Meter
Brand Name:	YSI
Model No.:	550A
Serial No.:	16A104433
Equipment No.:	--
Date of Calibration:	30 May, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1831632

SUB-BATCH: 0
DATE OF ISSUE: 31-May-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Dissolved Oxygen Meter
Brand Name: YSI
Model No.: 550A
Serial No.: 16A104433
Equipment No.: --
Date of Calibration: 30 May, 2018 Date of Next Calibration: 30 August, 2018

PARAMETERS:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.42	2.51	+0.09
4.93	4.87	-0.06
7.54	7.42	-0.12
	Tolerance Limit (mg/L)	±0.20

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

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
10.0	10.3	+0.3
20.5	21.1	+0.6
39.0	38.5	-0.5
	Tolerance Limit (^{o}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
Assistant Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1840311
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	20-Jul-2018
		DATE OF ISSUE:	25-Jul-2018

COMMENTS

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 ALS Hong Kong laboratory or quoted from relevant international standards.

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

Scope of Test:	Dissolved Oxygen and Temperature
Equipment Type:	Dissolved Oxygen Meter
Brand Name:	YSI
Model No.:	Pro 20
Serial No.:	12C100570
Equipment No.:	--
Date of Calibration:	25 July, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1840311

SUB-BATCH: 0
DATE OF ISSUE: 25-Jul-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Dissolved Oxygen Meter
Brand Name: YSI
Model No.: Pro 20
Serial No.: 12C100570
Equipment No.: --
Date of Calibration: 25 July, 2018 Date of Next Calibration: 25 October, 2018

PARAMETERS:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.28	2.46	+0.18
4.90	4.77	-0.13
7.73	7.67	-0.06
	Tolerance Limit (mg/L)	±0.20

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

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
10.5	11.6	+1.1
21.0	22.7	+1.7
41.0	40.1	-0.9
	Tolerance Limit (^{o}C)	±2.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1831627
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	25-May-2018
		DATE OF ISSUE:	31-May-2018

COMMENTS

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

Scope of Test:	Salinity
Equipment Type:	Salinity Meter
Brand Name:	Atago Refractometer Atago S
Model No.:	Mill-E
Serial No.:	289468
Equipment No.:	--
Date of Calibration:	30 May, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1831627

SUB-BATCH: 0
DATE OF ISSUE: 31-May-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Salinity Meter
Brand Name: Atago Refractometer Atago S
Model No.: Mill-E
Serial No.: 289468
Equipment No.: --
Date of Calibration: 30 May, 2018 Date of Next Calibration: 30 August, 2018

PARAMETERS:
Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0	--
10	10	+0.0
20	19	-5.0
30	27	-10.0
	Tolerance Limit (%)	±10.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1845007
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	17-Aug-2018
		DATE OF ISSUE:	24-Aug-2018

COMMENTS

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

Scope of Test:	Salinity
Equipment Type:	Salinity Meter
Brand Name:	--
Model No.:	AZ8371
Serial No.:	1118267
Equipment No.:	--
Date of Calibration:	22 August, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1845007

SUB-BATCH: 0
DATE OF ISSUE: 24-Aug-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Salinity Meter
Brand Name: --
Model No.: AZ8371
Serial No.: 1118267
Equipment No.: --
Date of Calibration: 22 August, 2018 Date of Next Calibration: 22 November, 2018

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	9.31	-6.9
20	18.2	-9.0
30	28.3	-5.7
	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
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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1831630
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	25-May-2018
		DATE OF ISSUE:	31-May-2018

COMMENTS

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

Scope of Test:	pH Value and Temperature
Equipment Type:	pH meter
Brand Name:	AZ
Model No.:	8685
Serial No.:	1141943
Equipment No.:	--
Date of Calibration:	30 May, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1831630

SUB-BATCH: 0
DATE OF ISSUE: 31-May-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: pH meter
Brand Name: AZ
Model No.: 8685
Serial No.: 1141943
Equipment No.: --
Date of Calibration: 30 May, 2018 Date of Next Calibration: 30 August, 2018

PARAMETERS:

pH Value

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

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.2	+0.20
7.0	6.9	-0.10
10.0	9.8	-0.20
	Tolerance Limit (pH unit)	±0.20

Temperature

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

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
11.0	11.8	+0.8
21.0	22.2	+1.2
38.5	37.9	-0.6
	Tolerance Limit (^{o}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
Assistant Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1846345
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	27-Aug-2018
		DATE OF ISSUE:	03-Sep-2018

COMMENTS

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

Scope of Test:	pH Value and Temperature
Equipment Type:	pH meter
Brand Name:	AZ
Model No.:	8685
Serial No.:	1118396
Equipment No.:	--
Date of Calibration:	30 August, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1846345

SUB-BATCH: 0
DATE OF ISSUE: 03-Sep-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: pH meter
Brand Name: AZ
Model No.: 8685
Serial No.: 1118396
Equipment No.: --
Date of Calibration: 30 August, 2018 Date of Next Calibration: 30 November, 2018

PARAMETERS:

pH Value

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

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	4.0	+0.00
7.0	7.0	+0.00
10.0	9.8	-0.20
	Tolerance Limit (pH unit)	±0.20

Temperature

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

Expected Reading (^{o}C)	Displayed Reading (^{o}C)	Tolerance (^{o}C)
11.0	11.5	+0.5
22.0	22.0	+0.0
38.5	37.5	-1.0
	Tolerance Limit (^{o}C)	±2.0

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

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1831623
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG,	SUB-BATCH:	0
	NO. 35-41 TAI LIN PAI ROAD,	LABORATORY:	HONG KONG
	KWAI CHUNG,	DATE RECEIVED:	25-May-2018
	N.T., HONG KONG.	DATE OF ISSUE:	01-Jun-2018

COMMENTS

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

Scope of Test:	Turbitidy
Equipment Type:	Turbidimeter
Brand Name:	Hach
Model No.:	2100Q
Serial No.:	12060C18266
Equipment No.:	--
Date of Calibration:	30 May, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1831623

SUB-BATCH: 0
DATE OF ISSUE: 01-Jun-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Turbidimeter
Brand Name: Hach
Model No.: 2100Q
Serial No.: 12060C18266
Equipment No.: --
Date of Calibration: 30 May, 2018 Date of Next Calibration: 30 August, 2018

PARAMETERS:
Turbidity

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.14	--
4	4.37	+9.3
40	43.0	+7.5
80	86.8	+8.5
400	434	+8.5
800	863	+7.9
	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
Assistant Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1846347
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T., HONG KONG.	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	27-Aug-2018
		DATE OF ISSUE:	04-Sep-2018

COMMENTS

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 ALS Hong Kong laboratory or quoted from relevant international standards.

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

Scope of Test:	Turbidity
Equipment Type:	Turbidimeter
Brand Name:	Hach
Model No.:	2100Q
Serial No.:	11030C008499
Equipment No.:	--
Date of Calibration:	30 August, 2018

NOTES

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

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1846347

SUB-BATCH: 0
DATE OF ISSUE: 04-Sep-2018
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Turbidimeter
Brand Name: Hach
Model No.: 2100Q
Serial No.: 11030C008499
Equipment No.: --
Date of Calibration: 30 August, 2018 Date of Next Calibration: 30 November, 2018

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.17	--
4	--	N/A
40	41.10	+2.8
80	84.8	+6.0
400	383	-4.3
800	790	-1.3
	Tolerance Limit (%)	±10.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR IVAN LEUNG	**WORK ORDER:**	HK1827786
CLIENT:	ALS TECHNICHEM (HK) PTY LTD	**SUB-BATCH:**	0
ADDRESS:	11/F, CHUNG SHUN KNITTING CENTRE, 1-3 WING YIP STREET, KWAI CHUNG, N.T., HONG KONG	**LABORATORY:**	HONG KONG
		DATE RECEIVED:	06-Apr-2018
		DATE OF ISSUE:	02-May-2018

COMMENTS

The calibration of flow rate performed by AUES staff on 6 April 2018.

Scope of Test:	Flow rate
Equipment Type:	Flow Meter
Brand Name:	Global Water
Model No.:	FP211
Serial No.:	1449006330
Equipment No.:	--
Calibration Factor:	314
Date of Calibration:	06 April, 2018

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1827786
Sub-batch: 0
Date of Issue: 02-May-2018
Client: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Flow Meter
Brand Name: Global Water
Model No.: FP211
Serial No.: 1449006330
Equipment No.: --
Calibration Factor: 314

Date of Calibration: 06 April, 2018

Parameters: The calibration of flow meter is verified with another standard flow meter (SonTek IQ Standard Serial Number : IQ1217004) on site by AUES Staff.

Flow rate

Test	Standard Equipment Reading (m/s)	Verification Equipment Reading (m/s)
1st	0.12	0.1
2nd	0.21	0.2
3rd	0.18	0.2
4th	0.49	0.5
5th	1.03	1.0
6th	0.97	1.0

Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

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

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as listed in the HOKLAS Directory of Accredited Laboratories within the test category of
此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求，獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised International Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
這項認可資格演示在指定範疇所需的技術能力及實驗所質量管理體系的運作（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 the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : HOKLAS 066
註冊號碼：

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

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

L 000552

Appendix F

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

Event and Action Plan for air quality

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

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

Event and Action Plan for Construction Noise

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

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

Event and Action Plan for Water Quality

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

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

Appendix G

Monitoring Schedules of the Reporting Month and Coming Month

Monitoring Schedule of Air Quality, Noise and Water Quality in the Reporting Month – August 2018

Date		Noise Monitoring	Air Quality Monitoring		Water Quality Monitoring
			1-Hour TSP	24-Hour TSP	
Thu	16-Aug-18			✓	✓
Fri	17-Aug-18	✓	✓		
Sat	18-Aug-18				✓
Sun	19-Aug-18				
Mon	20-Aug-18				✓
Tue	21-Aug-18				
Wed	22-Aug-18			✓	✓
Thu	23-Aug-18	✓	✓		
Fri	24-Aug-18				✓
Sat	25-Aug-18				
Sun	26-Aug-18				
Mon	27-Aug-18				
Tue	28-Aug-18			✓	✓
Wed	29-Aug-18	✓	✓		
Thu	30-Aug-18				✓
Fri	31-Aug-18				

Remark:

✓	Monitoring Day
	Sunday or Public Holiday

Air Quality and Noise Monitoring Location

Environmental Aspect	Monitoring Location	Location
Air Quality	ASR-1	Sha Ling Village House No.6
Construction Noise	CN-1	Village house to the west of Sha Ling Road
Water Quality	M3	Wetland in the Conservation Area (CA) near Yuen Leng Chai

Monitoring Schedule of Air Quality, Noise and Water Quality in the Coming Month - September 2018

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

Remark:

✓	Monitoring Day
	Sunday or Public Holiday

Air Quality and Noise Monitoring Location

Environmental Aspect	Monitoring Location	Location
Air Quality	ASR-1	Sha Ling Village House No.6
Construction Noise	CN-1	Village house to the west of Sha Ling Road
Water Quality	M3	Wetland in the Conservation Area (CA) near Yuen Leng Chai

Appendix H

Monitoring Data

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

Air Quality (24-hour TSP)

24-Hr TSP Monitoring Data for ASR-1

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-Hr TSP ($\mu g/m^3$)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m^3/min)	(std m^3)	INITIAL	FINAL	(g)	
16-Aug-18	22801	8698.64	8723.01	1462.20	34	35	34.5	28.4	1005.5	1.23	1804	2.6785	2.7398	0.0613	34
22-Aug-18	22658	8723.01	8747.28	1456.20	35	37	36.0	28.5	1005.5	1.27	1847	2.7308	2.8674	0.1366	74
28-Aug-18	23055	8747.28	8771.67	1463.40	35	36	35.5	28.6	1005.1	1.26	1839	2.6758	2.7491	0.0733	40

Noise

Noise Measurement Results (dB(A)) of CN-1																				
Date	**Start Time**	**1st Leq_{5min}**	**L10**	**L90**	**2nd Leq_{5min}**	**L10**	**L90**	**3rd Leq_{5min}**	**L10**	**L90**	**4th Leq_{5min}**	**L10**	**L90**	**5th Leq_{5min}**	**L10**	**L90**	**6th Leq_{5min}**	**L10**	**L90**	**Leq_{30min}**	**Façade Collection**
17-Aug-18	9:35	**62.6**	63.0	58.2	**61.5**	62.4	58.7	**73.8**	73.8	58.2	**69.4**	65.6	58.6	**60.3**	60.3	57.5	**65.0**	61.3	57.2	**68.3**	**71.3**
23-Aug-18	9:45	**62.5**	63.3	61.7	**62.6**	63.4	61.7	**60.5**	62.4	57.7	**59.8**	60.4	57.0	**58.4**	59.5	57.1	**67.0**	60.6	57.6	**62.8**	**65.8**
29-Aug-18	9:47	**65.9**	68.3	53.1	**61.1**	65.0	54.7	**66.3**	69.2	54.2	**62.2**	66.7	53.3	**60.0**	65.7	53.2	**63.0**	67.5	54.3	**63.7**	**66.7**

Water Quality

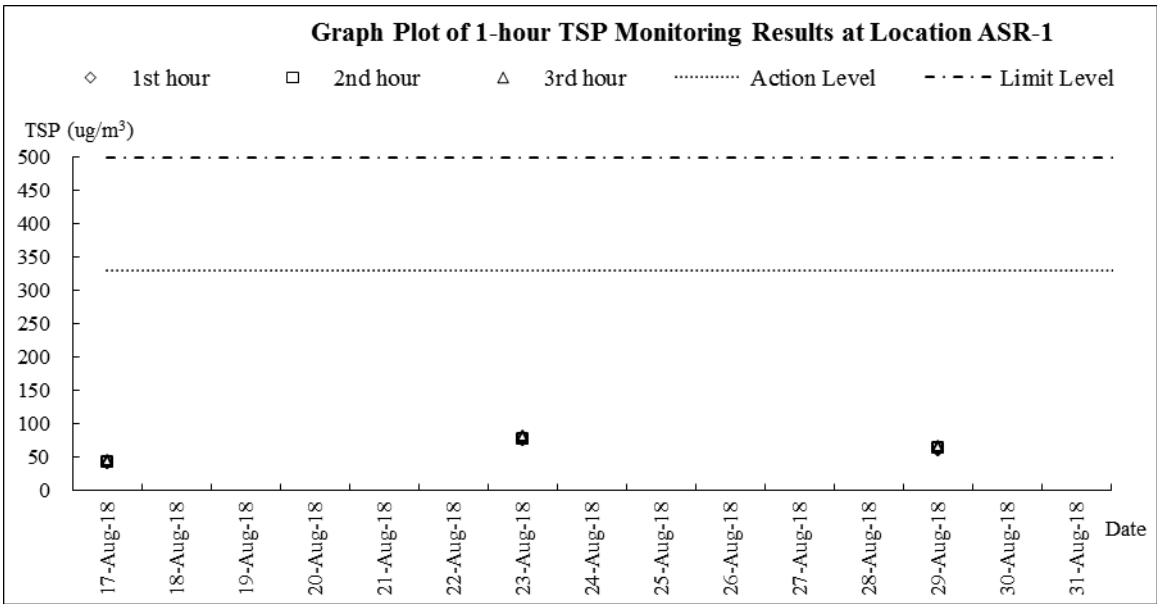
Water Quality Impact Monitoring at M3

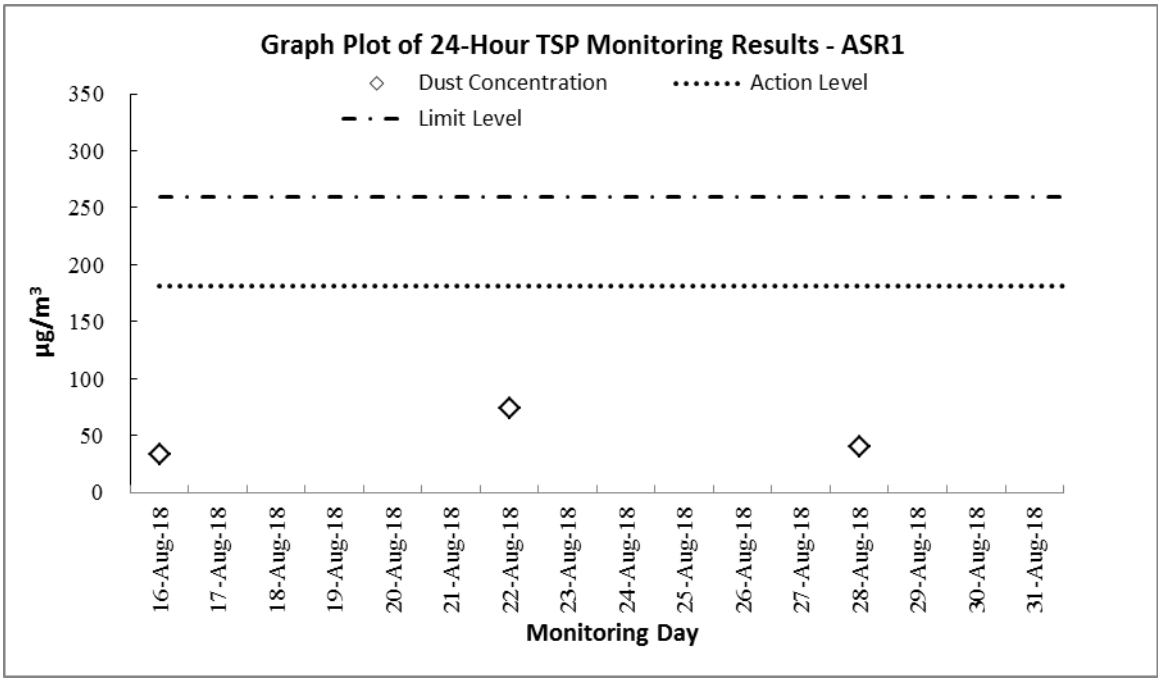
Date	Time	Depth (m)	Flow Velocity (m/s)	Temp (˚C) (averaged)		DO (mg/L) (averaged)		DOS (%) (averaged)		Turbidity (NTU) (averaged)		pH (Unit) (averaged)		SS (mg/L) (averaged)	
16/8/2018	10:30	2.90	0.1	28.7	28.7	6.46	6.5	83.6	83.6	17.4	17.8	6.80	6.8	22	23.0
				28.7		6.45		83.5		18.1		6.80		24	
18/8/2018	10:00	2.50	0.2	29.6	29.6	5.58	5.6	73.1	72.9	17.2	17.1	8.60	8.6	9	8.5
				29.6		5.56		72.6		16.9		8.60		8	
20/8/2018	10:15	2.50	0.2	28.3	28.3	5.78	5.8	74.2	74.5	14.4	14.4	6.90	6.9	9	9.0
				28.3		5.81		74.7		14.3		6.90		9	
22/8/2018	10:10	2.50	0.2	29.5	29.5	5.44	5.4	71.4	71.4	16.4	16.3	7.30	7.3	14	13.5
				29.5		5.42		71.4		16.2		7.30		13	
24/8/2018	9:45	2.50	0.1	29.1	29.1	5.78	5.8	75.3	75.6	19.4	19.8	6.90	6.9	11	10.5
				29.1		5.81		75.9		20.2		6.90		10	
28/8/2018	10:00	2.50	0.2	29.1	29.1	5.6	5.6	73.1	73.3	16.9	16.9	7.60	7.6	10	11.5
				29.1		5.62		73.4		16.8		7.60		13	
30/8/2018	10:05	2.50	0.2	25.3	25.3	7.01	7.0	85.2	85.4	105.0	104.0	6.90	6.9	34	36.0
				25.3		7.03		85.6		103.0		6.90		38	

Appendix I

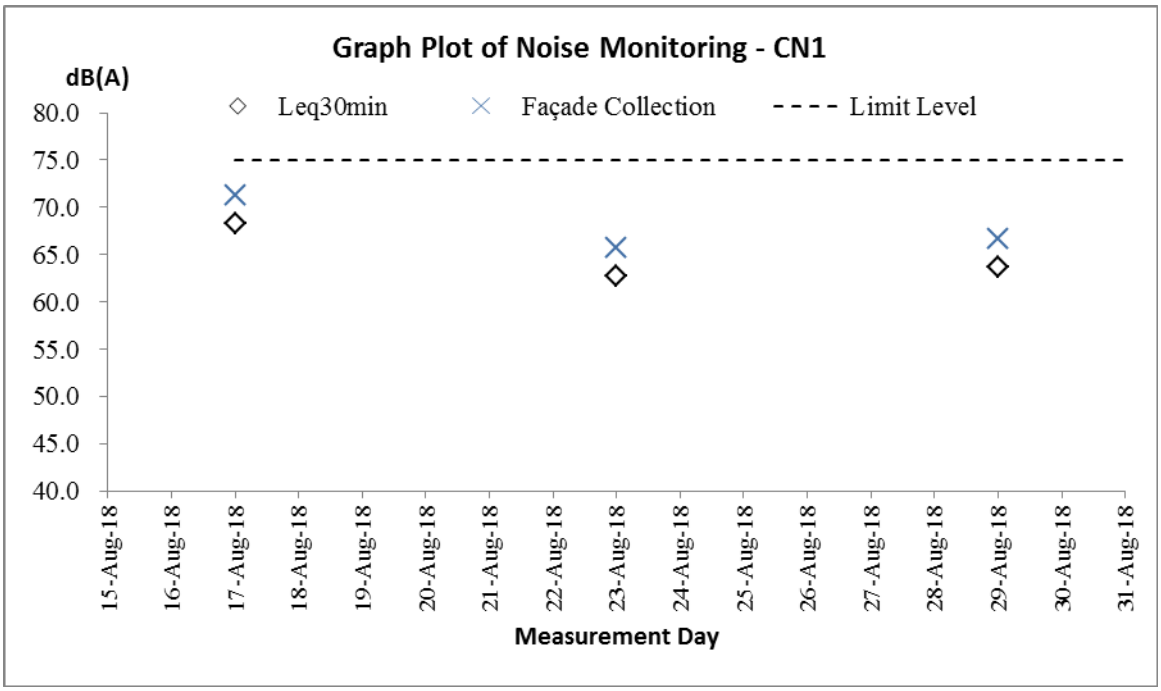
Graphical Plots of Air Quality, Noise and Water Quality

Air Quality Impact Monitoring

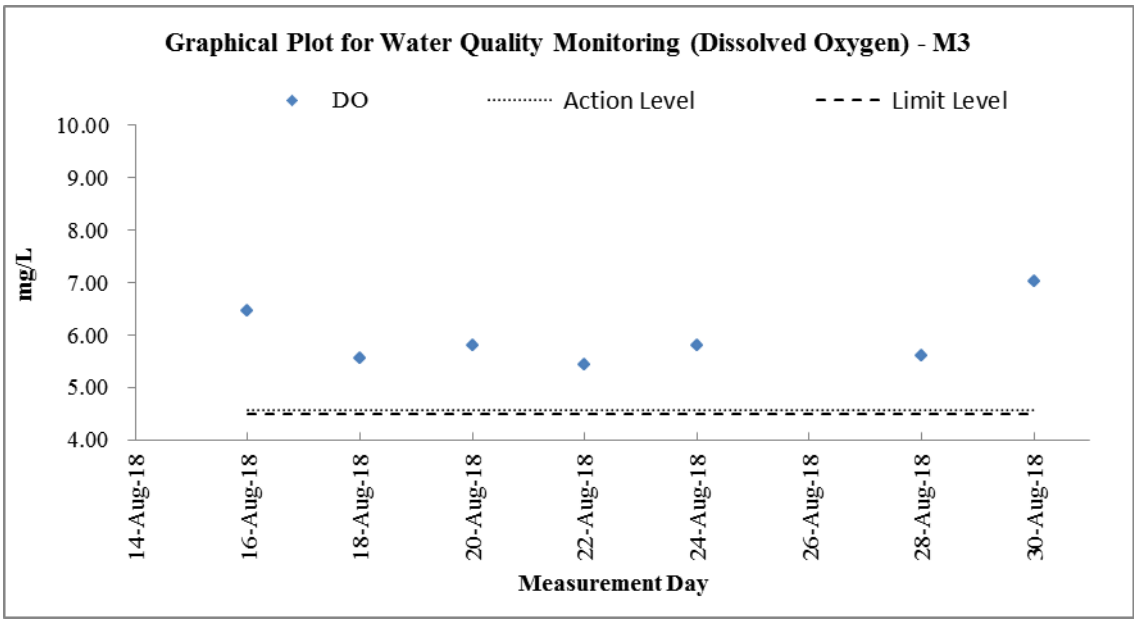


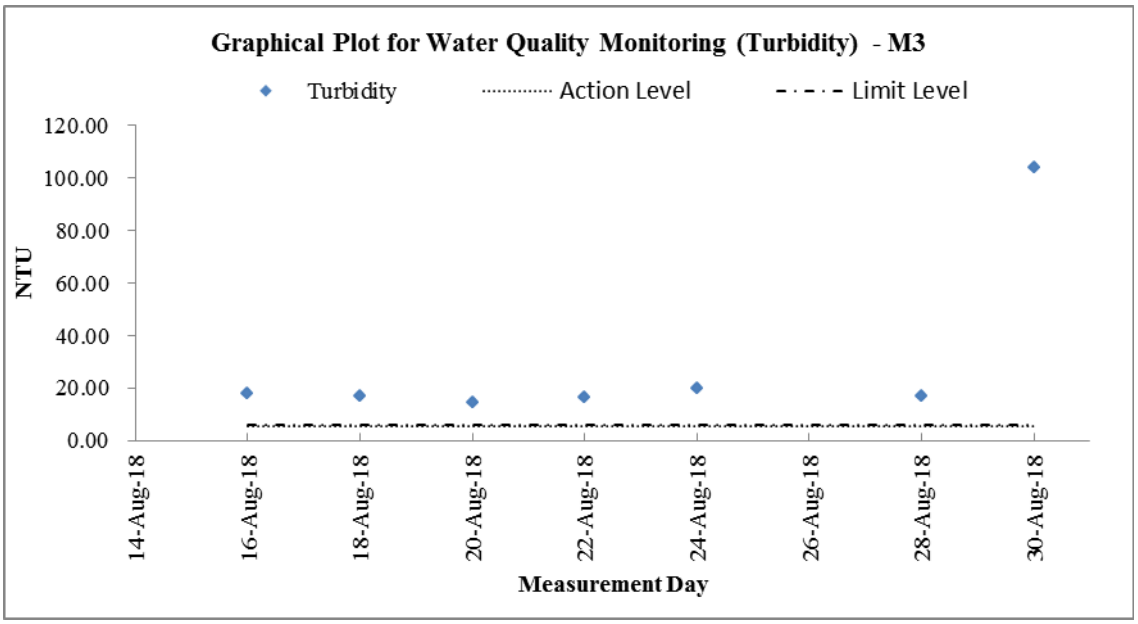


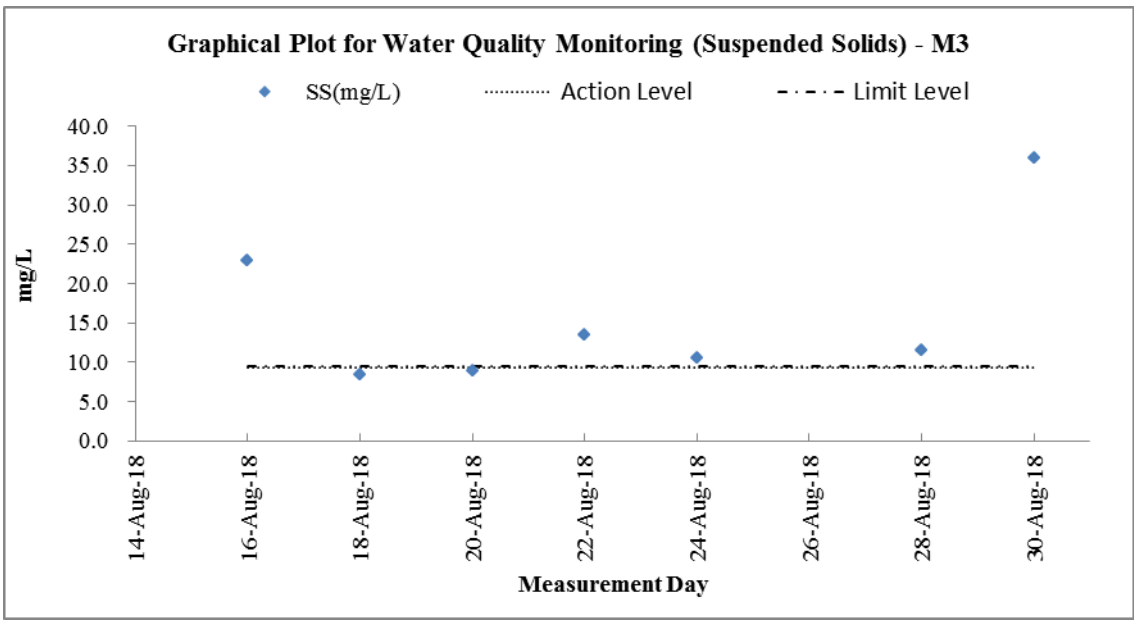
Construction Noise Impact Monitoring



Water Quality Impact Monitoring







Appendix J

Meteorological Data of the Reporting Period (Ta Kwu Ling Station)

Date		Weather	Total Rainfall (mm)	Ta Kwu Ling Station			
				Mean Air Temp. (°C)	Wind Speed (km/h)	Mean Relative Humidity (%)	Wind Direction
16-Aug-18	Thu	Mainly cloudy with sunny intervals	31.2	28.6	4.2	81.7	W/SW
17-Aug-18	Fri	Sunny intervals in the afternoon. Light winds.	61.1	28.6	4.8	83.7	S/SW
18-Aug-18	Sat	Mainly cloudy with sunny intervals	25.7	28.5	5.0	83.0	E/NE
19-Aug-18	Sun	Mainly cloudy with sunny intervals	26.4	28.5	9.0	83.0	S/SW
20-Aug-18	Mon	Mainly cloudy with a few showers and isolated thunderstorms.	24.9	28.4	5.1	85.5	S/SW
21-Aug-18	Tue	Hot with sunny periods and relatively low visibility.	0.1	28.5	3.7	79.5	N/NW
22-Aug-18	Wed	Mainly cloudy with sunny intervals, some haze	0.0	30.5	20.7	73.0	W
23-Aug-18	Thu	A few showers and isolated thunderstorms. Light winds.	80.2	29	5.5	73.2	S/SE
24-Aug-18	Fri	Hot with sunny periods and relatively low visibility.	27.3	27.2	4.9	86.2	S/SW
25-Aug-18	Sat	Light winds, becoming moderate southwester lies later.	71.6	27.0	7.8	88.5	E/NE
26-Aug-18	Sun	There will be isolated thunderstorms later.	23.3	25.7	8.2	94.0	N/NW
27-Aug-18	Mon	Mainly cloudy with a few showers	6.3	26.4	6.6	91.2	N/NW
28-Aug-18	Tue	Cloudy to overcast with heavy showers and squally thunderstorms.	7.2	27.2	4.2	91.0	E/SE
29-Aug-18	Wed	Mainly cloudy with a few showers	31.2	28.6	4.2	81.7	W/SW
30-Aug-18	Thu	Moderate southerly winds.	61.1	28.6	4.8	83.7	S/SW
31-Aug-18	Fri	Mainly cloudy with a few showers and isolated thunderstorms.	25.7	28.5	5.0	83.0	E/NE

Appendix K

Ecology Survey Report

Muni Arborist

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 – Aug 2018

Revision	0	
Date of issue	31 Aug 2018	
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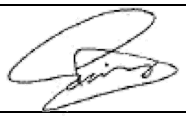
Reviewed by	Edwina Yeung	
Verified by	Desmond Tang	

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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-487/2014) on 7 April 2017. A Further Environment Permit (FEP) for the Project (FEP-01/534/2017) was issued on 23 February 2018.

1.1.4 According to Clause 3.1 of the FEP (FEP-01/534/2017), "The Permit Holder shall implement the EM&A programme in accordance with the procedures and requirements as set out in the EM&A Manual. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval".

1.1.5 This Ecologically Sensitive Habitats Monitoring Methodology articulates the protocol of monitoring the ecology of concerned habitats as specified in EM&A Manual.

1.2 OBJECTIVE

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

1.2.2 The objective of ecologically sensitive habitats monitoring is to evaluate the effectiveness of measures to minimize impacts on concerned habitats from disturbance and pollution.

2 ECOLOGICALLY SENSITIVE HABITATS

2.1 DESCRIPTION OF HABITATS

2.1.1 In order to monitor the effectiveness of the measures to the minimise impact on ecologically sensitive habitats from disturbance and pollution, monthly monitoring during construction and operation phases is required as specified in EM&A Manual. Standard faunal transect and sampling surveys cover both wetland and non-wetland habitats:

Wetland habitats	Non-wetland habitats
Wet Woodland	Upland Grassland
Watercourses	Woodland

2.1.2 Wet woodland is small patch present on northwest of the project boundary, and is confined by the marsh area to the north and the secondary woodland to the east, south and south-west parts. A number of mature trees *Cleistocalyx nervosum* and *Acronychia pedunculata* form the tree canopy, with other self-sown shrubs (including *Psychotria asiatica*, *Ligustrum sinense* and *Glochidion lanceolarium*) and trees (*Aporosa dioica* and *Litsea monopetala*). Whilst botanically it comprises of naturally regenerated secondary woodland and ground level are a series of small braided streams and weep points which even during the dry season remain wet. This creates a rather uncommon habitat in Hong Kong offering suitable conditions for a good assemblage of common wetland species. The wet woodland provides a good assemblage of micro-habitats, which is relatively undisturbed and has good linkages to other natural habitats. Several species of conversation importance were recorded in EIA report from this habitat: East Asian Porcupine, Leopard Cat, Red Muntjac, Two-striped Grass Frog, Small Snakehead, *Somanniathelphusa zanklon*, Dancing Shadow-emerald.

2.1.3 Seasonal watercourse running west to east in the eastern part of the area inside the Project boundary is shallower in gradient than those running off the hillside. This seasonal watercourse is heavily vegetated with wetland-associated herbs including *Commelina diffusa*, *Polygonum chinense*, *Colocasia esculenta* and *Dracaena sanderiana*. A mature tree of *Aquilaria sinensis* was recorded at the bank of the seasonal watercourse to the west of the Sandy Ridge Cemetery Office. Seasonal watercourses are restricted to the steeper slopes within the project boundary and are characterised by being entirely dry for much of the dry season. However, endemic crab *S. zanklon* population is supported by ephemeral watercourses close to the project boundary.

2.1.4 Upland grassland is the major habitat within the project boundary. The semi-natural habitat is dominated by typical upland grassland species: fern *Dicranopteris pedata*, grass *Neyraudia reynaudiana*, *Miscanthus floridulus*, climbing vines *Smilax china*, *Smilax glabra*, and shrubs such as *Rhodomyrtus tomentosa*, *Breynia fruticosa* and *Helicteres angustifolia*. Approximately 30 flowering spikes of two orchid species Bamboo Orchid and Toothed Habenaria were recorded near the hill top in the northern part of this upland grassland. Golden-headed Cisticola, which is considered as Local Concern by Fellowes *et al.* (2002), was also recorded in upland grassland on Sandy Ridge, including a proved breeding record of fledged young in September 2013. In addition, numerous species of conservation interest

were recorded in EIA report, such as East Asian Porcupine, Leopard Cat, Red Muntjac, Great Swift, Tamil Grass Dart, Small Three-ring and Small Grass Yellow.

2.1.5 Scattered patches of woodland are present throughout the assessment area, with the largest contiguous block located immediately to the east of the project boundary. These woodlands are relatively young with single-layered of canopy dominants (~10 – 15m tall) including *A. dioica*, *Bridelia tomentosa*, *Cinnamomum burmannii*, *Daphniphyllum calycinum*, *Litsea glutinosa*, *Rhus succedanea*, and *Zanthoxylum avicennae*. Such areas comprise secondary woodland which is largely derived from natural regeneration and colonisation of trees as a result of seed dispersal by birds and/or bats. A mature tree of *A. sinensis* is located at the woodland edge at the central part of the Project according to EIA report.

2.2 MONITORING MEASURES OF WETLAND HABITATS

2.2.1 Wetland habitats include wet woodland and watercourses. Monitoring surveys using standardised quantitative methodology will be conducted at fixed points. For seasonal watercourse, survey shall be conducted whenever the habitat appears.

2.2.2 Measures to respond to decreases in numbers of aquatic fauna using the wetland habitats and action and limit levels to trigger these measures are detailed in Table 1.

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

Table 1 Action and Limit Levels and Responses to Evidence of Declines in Aquatic Fauna

2.3 MONITORING MEASURES OF NON-WETLAND HABITATS

2.3.1 Non-wetland habitats consist of upland grassland and woodland. Monthly quantitative surveys of non-aquatic fauna will be conducted using standard route transect counts.

2.3.2 Measures to respond to decreases in numbers of non-aquatic fauna using the non-wetland habitats and action and limit levels to trigger these measures are detailed in Table 2.

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

Table 2 Action and Limit Levels and Responses to Evidence of Declines in Non-Aquatic Fauna

3 METHODOLOGY

The ecological survey includes all taxa being investigated in EIA report. Table 3 summarizes schedule of faunal surveys.

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

Table 3 Survey Schedule

3.1 MAMMAL SURVEY

3.1.1 Mammal surveys will be conducted along the transects shown in Appendix 1 during both daytime and night time periods. Along with direct observations, other field signs, such as scats and tracks, will be searched and recorded if present.

3.2 BIRD SURVEY

3.2.1 Bird surveys will be conducted along the transects shown in Appendix 1 during the surveys, species and their vocalizing individuals recorded will be enumerated and recorded according to the habitat(s) they are utilising.

3.3 HERPETOFAUNA SURVEY

3.3.1 Reptile and amphibian surveys will be conducted along transects shown in Appendix 1 during surveys careful searches of appropriate microhabitats and refugia for reptiles and their vocalizing individuals will be undertaken and all reptiles observed will be identified and counted.

3.4 DRAGONFLY SURVEY

3.4.1 Dragonfly surveys will be conducted along transects shown in Appendix 1 during surveys all dragonflies seen will be identified and counted as accurately as possible.

3.5 BUTTERFLY SURVEY

3.5.1 Butterfly surveys will be conducted along transects shown in Appendix 1 during surveys all dragonflies 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

The first monitoring survey started on 7th August 2018. The weather was fine. The survey included day and night sections, covering wetland and non-wetland areas. The survey was conducted by transect and fixed points. All species seen will be identified and counted as accurately as possible.

- Mammal

An unknown bat was found in the project site.

- Bird

There were a total of 24 bird individuals from 17 species recorded during the survey. Some species of conservation interests were recorded in the monitoring area: *Milvus migrans*, Black Kite(黑鳶),*Chalcophaps indica*, Common Emerald Dove(綠翅金鳩)*Halcyon smyrnensis*, White-throated Kingfisher(白胸翡翠) *Garrulax canorus*, Chinese Hwamei(畫眉)

- Herpetofauna

There were a total of 4 individuals from 2 species of reptile recorded There were a total of 6 amphibian individuals from 4 species were recorded, including a species of conservation interests, *Rana taipehensis*, Two-striped Grass Frog(台北蛙) .

- Dragonfly

There were a total of 5 odonate individuals from 4 species, a species of conservation interests, *Urothemis signata*, Scarlet Basker (赤斑曲鈎脈蜻) was found in upland glass land.

- Butterfly

There were a total of 7 butterfly individuals from 5 species recorded.

- Freshwater communities

A crab of conservation importance *Somanniathelphusa zanklon* (鐮刀束腰蟹) was found in marsh.

Figure 1

Rana taipehensis, Two-striped Grass Frog(台 北 蛙)

Figure 2

Urothemis signata, Scarlet Basker (赤斑曲鈎脈蜻)

Table 4 Result of Avifauna in survey

Scientific Name	English Name	Chinese Name	Conservation Status	9-Aug-18	
				Non-wetland	Wetland
Milvus migrans	Black Kite	黑鳶	Fellowes et al. (2002): RC; Appendix 2 of CITES	1	
Chalcophaps indica	Common Emerald Dove	綠翅金鳩	China Red Data Book Status: (Vulnerable)		1
Eudynamys scolopaceus	Asian Koel	噪鵑			1
Caprimulgus affinis	Savanna Nightjar	林夜鷹		1	
Apus nipalensis	House Swift	小白腰雨燕		4	
Halcyon smyrnensis	White-throated Kingfisher	白胸翡翠	Fellowes et al. (2002): LC		1
Lanius schach	Long-tailed Shrike	棕背伯勞			1
Dicrurus macrocercus	Black Drongo	黑卷尾			1
Pycnonotus sinensis	Chinese Bulbul	白頭鵯		3	
Pycnonotus aurigaster	Sooty-headed Bulbul	白喉紅臀鵯		5	
Hirundo rustica	Barn Swallow	家燕		1	

Prinia flaviventris	Yellow-bellied Prinia	黃腹鷦鶯		1	
Garrulax canorus	Chinese Hwamei	畫眉	Appendix 2 of CITES	1	
Garrulax perspicillatus	Masked Laughingthrush	黑臉噪鹛			2

Table 5 Result of reptile in survey

Scientific Name	**Common Name**	**Chinese Name**	**9-Aug-18**	
			Non-wetland	**Wetland**
Calotes versicolor	Changeable Lizard	變色樹蜥, 雞冠蛇	1	
Hemidactylus bowringii	Bowring's Gecko	原尾蜥虎	3	

Table 6 Result of amphibian in survey

Scientific Name	**Common Name**	**Chinese Name**	**Conservation Status**	**9-Aug-18**	
				Non-wetland	**Wetland**
Kaloula pulchra	Asiatic Painted Frog	花狹口蛙		3	
Microhyla pulchra	Marbled Pigmy Frog	花姬蛙			1
Rana taipehensis	Two-striped Grass Frog	台北蛙	Fellowes et al. (2002): LC		1
Polypedates megacephalus	Brown Tree Frog	斑腿泛樹蛙		1	

Table 7 Result of butterfly in survey

Scientific Name	Common Name	Chinese Name	9-Aug-18	
			Non-wetland	Wetland
Ampittia dioscorides	Bush Hopper	黃斑弄蝶		1
Parnara bada	Oriental Straight Swift	么紋稻弄蝶	1	
Deudorix epijarbas	Cornelian	玳灰蝶	1	
Spindasis lohita	Long-banded Silverline	銀線灰蝶	1	
Abisara echerius	Plum Judy	蛇目褐蜆蝶	3	

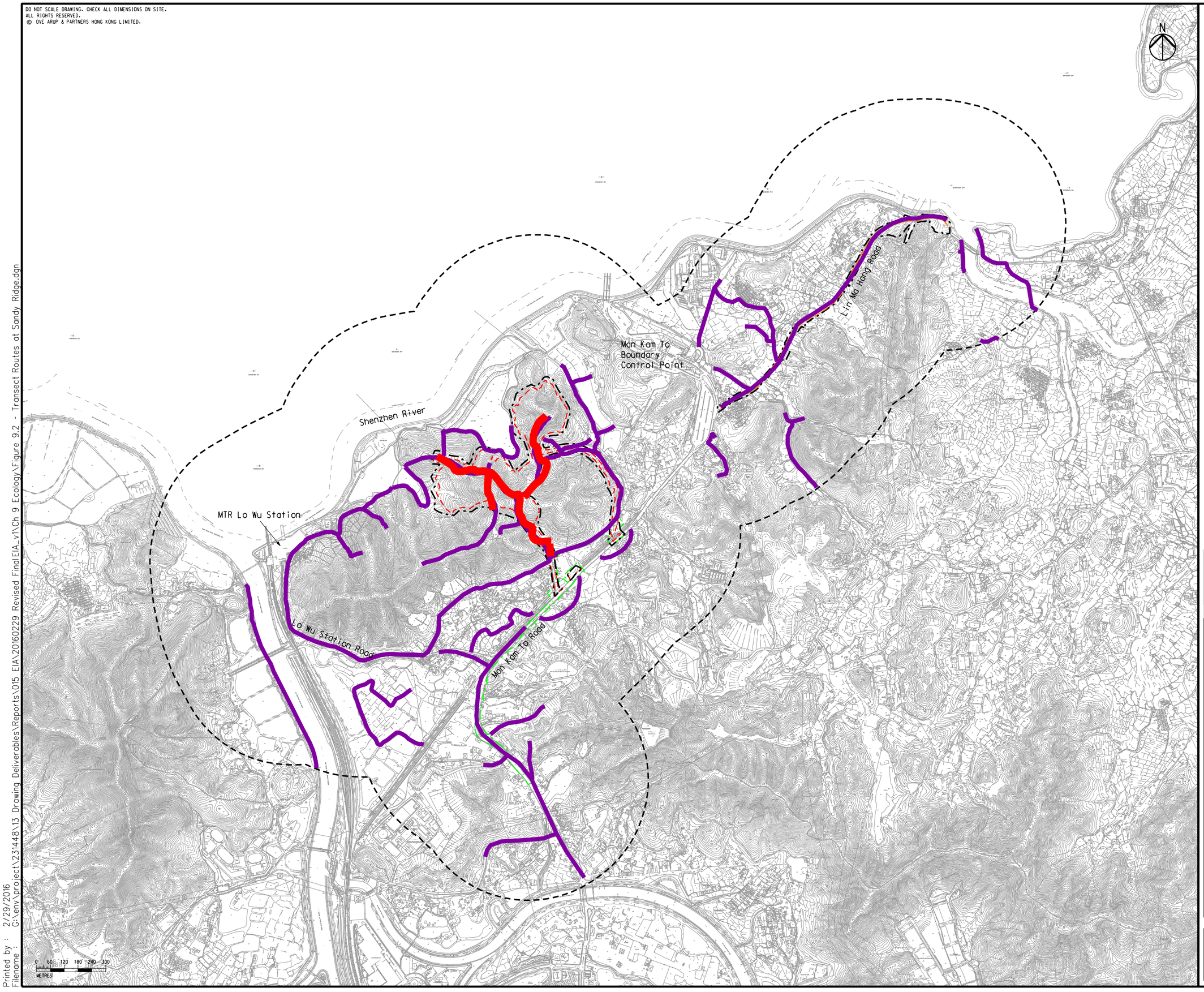
Table 8 Result of Odonate in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	9-Aug-18	
				Non-wetland	Wetland
Brachydiplax chalybea	Blue Dasher	藍額疏脈蜻			1
Orthetrum glaucum	Common Blue Skimmer	黑尾灰蜻		2	
Urothemis signata	Scarlet Basker	赤斑曲鈎脈蜻	Fellowes et al. (2002): LC	1	
Ceriagrion auranticum	Orange-tailed Sprite	琉球橘黃蟌		1	

Table 9 Result of freshwater communities in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	9-Aug-18
Somanniathelphusa zanklon		鐮刀束腰蟹	Fellowes et al. (2002): GC	1

Appendix I – Transect Routes at Sandy Ridge



Legend

- Project Boundary
- Utilities Construction
- Sandy Ridge Works Area
- Lin Ma Hang Road Works Area
- 500m Assessment Area
- Survey Transect

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

Consultant

ARUP

Contract No. and Title:

Agreement No. CE 1/2013(CE)

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

Drawing title

Transect Routes at Sandy Ridge

Drawing no.		Rev.
Figure 9.2		G
Drawn: GL	Date: 02/16	Checked: EL	Approved: ST
Scale: AS SHOWN		Status: PRELIMINARY	

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

Printed by : 2/29/2016
Filename : G:\env\project\231448\13 Drawing Deliverables\Reports\015 EIA\20160229 Revised Final\EIA_v1\Ch 9 Ecology\Figure 9.2 - Transect Routes at Sandy Ridge.dgn

Appendix L

Landscape & Visual Inspection Checklist

Contract No. CV/2016/10
Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery
Landscape and Visual Impact Assessment Checklist for Site Audit

Date: 29/08/2018 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?	✔			Observation 1.
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?	✔			Observation 1.
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)?	✔			Observation 2.
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?			✔	Transplanting works have not yet been commenced.
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)	✔			Observation 3.
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

The contractor was reminded to rectify the following:
Outstanding observation from previous inspection

N/A
New Observation:

1. No hoarding and barrier was provided for demarcating the construction site. (Fig A)
2. No TPZ was provided for some of the retained trees. (Fig B & C)
3. Earth bund was set up to filter the runoff from the construction site, however, muddy water was stilled observed which may affect the nearby natural streams or river. Moreover, no precautionary control measures were provided to protect the wet woodland. (Fig D & E)

Reminders:

1. Construction works were being started. Contractor was reminded to provide TPZ with robust fence at the dripline of all retained trees. No works were allowed to undertake within the TPZ.
2. Proper precautionary control measures should be implemented to protect natural streams and rivers from adverse impact.

Photo Record:

Fig A.	**Fig B.**
	
No hoarding and barrier was provided	No TPZ was provided
Fig C.	**Fig D.**
	
No TPZ was provided	Earth bund failed to filter the muddy water

Fig E.	Fig F.
	
Close-up for muddy water	No mitigation was provided for protecting wet woodland

Signature:

		Signature	Date
Recorded by	Registered Landscape Architect		31/08/2018
Checked by	Environmental Team Leader		05/09/2018
	Independent Environmental Checker		

Appendix M

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for August 2018

Department: Civil Engineering and Development Department Contract No.: CV/2016/10

Contract Title: Site Formation and Assoicated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery

Commencement Date: 15-Dec-2017 Estimated completion Date 22-Dec-2023 Estimated Contract Sum: 780M

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging	Plastics (see Note 3)	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000m^3)
Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.134
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.127
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
Apr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.071
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.248
June	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
Sub-total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.604**
July	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.064
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.094
Sept											
Oct											
Nov											
Dec											
Total	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**2.762**

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.

Appendix N

Implementation Schedule for Environmental Mitigation Measures (ISEMM)

Environmental Mitigation Implementation Schedule – Sandy Ridge

Note: Chapters 1 to 3 of the EIA report present the background information of the Project, identified concurrent projects, objectives and scope for various environmental aspects, and description on alternative options and construction description. Chapters 4 to 12 of the EIA report present the EIA findings and mitigation measures are described below with cross-reference to the EIA report. Chapters 13 to 15 describe the environmental monitoring requirements and conclusion.

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
Common Mitigation Measures (Applicable to ALL Project Components, including DPs and Non-DPS)						
Construction Dust Impact						
S4.4.5.2	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria
S4.4.5.3	Water spraying every hour for all active works area.	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria
S4.4.5.2	• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Vehicle wheel washing facilities should be provided at each construction	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and TM-EIAO criteria

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
	site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					

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
S4.4.5.1	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction phase	• TM-EIAO
S4.4.5.3	• All road surface within the barging facilities will be paved. • Dust enclosures will be provided for the loading ramp, installation of 3-sided screen with top cover and the provision of water sprays at the discharge point would be provided. • Vehicles will be required to pass through designated wheel wash facilities. • Continuous water spray at the loading point.	Minimise dust impact at the nearby sensitive receivers	Contractor	Barging point at Siu Lam	Construction phase	• TM-EIAO

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
Construction Noise						
S5.5.5.3	Implement the following good site management practices: • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	Control construction noise	Contractor	All construction sites	Construction phase	• Annex 5, TM-EIAO
S5.5.5.5	Adopt quiet plants during the construction of viaduct, widening of Sha Ling Road, construction of platform for crematorium and widening of Lin Ma Hang Road. The quiet plants should be made reference to the PME listed in the TM or the QPME/ other commonly used PME listed in EPD web pages or taken from BS5228: Part 1: 2009 Noise Control on Construction and Open Sites as far as possible.	Reduce the noise levels of plant items	Contractor	Works area for construction of viaduct, widening of Sha Ling Road, construction of platform for crematorium and widening of Lin Ma Hang Road	Construction phase	• Annex 5, TM-EIAO

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
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
S5.5.5.7 – S5.5.5.12	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered upper portion of superficial density no less than 7kg/m^2 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
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
S13.2.1.1 – S13.4.1.2	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction phase	• TM-EIAO
Operational Noise (Road Traffic Noise)						
S5.6.6.4	Provide a series of noise mitigation measures including absorptive noise barriers and low noise road surfacing materials along Lin Ma Hang Road and Sha Ling Road before operation of the proposed project for existing and planned representative NSRs. Locations of noise mitigation measures are stated as following: *For existing representative NSRs* • Approx. 12m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM1); • Approx. 92m of absorptive noise barrier 2.5m above road level along Sha Ling Road (MM2);	Reduce operation noise from road traffic	Contractor	Refer to **Figures 5.6.9 – 5.6.13** of the EIA Report	Prior to operation of the Project for existing representative NSRs. While for barriers to protect planned representative NSRs, it should constructed before intake of planned representative NSRs.	• TM-EIAO

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
	• 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 Road near Muk Wu Nga Yiu (MM13); • Approx. 31m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM14); • Approx. 31m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM15); • Approx. 41m of absorptive noise barrier 5m above road level along Lin Ma Hang Road near Muk Wu Nga Yiu (MM16);					

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
	• Approx. 340m of low noise surfacing materials along Lin Ma Hang Road near Muk Wu Nga Yiu (MM17).					

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
Water Quality (Construction Phase)						
S6.4.4.1 – S6.4.4.3	In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>*General Site Operation*</u> • At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction; • Diversion of natural stormwater should be avoided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipment in order to avoid or minimise polluted runoff. Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m^3 capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped; • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates; • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of	To minimise water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where applicable	Construction phase	• Water Pollution Control Ordinance • ProPECC PN1/94 • TM-EIAO • TM-DSS

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
	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 completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means; • If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas; • All open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than $50m^3$ should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system; • Manholes (including newly constructed ones) should always be covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers; • Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes;					

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
	• All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain; • 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.					
S6.4.4.4 – S6.4.4.5	*Sewage from workforce* • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance;	To minimise water quality from sewage effluent	Contractor	All construction sites where practicable	Construction phase	• Water Pollution Control Ordinance • TM-DSS

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
	• 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.					
S6.4.4.6	*Operation of Barging Point at Siu Lam* • All barges should be fitted with tight bottom seals to prevent leakage of materials during transport; • Barges or hoppers should not be filled to a level that will cause overflow of materials or polluted water during loading or transportation; • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and • Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. • Mitigation measures for land-based activities as outlined in Section 6.4.4 should be applied to minimise water quality impacts from site runoff and open stockpile spoils at the proposed barging facilities where appropriate.	To minimise water quality from operation of barging point at Siu Lam	Contractor	All construction sites where practicable	Construction phase	• Water Pollution Control Ordinance • TM-DSS
Water Quality (Operational Phase)						
S6.5.4.1 – S6.5.4.6	The following mitigation measures during operational phase are recommended: • Sewage and wastewater discharge should be connected to foul sewerage system; • Proper drainage systems with silt traps and oil interceptors should be installed;	To minimise the road runoff, wastewater discharge and erosion of seasonal watercourse during the operational phase	Highways Department / Contractors	Whole alignment	Construction / Operational Phase	• Water Pollution Control Ordinance • TM-DSS

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
	• The design of road gullies with silt traps should be incorporated especially for the catchment leading to the existing wet woodland area located at the north of the site; • The silt traps and oil interceptors should be cleaned and maintained regularly, especially before peak seasons of the visitors in Ching Ming Festival and Chung Yeung Festival; • Energy dissipaters should be installed at the seasonally wet watercourses to reduce the magnitude of the first flush in order to minimise the erosion impact to the wet woodland.					

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
Waste Management (Construction Waste)						
S7.3.3.8	Construction & Demolition Material Management Plan (C&DMMP) • A C&DMMP shall be submitted to the Public Fill Committee for approval in the case of C&D materials disposal exceeding 50,000m^3.	To enhance the management of construction and demolition (C&D) material including rock in public works projects	Contractor	All construction sites	Construction phase	• Project Administrative Handbook for Civil Engineering Works, 2012 Edition
S7.3.4.2	Good Site Practice The following good site practices are recommended throughout the construction activities: • nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • provision of sufficient waste disposal points and regular collection for disposal; • appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • a Waste Management Plan (WMP) should be prepared by the contractor and submitted to the Engineer for approval.	Minimise waste generation during construction	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance
S7.3.4.3	Waste Reduction Measures Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction: • segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal;	Reduce waste generation	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance

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
	• 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.					
S7.3.4.5	<u>Storage of Waste</u> The following recommendation should be implemented to minimise the impacts: • non-inert C&D materials such as soil should be handled and stored well to ensure secure containment; • stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; • different locations should be designated to stockpile each material to enhance reuse;	Good site practice to minimise the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction phase	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005
S7.3.4.6	<u>Collection and Transportation of Waste</u> The following recommendation should be implemented to minimise the impacts: • remove waste in timely manner; • employ the trucks with cover or enclosed containers for waste transportation; • obtain relevant waste disposal permits from the appropriate authorities; and • disposal of waste should be done at licensed waste disposal facilities.	Minimise waste impacts from storage	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance
S7.3.4.8 – S7.3.4.15	<u>Excavated and C&D Materials</u> Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public filling areas or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials: • maintain temporary stockpiles and reuse excavated fill material for	Minimise waste impacts from excavated and C&D materials	Contractor	All construction sites	Construction phase	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance

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
	backfilling; • carry out on-site sorting; • make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and • implement a recording system for the amount of waste generated, recycled and disposed of for checking. The recommended C&D materials handling should include: • On-site sorting of C&D materials; • Reuse of C&D materials; and • Use of Standard Formwork and Planning of Construction Materials purchasing.					• ETWB TCW No. 19/2005 • Project Administrative Handbook for Civil Engineering Works, 2012 Edition
S7.3.4.17 – S7.3.4.18	Chemical Waste If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste Contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction phase	• Waste Disposal (Chemical Waste) General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste
S7.3.4.19	General Refuse • General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis.	Minimise production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance
S7.3.4.20	Sewage • The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability,	Minimise production of sewage impacts	Contractor	All construction sites	Construction phase	• Waste Disposal Ordinance

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
	site condition and activities. • Regularly collection by licensed collectors should be arranged to minimise potential environmental impacts.					
Waste Management (Operational Waste)						
S7.4.4.1	<u>General Refuse</u> A reputable waste collector should be employed to remove general refuse on a daily basis.	Remove general refuse during routine road cleaning activities on the roads network and avoid odour, pest and litter impacts	Highways Department / Contractor	Roads network for the C&C facilities and Lin Ma Hang Road	Operational phase	• Waste Disposal Ordinance

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
Land Contamination						
S8.9.1.1	Re-appraisal of the potentially contaminated site (SRC-1)	Identify any hot spots for SI within the southeast and western portions of SRC-1	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	Once the works area for the Project is confirmed and site access is available (e.g. after land resumption)	• Annex 19 of the TM-EIAO, Guidelines for Assessment of Impact On Sites of Cultural Heritage and Other Impacts (Section 3 : Potential Contaminated Land Issues); • Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management; • Guidance Notes for Contaminated Land Assessment and Remediation; and • Practice Guide for Investigation and Remediation of Contaminated Land • Recommendations in Health Risk Assessment
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 re-appraisal 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
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

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
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 measures for the contaminated soil and groundwater identified in the assessment if remediation is required	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	Prior to the construction phase	Ditto
S8.11.1.2	Preparation and submission of Remediation Report (RR) to EPD for review and approval following the completion of any necessary remediation works	Demonstrate that the decontamination work is adequate and is carried out in accordance with the endorsed CAR and RAP	Project Proponent / Detailed Design Consultant	Potentially contaminated site (SRC-1)	Prior to the construction phase	Ditto

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
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 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.	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Upland Grassland Reinstatement Plan	Engineered slopes of Crematorium Indicative locations for Grassland Reinstatement should be referred to **Figure 9.11** of the EIA Report	Prior to construction phase	• Reinstatement and establishment requirements to be detailed in Upland Grassland Reinstatement Plan • TM-EIAO
S9.7.2.5 – S9.7.2.6	Preparation and submission of a Vegetation Survey Report and Transplantation Proposal (if needed as concluded in the Vegetation Survey Report) to EPD for agreement.	The Vegetation Survey will report the presence, as well as update the conditions, number, locations and habitat types of any identified floral species of conservation importance to be impacted by the development,	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for	Within the Project Area where applicable	Prior to construction phase	• Survey findings and transplantation methodology to be detailed in Vegetation Survey Report and Transplantation Plan

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
		and evaluate suitability and/or practicality of transplantation. The Transplantation Proposal will recommend locations of the receptor site(s), transplantation methodology, implementation programme of transplantation and post-transplantation monitoring and maintenance programme.	Vegetation Survey Report and Transplantation Proposal.			respectively. • TM-EIAO.
S9.7.5.3 – S9.7.5.5, S9.8.1.6	Preparation and submission of Enhancement Woodland Proposal to EPD for agreement.	Recommend appropriate enhancement planting programme, planting and post-transplantation monitoring methodology, action plan for monitoring the enhancement planting and maintenance programme.	Project Proponent/ Detailed Design Consultant (qualified ecologist/ botanist) for Wooded Area Proposal.	Filled slope west of the platform, and north west of the platform in the valley below MacIntosh Fort Indicative locations for Enhancement Woodland should be referred to **Figure 9.11** of the EIA Report	Prior to construction phase	• Enhancement planting and establishment requirements to be detailed in Wooded Enhancement Proposal. • TM-EIAO
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).	Minimise the indirect impacts to Water Quality and Hydrology	Contractor /detailed design consultant.	On the edge of any active works area, 30m from the watercourse	Prior to commencement and during construction phase	• ETWB TCW No. 5/2005 • TM-EIAO

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
	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.					
S9.7.3.4 – S9.7.3.6	Mitigation for noise disturbance (details refer to S5.5.5 to S5.6.6 of this table). Site formation and construction are tentatively proposed to cover a 65-month period from mid 2017 to late 2022. As a precautionary approach, consideration should be given at the detailed design stage to avoid the use of highly reflective materials in the design and implementing the use of opaque materials, fritting, breaking up external reflections with stickers or plastic wrap and/or any other bird-friendly design for noise barriers. Works will be restricted to daytime and any construction lighting should be designed and positioned as to not impact on adjacent ecologically sensitive areas.	The construction work and site formation will be phased in order to reduce overall noise disturbance impacts in particular areas. Collisions usually occurs as a result of birds perceiving a clear path through an object that is transparent or appears to be transparent at some distance, or if the noise barrier is highly reflective which would appear to be composed of the adjacent natural vegetation. Furthermore, mitigation measures to control noise disturbance during this phase will involve the selection of quieter plant, use of movable noise barriers and erection of hoarding and fencing to demarcate the site boundary	Contractor Project Proponent	All construction sites	Prior to commencement and during construction phase	• TM-EIAO.

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
S.9.7.3.7	In order to demonstrate ecological awareness and to minimise the risk of indirect impacts from water pollution and hill fires, a series of good site practices should be adopted by site staff throughout the construction phase at each works site. These are as follows: • Put up signs to alert site staff about any locations which are ecologically sensitive and measures to prevent accidental impacts; • Erection of temporary geotextile silt or sediment fences/oil traps around any earth-moving works to trap any sediments and prevent them from entering watercourses; • Prohibition of soil storage against trees or close to waterbodies; • Delineation of works site to prevent encroachment onto adjacent habitats and fence off areas which have some ecological value; • No smoking, hot works or sources of fire close to upland grassland; • No on-site burning of waste; and • Waste and refuse in appropriate receptacles.	Minimise impacts on hydrological condition and water quality of hillside watercourses and reduce chances of hillfires.	Contractor	All construction sites	Prior to commencement and during construction phase	• TM-EIAO.
S.9.7.3.9	Precautionary checks by a suitably experienced ecologist of the vegetation for the presence of nesting birds should be carried out in the breeding season (February to July) before vegetation clearance. These impacts can be avoided by conducting vegetation clearance during the non-breeding season (tentatively August-January) and phased through the project period to minimise impacts.	Minimise the impacts to breeding birds within the works areas.	Contractor	All construction sites	Prior to site clearance	• TM-EIAO • WAPO
Ecology (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
S9.7.2	Establishment, maintenance and monitoring of a Upland Grassland Reinstatement Area	Reinstatement of upland grassland and to maintain connectivity in Sandy Ridge.	Project Proponent / Contractor / Maintenance Authority	Engineered slopes of Crematorium Indicative locations for Grassland Reinstatement should be referred to **Figure 9.11** of the EIA Report	Operational phase	• Monitoring methodology and successfulness of survival of upland grassland should follow Upland Grassland Reinstatement Plan. • TM-EIAO.
S9.7.5.3 – S9.7.5.6	Establishment, maintenance and monitoring of an enhancement woodland	Recommend appropriate enhancement planting programme, planting and post-transplantation monitoring methodology, action plan for monitoring the enhancement planting and 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	Operational phase	• Enhancement planting and establishment requirements to be detailed in Wooded Area Proposal. • TM-EIAO.
S9.7.4.1 – S9.7.4.5	<u>Mitigation for Impacts to Water Quality and Hydrology (Operational Phase)</u> • Stormwater drainage system will be further developed in detailed design stage to collect dusty materials from water collected from the platform and associated road system. Silt traps will be installed to ensure removal of dusty materials. Regular cleaning will be conducted to avoid debris entering downstream rivers during first flush; and • The proposed small diameter bore pile system at the foundation of the proposed platform structure.	Specific mitigation measures will be implemented to prevent indirect impacts wetland habitats and fauna. Mitigation measures are to be further developed in the detailed design stage to address any water quality impacts due to the drainage from the proposed platform, and any erosion issues due to the drainage from the	Detailed Design Consultant	Wet woodland (and further down the marsh and mitigation ponds) and the seasonal watercourse to the east of the Project boundary	Detailed Design phase/Operational phase	• TM-EIAO

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
		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 proposed platform structure would allow a notional free area of about 87 – 91% for groundwater to pass through				
S9.7.4.6 – S9.7.4.7	<u>Minimise the potential indirect light disturbance on the Street Lighting on fireflies surrounding the Project Site during operational phase</u> • It is considered that at the detailed design stage, street lighting of similar lux/light intensity as to what is currently present is utilised. Furthermore, as a precautionary measure, it is suggested that deflectors are fixed to the back of the street lights to prevent additional light reaching the marsh and causing adverse impacts to fireflies.	Reduce light pollution and impact on the nearby habitats and their associated wildlife groups, particularly nocturnal fireflies.	Detailed Design/ Consultant/ Operator	The whole Project area	Detailed Design phase/Operational phase	• TM-EIAO
S9.7.4.9 – S9.7.4.9	The increase in visitors to the columbarium allows greater public access to the upland grassland of Sandy Ridge and in turn, the potential for hill fires is also increased. Fires may emanate from discarded cigarettes and from specific practices during festivals or grave-sweeping. In order to reduce the risk of hill fires, sufficient educational signage should be displayed throughout the columbarium warning people of the risks of fire and strictly prohibits practices that could cause hill fires. This will require input in the detailed design phase.	Minimise the risk of hill fires.	Detailed Design/ Consultant/ Operator	The whole Project area	Detailed Design phase/Operational phase	• TM-EIAO

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
Fisheries						
S10.5.1.1	No loss of fish ponds is anticipated and no *in situ* mitigation is required. However, mitigation measures for water quality (S6.4.4 – S6.5.4 in this table) proposed are also pertinent in ensuring that fisheries impacts of the Project do not occur downstream of the Project area either locally or in Inner Deep Bay.	-	-	-	-	-

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
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	-
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	-
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	-
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	-

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
S11.8.1.3, Table 11.9	CM6 – Tree Protection and Preservation – Woodland, plantation and other vegetation within the Study Area will be protected and preserved as far as possible in accordance with ETWB TCW No. 29/2004 - Registration of Old and Valuable Trees, and Guidelines for their Preservation and DEVB TCW No.07/2015 – Tree Preservation. Detailed Design Considerations are made to avoid impacts to trees, e.g. proper viaduct/ bridge design routing to avoid majority of the woodland, locating the columbarium buildings in areas with less trees and ensuring design of the buildings has as small a footprint as practical.	Minimise landscape impact and visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Construction phase	• DEVB TC(W) 07/2015 • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DevB
S11.8.1.3, Table 11.9	CM7 – Tree Transplantation – Tree(s) will be affected according to the Tree Preservation and Removal Proposal to be carried out in a later stage. Established trees of value are to be re-located where practically feasible.	Minimise landscape and visual impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Design and Construction phase	• 'Guidelines for Tree Risk Management and Assessment Arrangement on an Area Basis and on a Tree Basis', issued January 2011, Greening, Landscape and Tree Management (GLTM) Section, DevB • Latest recommended horticultural practices from GLTM Section, DevB

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
S11.8.1.3, Table 11.9	CM8 - Implementing precautionary control measures during construction stage accordingly to ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works to avoid direct or indirect impacts any watercourses and good site practices.	Minimize landscape impact	Funded by CEDD and implemented by Contractor	Work site/ during construction	Design and Construction phase	• ETWB TCW No. 5/2005 – Protection of natural streams/rivers from adverse impacts arising from construction works
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

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
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 – Maintenance of Vegetation and Hard Landscape Features
S11.8.1.3, Table 11.9	OM3 – Amenity Planting and aesthetic streetscape design of hard landscaping for Pedestrian Walkway, Roadside - Roadside amenity planting should be provided along Sha Ling Road, Lin Ma Hang Road, as well as the internal road within Sandy Ridge columbarium and crematorium site; to enhance the landscape quality of the existing and proposed transport routes. Climbers are proposed to cover vertical, hard surfaces of the piers of the proposed viaducts, and also the newly formed retaining wall within the site. Shade tolerant plants will be planted, where light is sufficient, to improve aesthetic value of areas under viaducts.	Minimise visual impact and also enhance landscape.	Funded by CEDD and implemented by Contractor	Within Project Site	Construction phase	• Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB • DEVB TCW No. 06/2015 – Maintenance of Vegetation and Hard Landscape Features
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.

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
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	-
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	-
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 system.
S11.8.1.3, Table 11.9	OM8 - Silt traps should also be incorporated into design of road gullies for the natural water stream(s).	Minimise the landscape impact on natural stream	Funded by CEDD and implemented by Contractor	Within Project Site	Construction Phase	

Notes:

(a) A detailed Tree Survey Report showing all identified valuable trees and OVT will be undertaken in a separate Tree Preservation and Removal Proposal.

(b) Wood resulting from tree removal should be recycled as mulch or soil conditioner for re-use within the Project or in other projects as far as possible e.g. for the construction of soft landscape work, were practical.

(c) Contractor is responsible for landscaping during the agreed establishment and maintenance period. Other designated management and maintenance agents to take up maintenance and management of landscaping after end of agreed period.

(d) Highways Department (HyD) is responsible for maintenance and management of landscaping of public road side slope, Leisure and Cultural Services Department (LCSD) is responsible for the management and maintenance of soft landscapes along non-expressway public roads outside Country Park and Food and Environmental Hygiene Department (FEHD) is responsible for maintenance and management of landscaping of other areas allocated to FEHD.

(e) The landscape mitigation treatment of the future development site shall follow the below frameworks:
- Buffer planting shall be provided to soften the edge of the site.
- Aesthetic landscape treatment including both soft and hard landscape features shall be provided.
- Vertical greening shall be provided as far as practicable.
- At-grade tree planting shall be provided as far as possible while planting space is allowed, to enhance the overall environment.
- Architectural design shall blend in with the surrounding environment.
- Overall greening ratio shall comply with TC(W) No.3/2012 Site coverage of Greenery for Government Building Projects.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
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.						

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
Cultural Heritage Impact (Construction and Operational Phase)						
S.12.4.8.1	• Archaeological Watching Brief (AWB) programme near the crossing at the south of the proposed connection road to Man Kam To Road as delineated on **Figure 12.3.13** needs to be undertaken by qualified archaeologist, who will apply for an archaeological licence to conduct the works.	To further assess cultural soils recorded during the Archaeological field survey	Contractor	Location for AWB shown in **Figure 12.3.13** of the EIA Report	Prior to the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • Archaeological licence requirements • AWB methodology guidelines
S.12.4.8.2	• The contractor should be alerted during the construction along Lin Ma Hang Road on the possibility of locating archaeological remains and as a precautionary measure, AMO shall be informed immediately in case of discovery of antiquities or supposed antiquities in the subject sites.	To preserve any cultural heritage items which may be removed and damaged by the excavation works.	Contractor	Along Lin Ma Hang Road	During the Construction phase	• Antiquities and Monuments Ordinance
S.12.3.11.10 Table 12.4	• Monitoring of vibration levels will be undertaken during the construction phase and the Alert, Alarm and Action (AAA) vibration limit will be set at 5/6/7.5 mm/s. The monitoring proposal should be sent to AMO for comment; • A condition survey should be undertaken by the project proponent to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer. A condition survey proposal will be submitted to AMO for comment before commencement of work; • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance.	Protect the building from damage from construction works	Contractor	MacIntosh Fort at Nam Hang (GB-01)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits

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
S.12.3.11.10 Table 12.5	• A cartographic and photographic survey will be conducted for shrine that will require relocation prior to the construction works; • The shrine will be relocation to a suitable locations in the close vicinity to allow for continuing worship by public.	Protect the structure from damage from construction works	Contractor	Earth God Shrine on corner of Man Kam To and Sha Ling Road (HB-01)	Prior to commencement the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO's guidelines for cartographic and photographic survey
S.12.3.11.10 Table 12.5	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance.	Protect the building from damage from construction works	Contractor	Tin Hau Temple (HB-02)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S.12.3.11.10 Table 12.5	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Protective covering should be provided for the structure in the form of plastic sheeting; • A buffer zone measuring a minimum of 1 m or as appropriate needs to be set up and covering in the form of plastic sheeting on a moveable fence to protect the heritage building from works;	Protect the building from damage from construction works	Contractor	San Uk Ling Village Entrance Gate (HB-03)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits

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
	• Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance.					
S.12.3.11.10 Table 12.5	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance.	Protect the building from damage from construction works	Contractor	Cheung Ancestral Hall (HB-04)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S.12.3.11.10 Table 12.5	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance.	Protect the building from damage from construction works	Contractor	No. 9 San Uk Ling Village House (HB-05)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S.12.3.11.10 Table 12.5	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s;	Protect the structure from damage from construction works	Contractor	Buddhist Shrine (HB-06)	During the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed

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
	• Protective covering should be provided for the structure in the form of plastic sheeting; • Buffer zones should be provided between the construction works and the shrine and should be as large as site restrictions allow and be marked out by temporary fencing or hoarding; • Provision of safe public access.					Vibration Limits
S.12.3.11.10 Table 12.5	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Protective covering should be provided for the structure in the form of plastic sheeting; • Buffer zones should be provided between the construction works and the shrine and should be as large as site restrictions allow and be marked out by temporary fencing or hoarding; • Provision of safe public access.	Protect the structure from damage from construction works	Contractor	Buddhist Shrine (HB-07)	During the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S.12.3.11.10 Table 12.6	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Protective covering should be provided for the structure in the form of plastic sheeting; • Buffer zones should be provided between the construction works and the grave and should be as large as site restrictions allow and be marked out	Protect the structure from damage from construction works	Contractor	Yuen Clan Urns and Plaque (G-01)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits

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
	by temporary fencing or hoarding; • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance; • Provision of safe public access.					
S.12.3.11.10 Table 12.6	• A condition survey will be undertaken to determine the present condition of graded historic building and to recommend protective measures to ensure that the building is not damaged by the construction works. A condition survey must be carried out by qualified building surveyor or engineer; • Monitoring of vibration levels will be undertaken during the construction phase and the action vibration limit will be set at 25 mm/s; • Protective covering should be provided for the structure in the form of plastic sheeting; • Buffer zones should be provided between the construction works and the grave and should be as large as site restrictions allow and be marked out by temporary fencing or hoarding; • Regular site inspections and monitoring works will be carried out by the contractor and the monitoring results will be submitted to the resident site staff to ensure compliance; • Provision of safe public access.	Protect the structure from damage from construction works	Contractor	Cheung Clan Grave (G-02)	Prior to commencement and during the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19 • AMO Proposed Vibration Limits
S.12.3.11.10 Table 12.6	• Provision of safe public access.	Public access may be affected during the construction works.	Contractor	Yuen Clan Grave (G-10)	During the Construction phase	• Guidelines for Cultural Heritage Impact Assessment • TM-EIAO Annex 10 and Annex 19
S.12.3.11.10 Table 12.6	• Provision of safe public access.	Public access may be affected during the construction works.	Contractor	Cheung Clan Grave (G-11)	During the Construction phase	• Guidelines for Cultural Heritage Impact Assessment

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
						• TM-EIAO Annex 10 and Annex 19

Environmental Mitigation Implementation Schedule – Sandy Ridge

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and / or standards to be achieved
EM&A Project						
S13.1.1.1, S13.2.1.2	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Highways Department	All construction sites	Construction phase	• EIAO Guidance Note No.4/2010 • TM-EIAO
S13.2.1.1 – S13.4.1.2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Highways Department / Contractor	All construction sites	Construction phase	• EIAO Guidance Note No.4/2010 • TM-EIAO