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.3) – OCTOBER 2018

PREPARED FOR

HSIN CHONG TSUN YIP JOINT VENTURE

Date	Reference No.	Prepared By	Certified By
14 November 2018	TCS00881/18/600/R189v2		
		Nicola Hon (Environmental Consultant)	Tam Tak Wing (Environmental Team Leader)

Version	Date	Remarks
1	6 November 2018	First Submission
2	14 November 2018	Amended according to the IEC's comment 12 November 2018

Our Ref: TCS00881/18/300/L0194

Hsin Chong Tsun Yip Joint Venture
Hsin Chong Center,
107-109 Wai Yip Street,
Kwun Tong,
Kowloon, Hong Kong

Attn: Mr. HO Man To

14 November 2018
By e-mail

Dear Sirs,

Re: CEDD Contract CV/2016/10
Site Formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Monthly Environmental Monitoring & Audit Report (No.3) – October 2018

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

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

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

T. W. Tam
Environmental Team Leader
TW/nh

cc	CEDD	Mr. Joseph Wong	By-email
	Arup (RE)	Mr. Steve Tang	By-email
	Acuity (IEC)	Mr. Jacky Leung	By-email

ACUITY
SUSTAINABILITY
CONSULTING LIMITED

Website: www.acuityhk.com

Unit 1908, iPlace,
Nos. 301-305 Castle Peak Road,
Kwai Chung, New Territories

Tel. : (852) 2698 6833
Fax.: (852) 2698 9383

Our ref: CJO4068

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

Attention: Mr. HO Man-to

14 November 2018

Dear Sir,

Site formation and Associated Infrastructural Works for Development of Columbarium at Sandy Ridge Cemetery
Monthly Environmental Monitoring and Audit Report (No.3) October 2018

I refer to the email of ETL dated 14 November 2018 regarding the captioned. We have no further comment on the Monthly Environmental Monitoring and Audit Report (No.3) October 2018 (Version 2) dated 14 November with reference No. TCS00881/18/600/R189v2 after verification.

Yours faithfully,

CH Leung

Ir Leung CH Jacky
Independent Environmental Checker

cc. CEDD-DPTL/Land Works – Mr. LI Kwok Hung
ARUP – Mr. LEE Davis
ET Leader – Mr. TAM

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. 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.05. This is the **3rd** monthly Environmental Monitoring and Audit Report to reporting the monitoring results and inspection findings for the period from **1** to **31 October 2018 (**the Reporting Month).

ENVIRONMENTAL MONITORING AND AUDIT ACTIVITIES

ES.06. 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	15
	24-hour TSP	ASR-1	6
Construction Noise	Leq (30min) Daytime	CN-1	4
Water Quality	In-situ measurement and Water sampling	M3	14
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	5
	IEC Monthly Environmental Site Audit	Site area of CV/2016/10	1

BREACH OF ACTION AND LIMIT (A/L) LEVELS

ES.07. No exceedance of air quality and construction noise monitoring was recorded in this Reporting Month. However, four (4) Limit Level exceedances were recorded in water quality monitoring. Notification of Exceedance (NOE) of water quality was 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	**0**	**3**	**3**	Not related to the Contract Works	NA
	SS	0	**1**	**1**	Not related to the Contract Works	NA

Note: NOE – Notification of Exceedance

ES.08. Investigation for the cause of water quality exceedances have been undertaken by ET. Investigation results revealed that water quality mitigation measures have been implemented to minimize the water quality impact arising from contract works. Such as temporary bund and de-silting trench were installed at Retaining Wall RW1 to reduce the suspended solids content in runoff. Series of sheet pile was installed at site boundary to prevent site runoff flowing to the Conservation Area (CA). In view of the implementation of water quality mitigation measures, the site was generally order and no water quality impact was observed, it is considered that the exceedances were unlikely caused by the works under the Project.

ENVIRONMENTAL COMPLAINT

ES.09. 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
1 – 31 October 2018	0	0	NA

ES.010. 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.011. 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
1 – 31 October 2018	0	0	NA

Table ES-8 Environmental Prosecution Summaries in the Reporting Month

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 October 2018	0	0	NA

REPORTING CHANGE

ES.012. There were no reporting changes in the Reporting Month.

SITE INSPECTION

ES.013. 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 **4th, 11th, 19th, 25th and 31st October 2018**. No non-compliance was noted during the site inspection. Furthermore, IEC attended a joint site inspection on **19th October 2018**.

FUTURE KEY ISSUES

ES.014. 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 stream and Conservation Area (CA).

ES.015. 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.016. 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) and it was approved by EPD on 25 October 2018.

1.1.7 This is the **3rd** monthly Environmental Monitoring and Audit Report to reporting the monitoring results and inspection findings for the period from **1** to **31 October 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 three month rolling construction programme are enclosed in ***Appendix C*** and the major construction activities undertaken in this Reporting Month are listed below:-

- General site clearance;
- Bulk Excavation
- Construction of temporary Site Office;
- Construction of Cut Slope, installation of soil nailing and construction of surface channel;
- Construction of retaining wall; and
- Construction of fill slope.

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 ref no.	License/ Permit Status
1	Air Pollution Control (Construction Dust) Regulation	Ref. no. 428909 Acknowledged by EPD on 20/12/2017	Valid
2	Chemical waste Producer Registration	WPN: 5231-641-H3937-01 Issued by EPD on 27/03/2018	Valid
3	Water Pollution Control Ordinance	License no. WT00030795-2018 Issued date: 9/5/2018 Expire Date: 31/5/2023	Valid
4	Billing Account for Disposal of Construction Waste	Account no.: 7029769 Date approved: NA	Valid
5	Construction Noise Permit	GW-RN0490-18 Issued date: 14/9/2018 Expire Date: 18/11/2018	Valid

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)	Submitted on 11 Oct 2018
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	Approved by EPD on 12 Oct 2018
6	Condition 2.16 of EP and Condition 2.15 of FEP	Vegetation Transplantation Proposal	Approved by EPD on 12 Oct 2018

Item	EP and / or FEP Stipulation	Description	Situation
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 Condition 2.22 of FEP	Traffic Noise Mitigation Plan	Submitted on 17 July 2018
11	Condition 3.3 of the EP and FEP	Baseline Monitoring Report (Air, Noise and Water)	Approved by EPD on 25 Oct 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 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

3.3.5 If the designated monitoring location is required to relocate, alternative monitoring location shall meet the following criteria:

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

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

Construction Noise

3.3.7 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

Location ID	NSR ID in EIA	Description	Location
			(1m façade from the building)

3.3.8 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

3.3.9 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

3.3.10 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 as proposed by the ET shall be verified by the IEC.

Air Quality Monitoring

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

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

3.5.4 All equipment used by ET for air quality monitoring is listed in ***Table 3-8***.

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 *ALS Technichem (HK) Pty Ltd*, he is one a local HOKLAS-accredited laboratory

3.6 EQUIPMENT CALIBRATION

3.6.1 The HVAS is operated and calibrated on a regular basis in accordance with the manufacturer's instruction using Tisch Calibration Kit Model TE-5025A. Calibration would carry out 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 schedule was submitted to all relevant parties which shown in ***Appendix G***.

4.1.2 In this Reporting Period, ***6*** occasions 24-hour TSP and ***15*** occasions 1-hour TSP of the air quality monitoring was 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 ($\mu g/m^3$)	1-hour TSP ($\mu g/m^3$)				
		Date	Start Time	1st hour measured	2nd hour measured	3rd hour measured
2-Oct-18	102	3-Oct-18	9:47	114	121	127
8-Oct-18	96	9-Oct-18	9:19	108	114	120
13-Oct-18	97	15-Oct-18	9:46	50	57	62
19-Oct-18	75	20-Oct-18	9:37	87	92	73
25-Oct-18	92	26-Oct-18	9:54	66	68	67
31-Oct-18	95					
Average (Range)	**93 (75 - 102)**	Average (Range)		**88 (50 – 127)**		

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

4.2 AIR MONITORING 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 MONITORING RESULTS

5.1.1 Noise impact monitoring schedule was submitted to all relevant parties which shown in ***Appendix G***.

5.1.2 In this Reporting Month, ***4*** 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) – CN1

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}
3-Oct-18	9:50	61.8	62.7	61.5	61.8	62.7	60.7	62	65
9-Oct-18	9:16	69.8	72.5	68.2	70.2	67.3	69.4	70	73
15-Oct-18	9:43	67.1	67.1	64.5	61.7	65.5	62.9	65	68
26-Oct-18	10:00	60.0	65.7	67.5	68.3	66.7	70.8	68	71
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. No noise measurement was performed in fog, rain, wind with a steady speed exceeding 5 m s^{-1} or wind with gusts exceeding 10 m s^{-1}.

5.2 NOISE MONITORING EXCEEDANCE

5.2.1 As shown in ***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 MONITORING RESULTS

6.1.1 Water quality impact monitoring schedule was submitted to all relevant parties which shown in ***Appendix G***.

6.1.2 In the Reporting Month, a total of ***14*** 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)
2-Oct-18	4.76	**8.0**	6.0
4-Oct-18	4.92	5.5	8.5
6-Oct-18	5.22	5.6	6.5
9-Oct-18	4.63	5.6	9.0
11-Oct-18	4.64	**7.8**	7.0
13-Oct-18	5.40	5.3	6.0
16-Oct-18	5.66	4.0	3.0
18-Oct-18	5.31	5.5	5.0
20-Oct-18	5.81	5.3	3.0
23-Oct-18	5.40	5.3	8.5
25-Oct-18	5.10	**7.9**	**11.5**
27-Oct-18	5.98	4.4	8.0
29-Oct-18	5.50	4.9	4.5
31-Oct-18	5.13	5.2	4.5

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 23.0°C to 27.1°C, no salinity concentrations was detected, pH values within 6.7 to 8.7 and the stream flow velocity between 0.1 and 0.2 m/sec.

6.2 WATER QUALITY MONITORING EXCEEDANCE

6.2.1 In this Reporting Period, a total of four (4) Limit Level exceedances, including three (3) Limit Level exceedances of turbidity and one (1) 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	**3**	0	**1**	0	**4**	0	0

6.2.2 Investigation for the cause of water quality exceedances have been undertaken by ET. Investigation results revealed that water quality mitigation measures have been implemented to minimize the water quality impact arising from contract works. Such as temporary bund and de-silting trench were installed at Retaining Wall RW1 to reduce the suspended solids content in runoff. Series of sheet pile was installed at site boundary to prevent site runoff flowing to the Conservation Area (CA). Moreover, exposed surface were covered by tarpaulin sheet as far as practicable. It was observed that construction of temporary drainage system was on-going and no muddy discharge was observed. In view of the implementation of water quality mitigation measures, the site was generally order and no water quality impact was observed, it is considered that the exceedances were unlikely caused by the works under the Project. Since the exceedances were concluded as not project-related, increase of monitoring frequency is not required according to EM&A Manual 7.8.1.3.

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
2 and 11 October 2018	NTU	In our investigation, HCTY-JV had implemented water quality mitigation measures. Having reviewed the monitoring data, there was no exceedance of Suspended Solids (SS) and the turbidity level is within the respective baseline range. In view of the implementation of water quality mitigation measures, the site was generally order and no water quality impact was observed, it is considered that the exceedances were unlikely caused by the works under the Project.
25 October 2018	NTU & SS	In our investigation, HCTY-JV had implemented water quality mitigation measures. In view of the implementation of water quality mitigation measures, the site was generally order and no water quality impact was observed, it is considered that the exceedances were unlikely caused by the works under the Project.

6.2.4 Although the exceedances were concluded 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 In the Reporting Month, ecological monitoring was undertaken on ***4th October 2018***. The weather of monitoring day was fine. The monitoring survey was 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 monitoring survey are presented below:

Mammal

7.3.2 There was no mammal recorded in the monitoring area

Birds

7.3.3 There were a total of 32 bird individuals from 10 species recorded during the survey.

Herpetofauna

7.3.4 There were no reptiles recorded in the monitoring area. There was two amphibian *(Kaloula*

pulchra ,Asiatic Painted Frog, 花狹口蛙) and *Microhyla fissipes*, Ornate Pigmy Frog, 飾紋姬蛙) found in the monitoring area.

Dragonfly

7.3.5 There were a total of 13 odonate individuals from 2 species.

Butterfly

7.3.6 There were a total of 3 butterfly individuals from 3 species recorded.

Aquatic Fauna Survey (Freshwater communities)

7.3.7 2 crabs of conservation importance *Somanniathelphusa zanklon* (鐮刀束腰蟹) were found in marsh.

7.3.8 The summaries of faunal 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
Apus nipalensis	House Swift	小白腰雨燕		15	
Lanius schach	Long-tailed Shrike	棕背伯勞			1
Dicrurus macrocercus	Black Drongo	黑卷尾		1	
Corvus macrorhynchos	Large-billed Crow	大嘴烏鴉		2	
Pycnonotus jocosus	Red-whiskered Bulbul	紅耳鵯		2	
Pycnonotus aurigaster	Sooty-headed Bulbul	白喉紅臀鵯		2	
Prinia inornata	Plain Prinia	純色鶲鶯			1
Garrulax chinensis	Black-throated Laughingthrush	黑喉噪鶥			2
Zosterops japonicus	Japanese White-eye	暗綠繡眼鳥		4	
Gracupica nigricollis	Black-collared Starling	黑領椋鳥			2

Table 7-5 Result of Reptile Survey

Scientific Name	Common Name	Chinese Name	Non-wetland	Wetland
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Table 7-6 Result of Amphibian Survey

Scientific Name	Common Name	Chinese Name	Conservation Status	Non-wetland	Wetland
Kaloula pulchra	Asiatic Painted Frog, Piebald Digging Frog	花狹口蛙			1
Microhyla fissipes	Ornate Pigmy Frog, Ornate Ricefrog, Ornamented Pygmy Frog	飾紋姬蛙		1	

Table 7-7 Result of Butterfly Survey

Scientific Name	Common Name	Chinese Name	Non-wetland	Wetland
Parnara guttata	Common Straight Swift	直紋稻弄蝶	1	
Rapala manea	Slate Flash	燕灰蝶	1	
Abisara echerius	Plum Judy	蛇目褐蜆蝶		1

Table 7-8 Result of Odonate Survey

Scientific Name	Common Name	Chinese Name	Conservation Status	Non-wetland	Wetland
Ceriagrion auranticum	Orange-tailed Sprite	琉球橘黃蟌		1	
Pantala flavescens	Wandering Glider	黃蜻		12	

Table 7-9 Result of Freshwater Communities Survey

Scientific Name	Common Name	Chinese Name	Conservation Status	4-Oct-18
Somanniathelphusa zanklon		鐮刀束腰蟹	Fellowes et al. (2002): GC	2

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

7.3.10 The tentative ecology inspection and monitoring in the next reporting period (November 2018) is scheduled on 15th November 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 October 2018. The findings / reminders recorded during the inspection are presented below:

Date	Findings and Reminder
29 October 2018	1. Construction works were being started. According to 'Tree Preservation' No7/2015, 26a, Contractor was reminded to provide TPZ with proper and robust fence at the dripline of all retained trees. No works were allowed to undertake within the TPZ. 2. Typhoon Mangkhut lead to fallen trees on site, contractor was reminded to remove these risk trees. 3. Construction material was found placing next to the retained tree, the contractor is reminded to provide robust TPZ and do not place any construction material in it. 4. Concrete leakage on the construction site was observed, contractor is reminded to keep the site clean and tidy. 5. Raised soil level near root flare of tree was observed, as it may lead to suffocation of tree root, contractor is reminded to lower the soil level around the tree root flare.

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)	2.982	Within the Contract working site
Reused in other Projects (Inert) (m^3)	0	-
Disposal as Public Fill (Inert) (m^3)	43.881	Tuen Mun Area 38

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)	0.298	NENT Landfill

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

10 SITE INSPECTION

10.1 REQUIREMENT

10.1.1 According to the approved 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 carried out by the RE, ET and the Contractor was on ***4th, 11th, 19th, 25th*** and ***31st October 2018***. Moreover, IEC attended a joint site inspection on ***19th October 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
4 October 2018	• The Contractor was reminded to spray water reguarly within site area for dust suppression.	• Not required for reminder.
11 October 2018	• Chemical container without drip tray was observed. The Contractor should place the chemical container into drip tray to avoid land contamination. • NRMM label was not observed for the excavator. The Contractor should display the NRMM label according the the NRMM regulation. • The Contractor was reminded to spray water regularly within site area and ensure dust mitigation measure for construction work such as slope drilling was properly implemented for dust suppression. • The Contractor was reminded to provide sufficient amount of rubbish bin within site area for collecting general wastes. • The Contractor was reminded to clean the stagnant water in drip tray under generator. • The Contractor was reminded to provide drip tray for generator within site area. • The Contractor was reminded to provide proper mitigation measure on open slope for dust suppression.	• Chemical container was removed to chemical storage area. • NRMM label was displayed on excavator. • Not required for reminder. • Not required for reminder. • Not required for reminder. • Not required for reminder. • Not required for reminder.
19 October 2018	• Chemical containers were observed on the ground at work area of retaining wall. The Contractor should provide drip tray chemical containers to avoid oil leakage.	• Drip tray was provided for the chemical containers.
25 October 2018	• Chemical containers were observed on the ground at CS11. The Contractor should provide drip tray to chemical containers to avoid land contamination. • The Contractor was reminded to dispose the empty cement bag properly to reduce dust impact. • The Contractor was reminded to maintain good housekeeping on site.	• Drip tray was provided for the chemical containers. • Not required for reminder. • Not required for reminder.

31 October 2018	• Chemical containers were observed near site entrance. The Contractor should provide drip tray to chemical containers to avoid land contamination. • The Contractor was reminded to dispose the empty cement bag properly to reduce dust impact. • The Contractor was reminded to maintain good housekeeping on site.	• Drip tray was provided for the chemical containers. • Not required for reminder. • Not required for reminder.

10.2.3 The Contractor is reminded to cover the open slope as far as practicable to reduce turbid runoff generated during rainy days and ensure all site runoff are properly diverted and treated prior to discharge. Moreover, all temporary catch pits shall be maintained in good condition in order to reduce water impact during heavy rainfall.

10.2.4 Moreover, removal of stagnant water within site areas should be conducted after rain to prevent mosquito breeding. In addition, all retained trees within site area shall be properly protected by mean of tree protection zone to avoid damage from work.

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
1 – 31 October 2018	0	0	NA

Table 11-2 Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 October 2018	0	0	NA

Table 11-3 Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Cumulative	Complaint Nature
1 – 31 October 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) Bulk Excavation
(iii) Construction of Temporary Site Office
(iv) Construction of Cut Slope, installation of soil nailing and construction of surface channel.
(v) Construction of retaining wall
(vi) Construction of fill slope

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 **3rd** monthly Environmental Monitoring and Audit Report presenting the monitoring results and inspection findings for the period of **1** to **31 October 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 4 Limit Level (LL) exceedances, including 3 LL exceedance of turbidity and 1 LL exceedances of SS were recorded at designated monitoring location M3. Investigation results revealed that water quality mitigation measures have been implemented to minimize the water quality impact arising from contract works. Such as temporary bund and de-silting trench were installed at Retaining Wall RW1 to reduce the suspended solids content in runoff. Series of sheet pile was installed at site boundary to prevent site runoff flowing to the Conservation Area (CA). In view of the implementation of water quality mitigation measures, the site was generally order and no water quality impact was observed, it is considered that the exceedances were unlikely caused by the works under the Project.

13.1.5 Monthly ecological monitoring for sensitive habitat is undertaken on ***4th October 2018***. Moreover, Landscape and visual inspection was undertaken by the RLA on ***29th October 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 **4th, 11th, 19th, 25th and 31st October 2018** and IEC attended joint site inspection on ***19th* October *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).

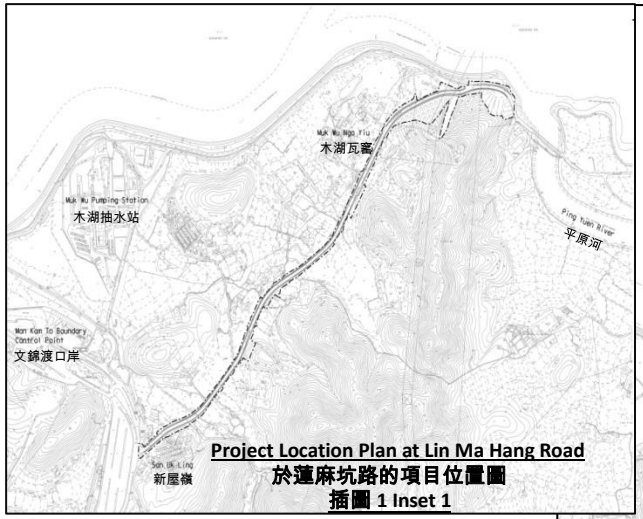
13.2.2 Construction noise would be a key environmental issue during construction phase of the Project. Noise mitigation measures such as using quiet plants and mobile noise barriers should be implemented in accordance with the EM&A requirement.

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.

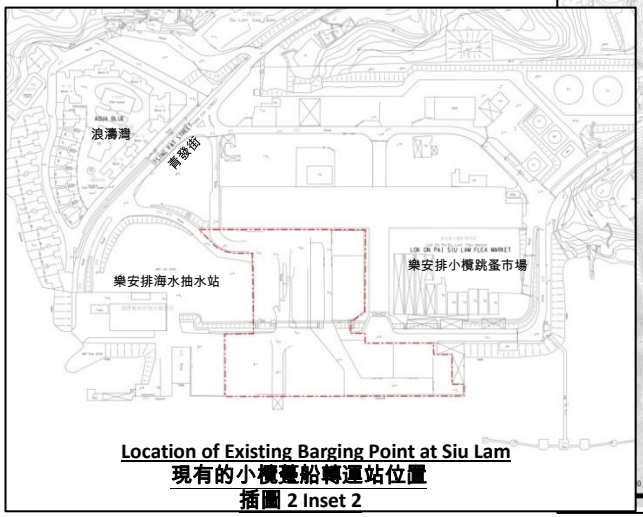
13.2.4 Furthermore, daily cleaning and weekly tidiness shall be properly performed and maintained. In addition, mosquito control should be performed to prevent mosquito breeding on site.

Appendix A

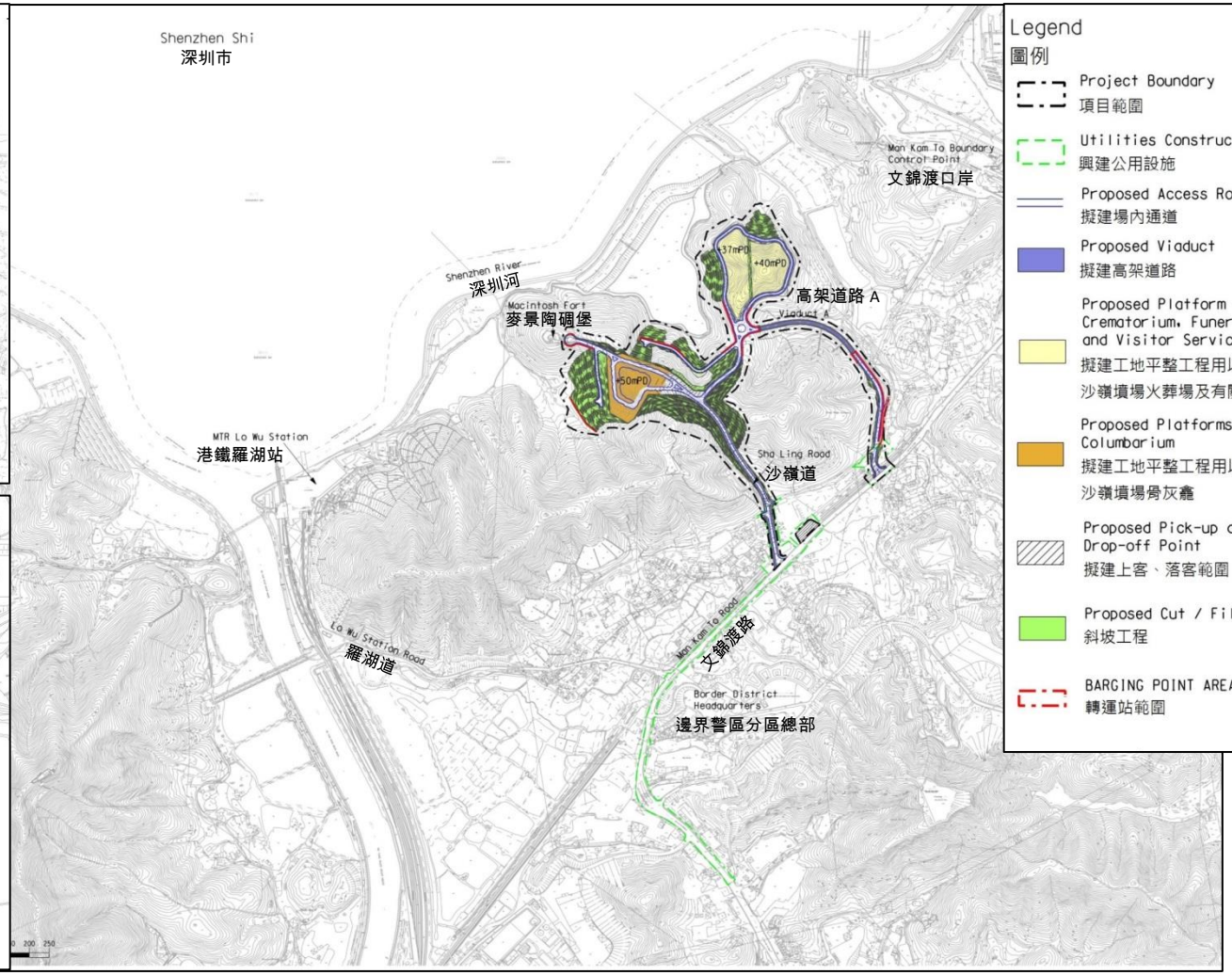
Layout Plan of the Project



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

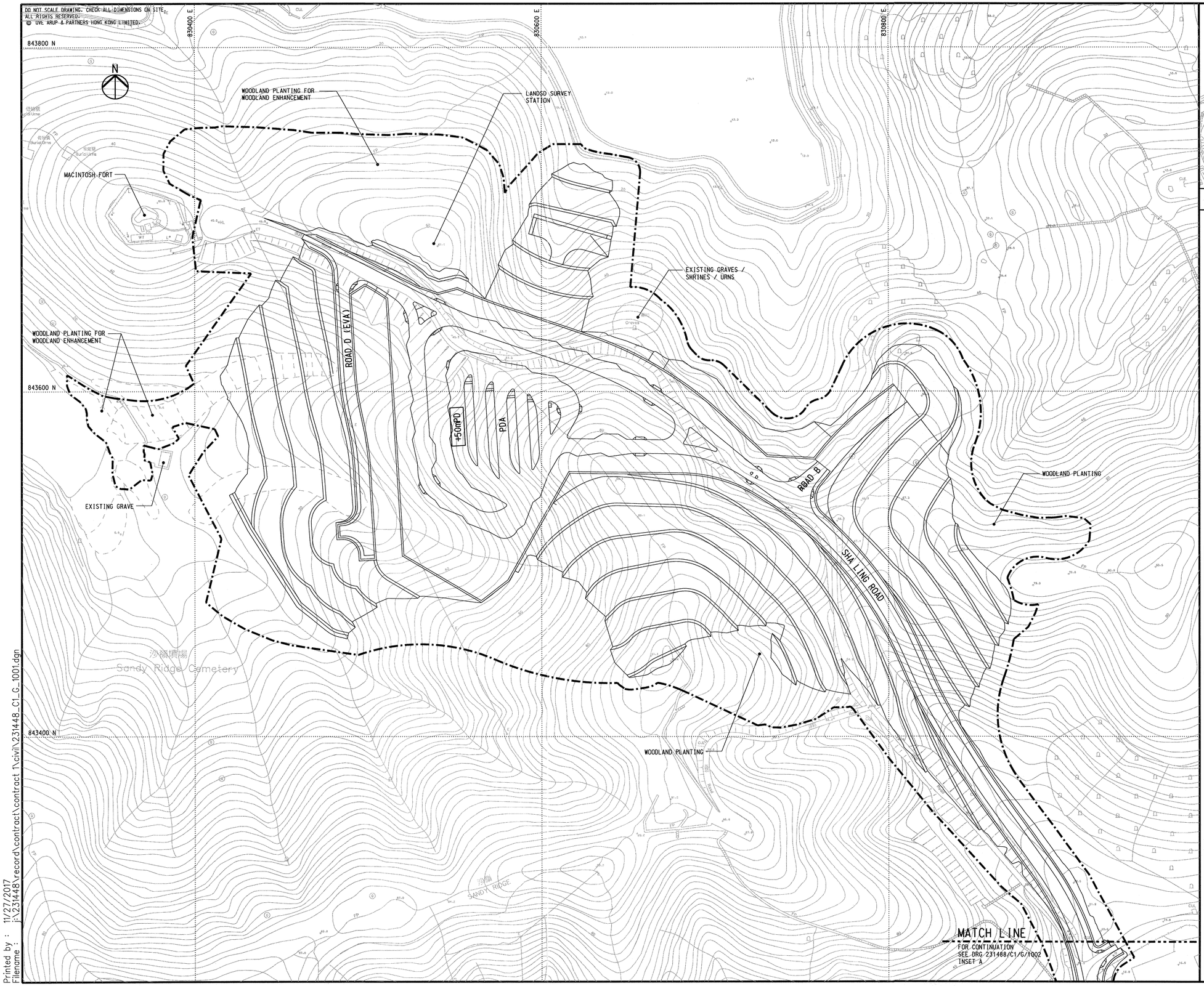
工程名稱：沙嶺墳場興建骨灰龕、火葬場及有關設施的工地平整及相關基建工程

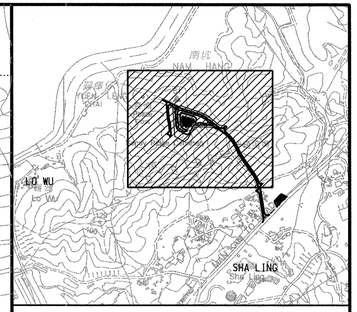
Figure 1: Project Location Plan

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

Printed by : 11/27/2017
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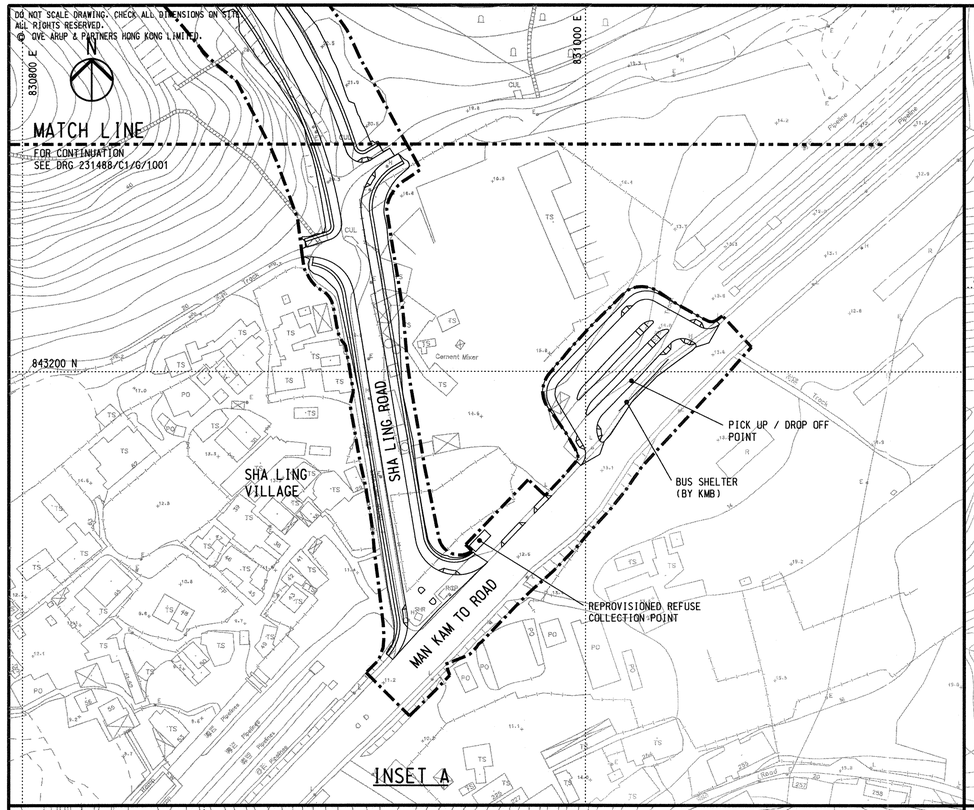

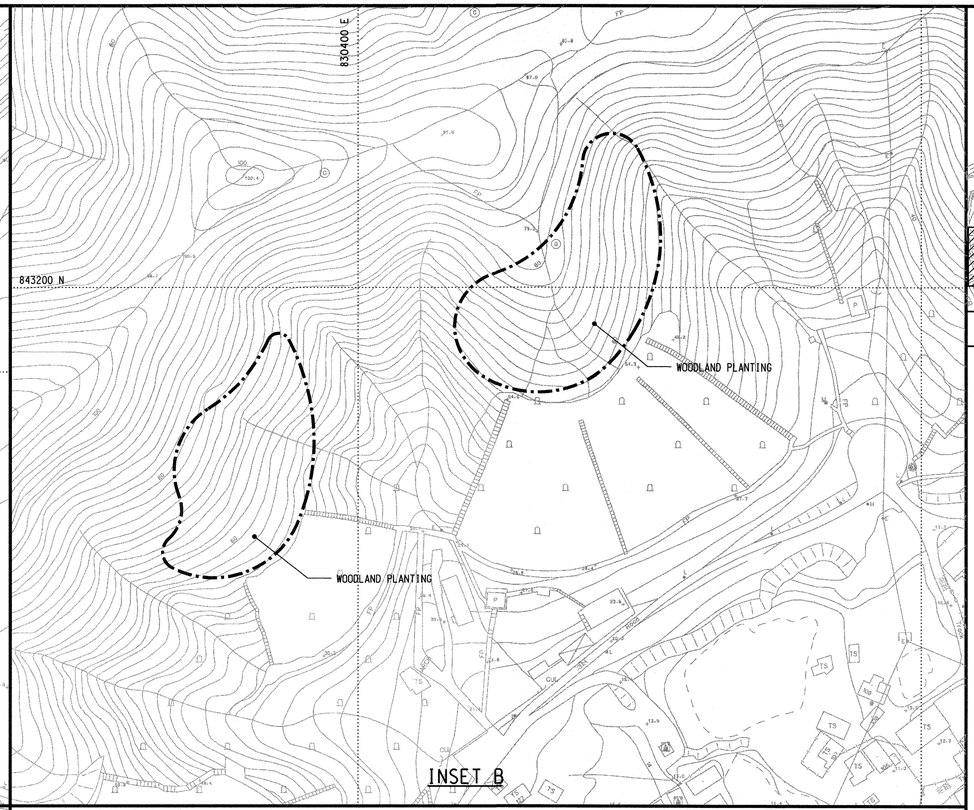

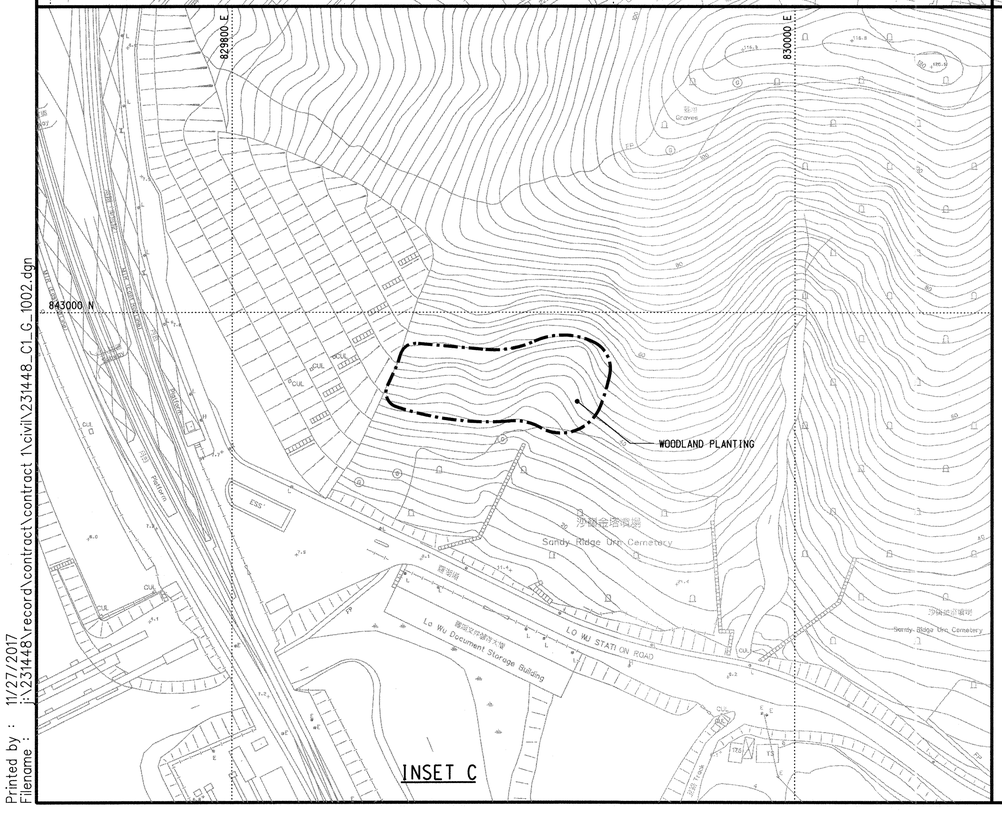

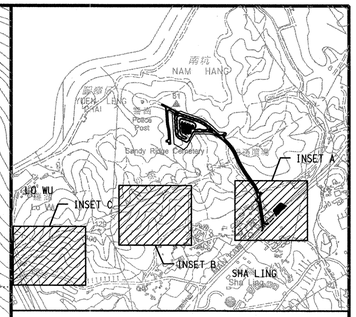

KEY PLAN

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

Printed by : 11/27/2017
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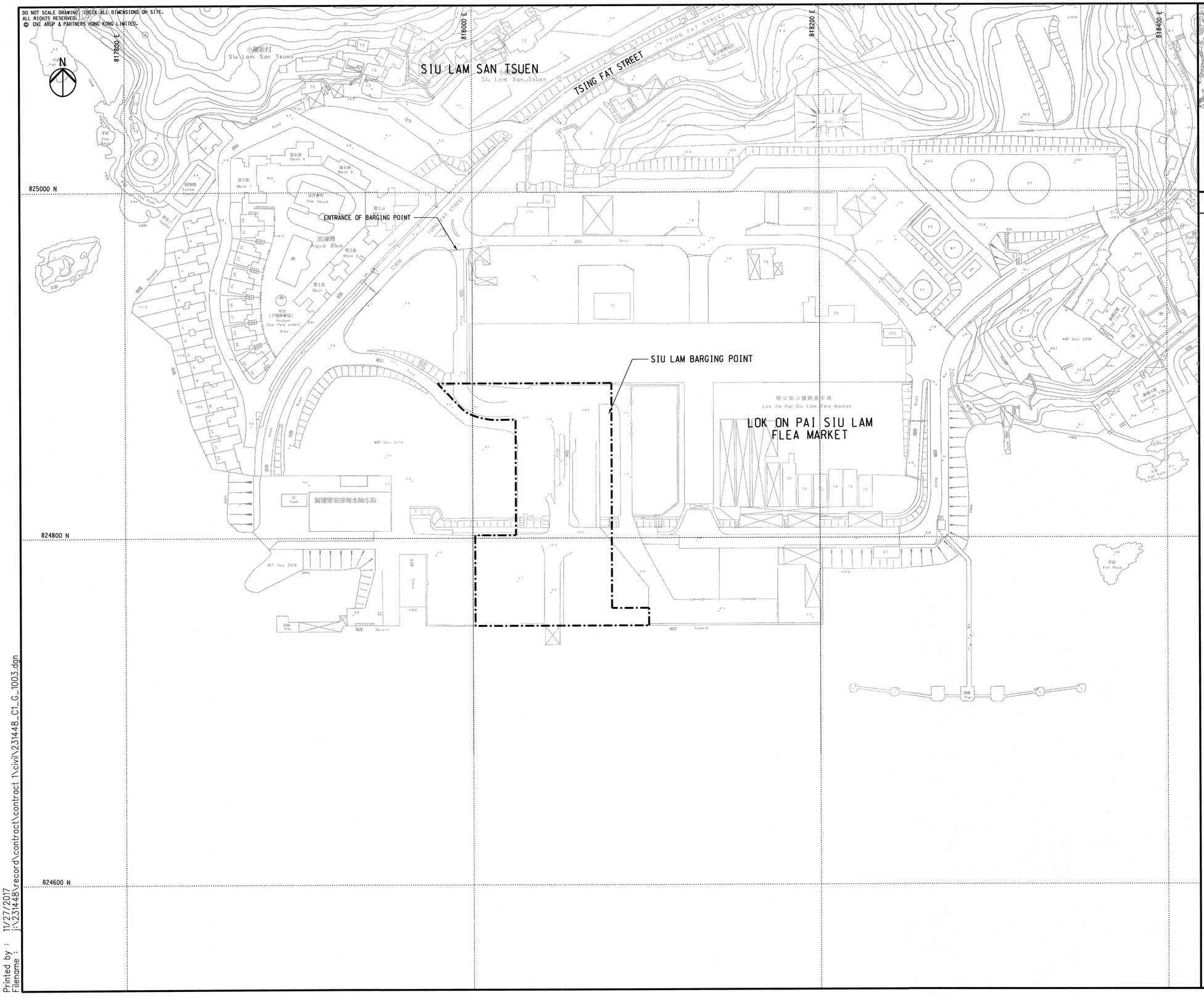

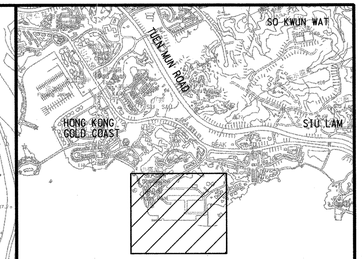

KEY PLAN

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

Printed by : 11/27/2017
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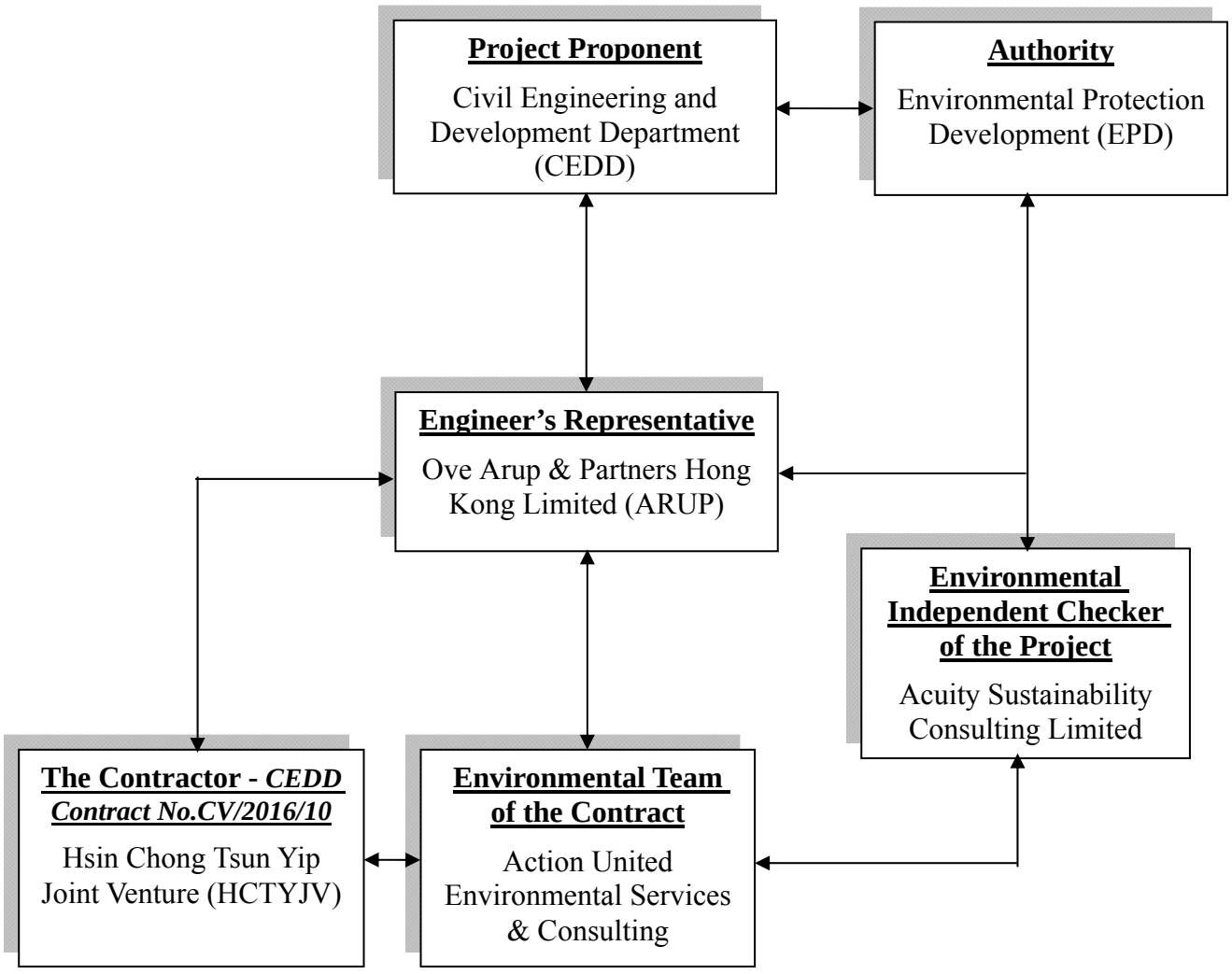
Appendix B

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

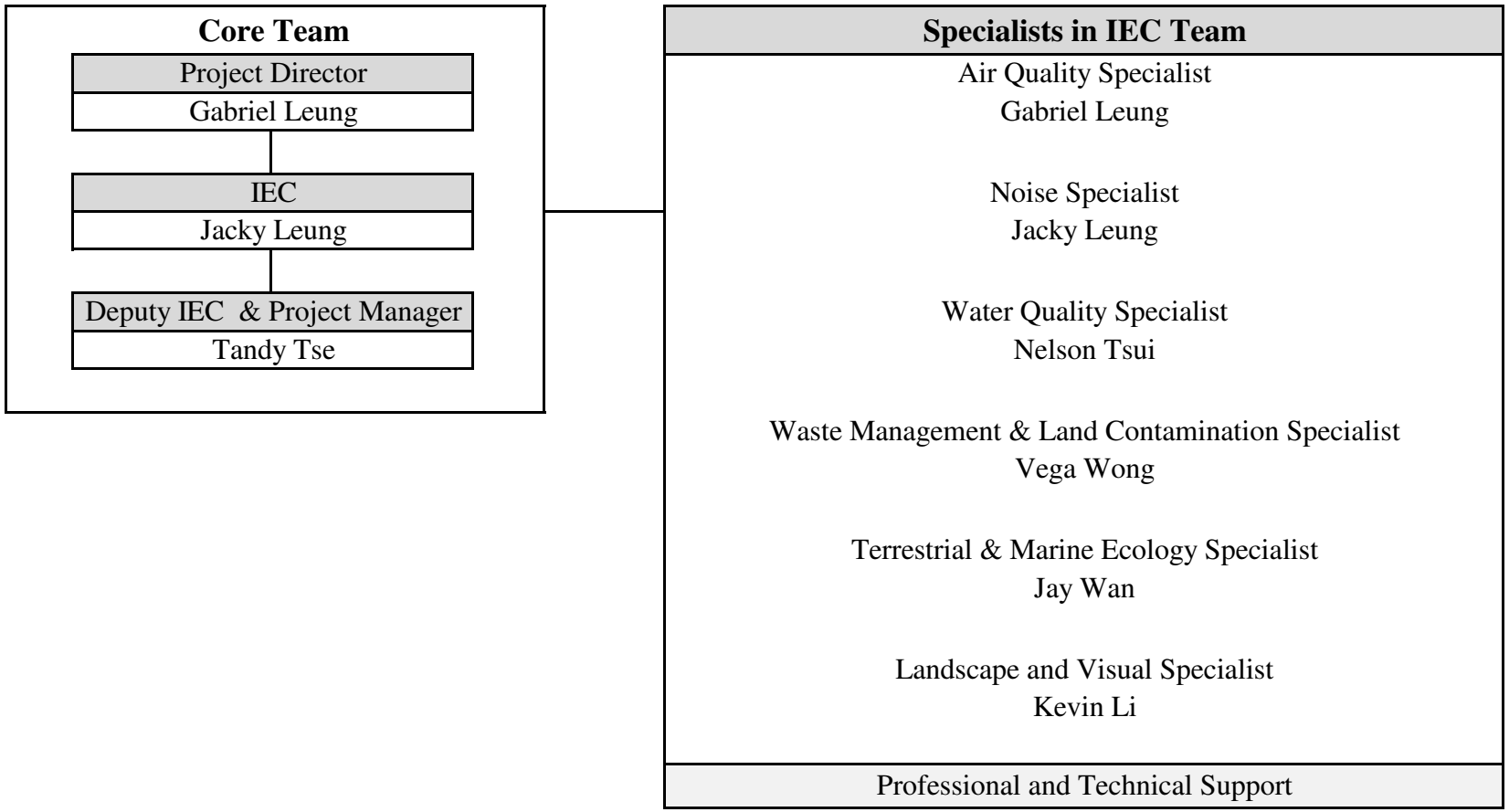
Hsin Chong Tsun Yip Joint Venture

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

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

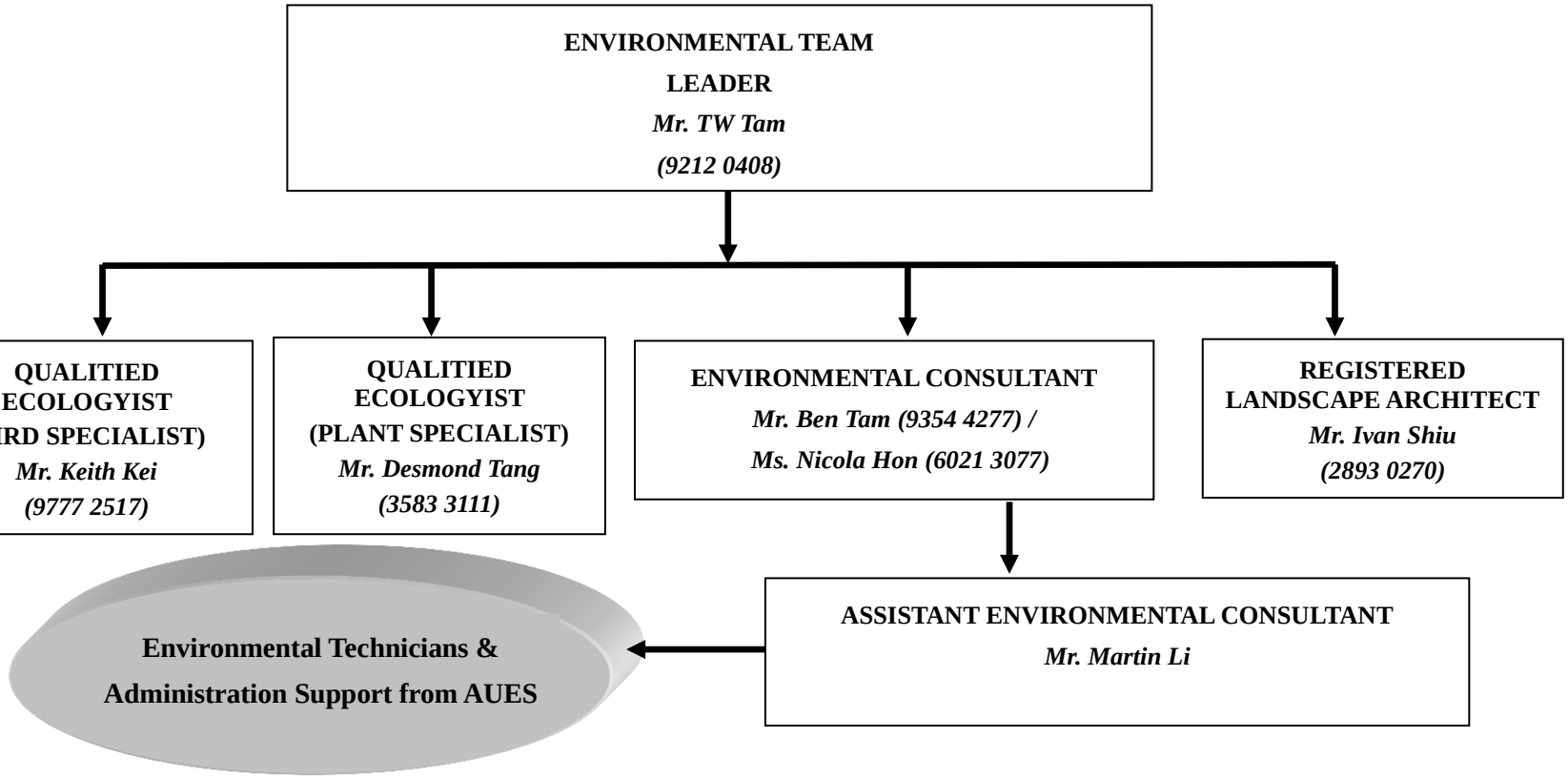
[Rev.02] [7 May 2018]

Organisation Chart of IEC Team



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

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

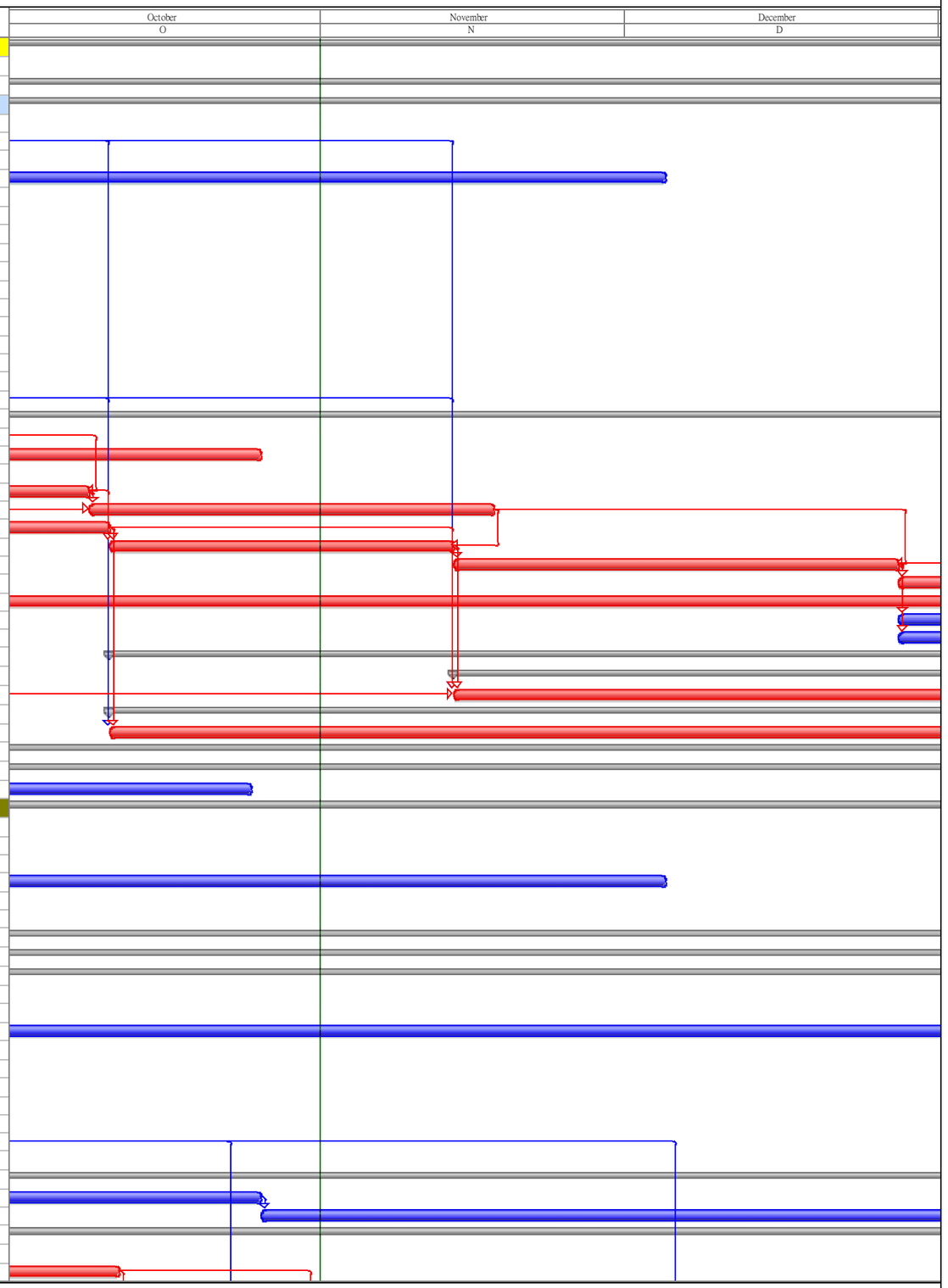
Three Months rolling Programme

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

3-month Rolling Programme (Oct 2018 to Dec 2018)

Hsin Chong Tsun Yip Joint Venture

ID	Task Name	Duration	Start	Finish
1	**Key Dates**	**2199 days**	**Fri 15/12/17**	**Fri 22/12/23**
28	**Subletting**	**239 days**	**Fri 5/1/18**	**Fri 31/8/18**
41	**Preliminary Works**	**606 days**	**Fri 15/12/17**	**Mon 12/8/19**
105	**Section 1 of the Works (Parts A1, A2 & A3)**	**837 days**	**Fri 15/12/17**	**Mon 30/3/20**
106	Tree Survey and Report Submission	31 days	Wed 28/2/18	Mon 9/4/18
107	Tree Felling and Tree Transplant	58 days	Fri 4/5/18	Fri 13/7/18
108	Erection of Site Hoarding	30 days	Thu 16/8/18	Wed 19/9/18
109	Temporary Drainage Works	90 days	Thu 16/8/18	Tue 4/12/18
110	**Utilities Diversion/Protection Works**	**45 days**	**Fri 15/12/17**	**Thu 8/2/18**
111	Enquiries of Utilities As-built Record from UU Companies	45 days	Fri 15/12/17	Thu 8/2/18
112	**CLP**	**0 days**	**Fri 15/12/17**	**Fri 15/12/17**
113	Removal / Diversion of Existing 11kV Overhead Cable (By CLP)	0 days	Fri 15/12/17	Fri 15/12/17
114	**Ground Investigation and Geotechnical instrumentation for Commencement of Slopework**	**120 days**	**Tue 20/3/18**	**Wed 15/8/18**
115	Mobilization of GI Rig and Preparation Works	18 days	Tue 20/3/18	Fri 13/4/18
116	Verification Drillholes (2 Nos., VDH1, 2) and Preliminary Results Submission	12 days	Sat 14/4/18	Fri 27/4/18
117	Site Clearance for Vertification Drillholes (6 Nos., VDH7-9,16-18)	14 days	Fri 4/5/18	Sat 19/5/18
118	Verification Drillholes (6 Nos., VDH7-9, 16-18) and Preliminary Results Submission	36 days	Mon 21/5/18	Wed 4/7/18
119	Inspection Pits (4 Nos., IP1-4)	24 days	Mon 21/5/18	Tue 19/6/18
120	Geotechnical Instrumentation Required for Commencement of Slope Works	30 days	Sat 14/4/18	Sat 19/5/18
121	Formal Report Submission and Verification of the Design of Cut and Fill Slope by PM	42 days	Thu 5/7/18	Wed 15/8/18
122	**Retaining Wall RW1**	**317 days**	**Thu 16/8/18**	**Fri 13/9/19**
123	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
124	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
125	Temporary Access Road for Vechicular Access	11 days	Thu 16/8/18	Tue 28/8/18
126	Base of Retaining Wall RW1 Bay 1-9	32 days	Thu 30/8/18	Mon 8/10/18
127	Base of Retaining Wall RW1 Bay 10-17	32 days	Tue 9/10/18	Sat 17/11/18
128	Wall Stem of Retaining Wall RW1 1-4	26 days	Sat 8/9/18	Wed 10/10/18
129	Wall Stem of Retaining Wall RW1 Bay 5-10 (1st pour)	26 days	Thu 11/10/18	Tue 13/11/18
130	Wall Stem of Retaining Wall RW1 11-17	36 days	Wed 14/11/18	Thu 27/12/18
131	Wall Stem of Retaining Wall RW1 Bay 5-10 (2nd pour)	39 days	Fri 28/12/18	Fri 15/2/19
132	Filter Layer behind RW1	173 days	Thu 13/9/18	Thu 18/4/19
133	Erosion Control Mat at RW1	111 days	Fri 28/12/18	Mon 20/5/19
134	Drainage and Maintenance Access in front of RW1	120 days	Fri 28/12/18	Thu 30/5/19
136	**Fill Slope FS1**	**426 days**	**Thu 11/10/18**	**Wed 25/3/20**
137	**Fill Slope FS1 South (Section 12 at Drawing C1/GE/1030)**	**396 days**	**Wed 14/11/18**	**Fri 20/3/20**
138	FS1 South Backfilling Stage 1 (~7.6m max, Section 12 up to +20 mPD)	75 days	Wed 14/11/18	Fri 15/2/19
145	**Fill Slope FS1 North (Section 14 at Drawing C1/GE/1030)**	**426 days**	**Thu 11/10/18**	**Wed 25/3/20**
146	FS1 North Backfilling Stage 1 (~5m height, Section 14 up to ~+20 mPD)	76 days	Thu 11/10/18	Mon 14/1/19
154	**Road D and Pickup/Drop-Off Area**	**496 days**	**Mon 23/7/18**	**Mon 30/3/20**
162	**Carriageway and Footway**	**496 days**	**Mon 23/7/18**	**Mon 30/3/20**
165	Design and Co-ordination for Road Lighting	76 days	Mon 23/7/18	Wed 24/10/18
179	**Section 2 of the Works (Parts B1, B2, C, D, F, G1 & G2)**	**1171 days**	**Fri 15/12/17**	**Sat 27/2/21**
180	Tree Survey and Report Submission	22 days	Wed 28/2/18	Sat 24/3/18
181	Tree Felling and Tree Transplant	60 days	Fri 4/5/18	Mon 16/7/18
182	Erection of Site Hoarding	21 days	Thu 16/8/18	Sat 8/9/18
183	Temporary Drainage Works	90 days	Thu 16/8/18	Tue 4/12/18
184	Enquiries of Utilities As-built Record from UU Companies	45 days	Fri 15/12/17	Thu 8/2/18
185	Uilities Detection and Reports Submission	45 days	Fri 9/2/18	Tue 10/4/18
186	**Part B1**	**938 days**	**Fri 15/12/17**	**Sat 27/2/21**
187	**Utilities Diversion/Protection Works**	**820 days**	**Fri 15/12/17**	**Wed 30/9/20**
188	**HKT**	**820 days**	**Fri 15/12/17**	**Wed 30/9/20**
189	Liaison with HKT for Diversion/Supporting of Existing Cable	120 days	Fri 15/12/17	Wed 16/5/18
190	Trial Pits for HKT Cable	12 days	Thu 17/5/18	Thu 31/5/18
191	Supporting / Diversion of Existing HKT Cable	700 days	Thu 17/5/18	Wed 30/9/20
192	**Ground Investigation and Geotechnical instrumentation for Commencement of Slopework**	**93 days**	**Tue 20/3/18**	**Sat 14/7/18**
193	Mobilization of GI Rig and Preparation Works	7 days	Tue 20/3/18	Tue 27/3/18
194	Verification Drillholes (2 Nos. ,6, 14) and Preliminary Results Submission	12 days	Wed 28/3/18	Sat 14/4/18
195	Site Clerance for Verification Drillholes (8 Nos., VDH3,10-13, 15, 19 & 20)	21 days	Fri 4/5/18	Tue 29/5/18
196	Verification Drillholes (8 Nos., VDH3,10-13, 15, 19 & 20) and Preliminary Results Submission	20 days	Thu 10/5/18	Sat 2/6/18
197	Formal Report Submission and Verification of the Design of Cut and Fill Slope by PM	42 days	Sun 3/6/18	Sat 14/7/18
198	Geotechnical Instrumentation Required for Commencement of Slope Works	20 days	Mon 4/6/18	Wed 27/6/18
213	**Temporary Excavation to Proposed Platform at Future PDA**	**434 days**	**Sat 1/9/18**	**Wed 26/2/20**
214	Excavate to +80 mPD	42 days	Sat 1/9/18	Thu 25/10/18
215	Excavate to +71 mPD	86 days	Fri 26/10/18	Sat 9/2/19
219	**Cut Slopes CS11 & CS12**	**663 days**	**Sat 1/9/18**	**Sat 5/12/20**
220	Mobilization of Plant and Equipment	12 days	Sat 1/9/18	Fri 14/9/18
221	Excavate to +94 mPD	21 days	Sat 15/9/18	Thu 11/10/18



Project: Master Programme Rev.0c 20
Date: Sep 2018

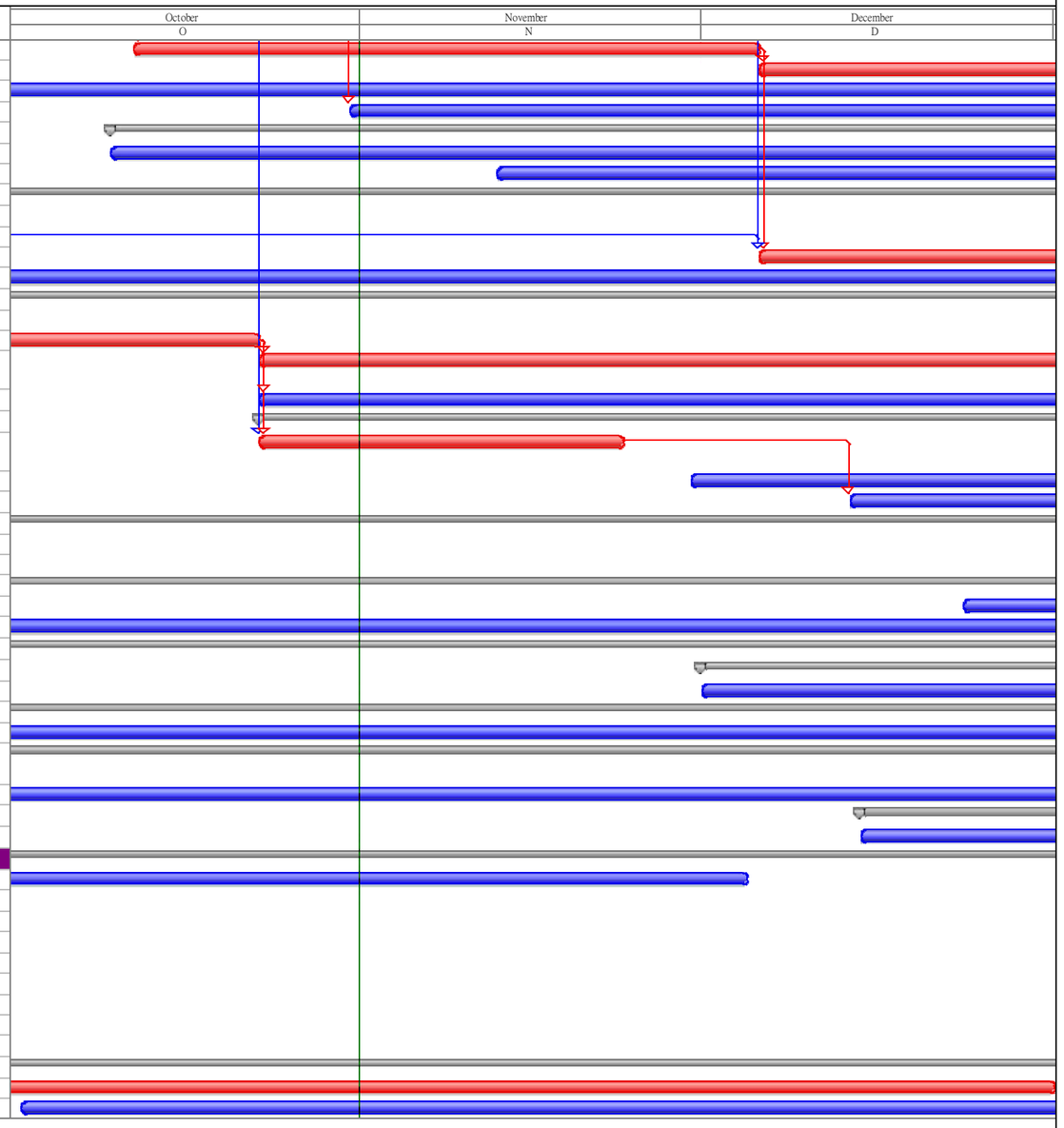
Task · Milestone · Project Summary · External Milestone · Critical · Progress
Split · Summary · External Tasks · Deadline · Critical Split

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

3-month Rolling Programme (Oct 2018 to Dec 2018)

Hsin Chong Tsun Yip Joint Venture

ID	Task Name	Duration	Start	Finish
222	Excavate to +87 mPD, Pull Out Test and Soil Nails (59 nos. of Soil Nail)	44 days	Fri 12/10/18	Wed 5/12/18
223	Excavate to +79.5mPD, Pull Out Test, Soil Nails and Raking Drains (78 Nos. of Soil Nail)	63 days	Thu 6/12/18	Sat 23/2/19
230	Drainage and Maintenance Access up to +72 mPD	235 days	Tue 18/9/18	Fri 12/7/19
232	Geotechnical Instrumentation Works	450 days	Wed 31/10/18	Sat 16/5/20
233	**Landscape Works at Cut Slopes CS11 & CS12**	**690 days**	**Wed 10/10/18**	**Thu 18/2/21**
234	Planter W2 Construction Stage 1 up to +72 mPD	238 days	Wed 10/10/18	Mon 5/8/19
240	Hydroseeding Stage 1 up to +72 mPD	212 days	Tue 13/11/18	Mon 5/8/19
249	**Cut Slope CS13**	**696 days**	**Fri 4/5/18**	**Sat 12/9/20**
250	Trial Pit Excavation	50 days	Fri 4/5/18	Wed 4/7/18
251	Verification of Design by Supervisor	42 days	Thu 5/7/18	Wed 15/8/18
252	Excavate to +79.5mPD, Pull Out Test and Soil Nails (6 Nos. of Soil Nail)	63 days	Thu 6/12/18	Sat 23/2/19
259	Drainage and Maintenance Access up to +72 mPD	235 days	Tue 18/9/18	Fri 12/7/19
270	**Cut Slope CS15**	**524 days**	**Sat 1/9/18**	**Thu 18/6/20**
271	Mobilization of Plant and Equipment	12 days	Sat 1/9/18	Fri 14/9/18
272	Excavate to +69.5 mPD, Pull Out Test, Soil Nails and Raking Drains (25 nos. of Soil Nail)	27 days	Sat 15/9/18	Mon 22/10/18
273	Excavate to +62mPD, Pull Out Test, Soil Nails and Raking Drains (76 nos. of Soil Nail, 31 nos. of Raking Drain)	59 days	Tue 23/10/18	Wed 2/1/19
278	Geotechnical Instrumentation Works	460 days	Tue 23/10/18	Wed 20/5/20
283	**Cut Slopes CS16 and CS17**	**242 days**	**Tue 23/10/18**	**Mon 19/8/19**
284	Excavate to +62 mPD, Pull Out Test, Soil Nails and Raking Drains (23 Nos. of Soil Nail, 6 Nos. of Raking Drain)	28 days	Tue 23/10/18	Fri 23/11/18
289	Drainage and Maintenance Access	207 days	Fri 30/11/18	Fri 16/8/19
290	Geotechnical Instrumentation Works	180 days	Fri 14/12/18	Tue 30/7/19
291	**Fill Slope FS17**	**621 days**	**Thu 5/7/18**	**Fri 14/8/20**
292	Trial Pits Excavation and Preliminary Results Submission	25 days	Thu 5/7/18	Thu 2/8/18
293	Final Results Submission and Verification of Design by Supervisor	42 days	Fri 3/8/18	Thu 13/9/18
302	**Landscape Works at Cut Slopes CS16 and CS17**	**460 days**	**Tue 3/7/18**	**Thu 23/1/20**
303	Planter W2 Construction	196 days	Mon 24/12/18	Tue 27/8/19
307	Hydroseeding	360 days	Tue 3/7/18	Fri 20/9/19
376	**Part B2**	**887 days**	**Fri 15/12/17**	**Wed 23/12/20**
387	**Sha Ling Road (M001 CH +40 to +180)**	**602 days**	**Sat 1/12/18**	**Sat 19/12/20**
388	TTA and XP Application for Existing Sha Ling Road	180 days	Sat 1/12/18	Wed 17/7/19
413	**Man Kam To Road Bus Shelter**	**836 days**	**Fri 15/12/17**	**Wed 21/10/20**
414	Temporary Storage and Secondary Site Office	600 days	Fri 15/12/17	Fri 3/1/20
421	**Sha Ling Road (M001 CH+0 to +40), Man Kam To Road Drainage, Sewerage, Watermains and Other Utilities**	**749 days**	**Fri 8/6/18**	**Wed 23/12/20**
422	TTA and XP Application at Man Kam To Road	270 days	Fri 8/6/18	Sat 11/5/19
472	**Part D**	**586 days**	**Sat 15/12/18**	**Tue 15/12/20**
473	Woodland Planting	586 days	Sat 15/12/18	Tue 15/12/20
495	**Section 3 of the Works (Part E)**	**642 days**	**Fri 15/12/17**	**Tue 17/9/19**
496	Temporary Drainage Works	90 days	Thu 16/8/18	Tue 4/12/18
497	**Utilities Diversion/Protection Works**	**30 days**	**Fri 15/12/17**	**Mon 22/1/18**
498	Enquiries of As-built Record from UU Companies	30 days	Fri 15/12/17	Mon 22/1/18
499	**Ground Investigation and Geotechnical Instrumentation for Commencement of Slopework**	**50 days**	**Fri 4/5/18**	**Wed 4/7/18**
500	Site Clearance for Verification Drillholes (2 Nos., VDH4-5)	8 days	Fri 4/5/18	Sat 12/5/18
501	Mobilization of GI Rig and Preparation of Works	7 days	Fri 4/5/18	Fri 11/5/18
502	Verification Drillholes (2 Nos., VDH4-5) and Preliminary Results Submission	8 days	Mon 14/5/18	Wed 23/5/18
503	Formal Report Submission and Verification of the Design of Cut and Fill Slope by PM	42 days	Thu 24/5/18	Wed 4/7/18
504	Geotechnical Instrumentation Required for Commencement of Slope Works	12 days	Thu 24/5/18	Wed 6/6/18
505	**Fill Slope FS3**	**236 days**	**Thu 16/8/18**	**Mon 10/6/19**
506	Backfilling Stage 1 (~11m, up to +27 mPD at Section 17)	111 days	Thu 16/8/18	Mon 31/12/18
507	Drainage, Maintenance Access after Backfilling Stage 1	94 days	Tue 2/10/18	Fri 25/1/19



Project: Master Programme Rev.0c 20
Date: Sep 2018

Task | Milestone | Project Summary | External Milestone | Critical | Progress
Split | Summary | External Tasks | Deadline | Critical Split

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

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 METRE

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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

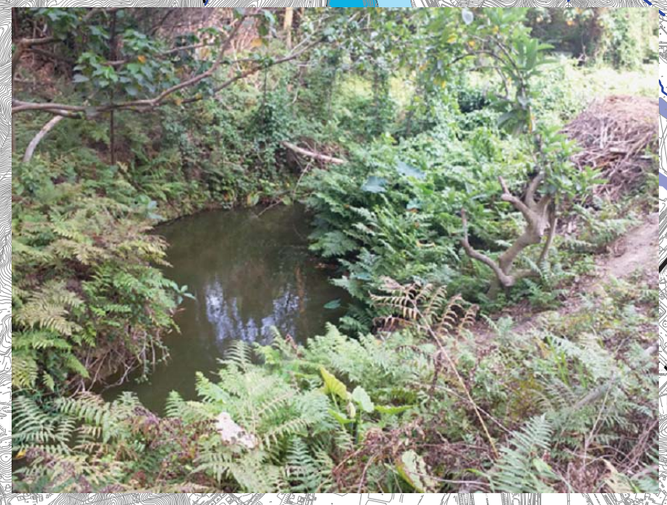
Contract No. and Title:

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

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

Proposed Noise Monitoring Location under Contract 1

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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)

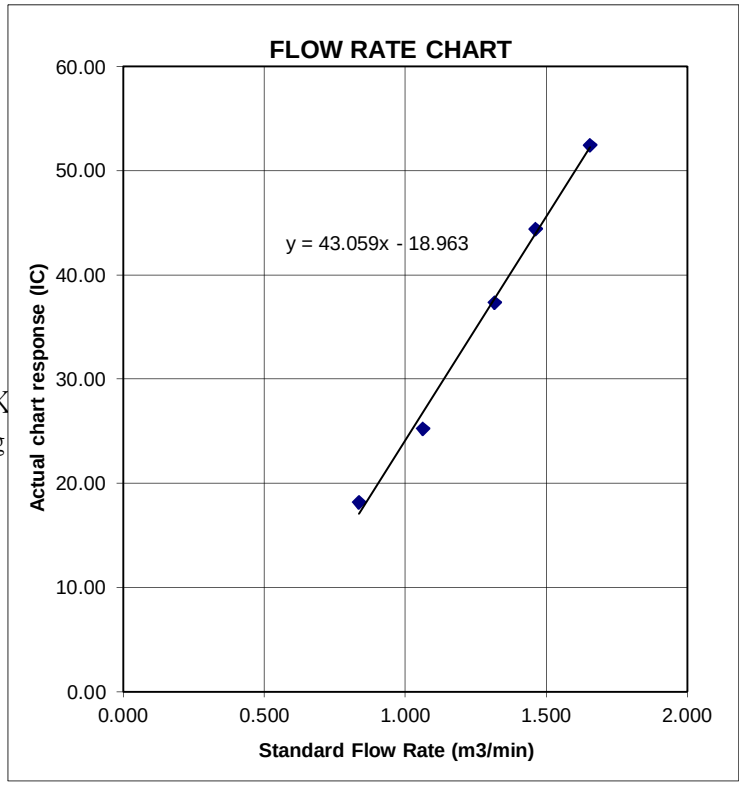
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

Sea Level Pressure (hPa)	1013.2	Corrected Pressure (mm Hg)	759.9
Temperature (°C)	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	2.00	7.80	9.8	1.574	49	49.41	Slope = 35.3099
13	1.00	6.80	7.8	1.406	44	44.37	Intercept = -5.7176
10	0.10	5.90	6.0	1.236	37	37.31	Corr. coeff. = 0.9937
7	-1.20	4.80	3.6	0.961	30	30.25	
5	-1.80	4.10	2.3	0.772	20	20.17	

Calculations :

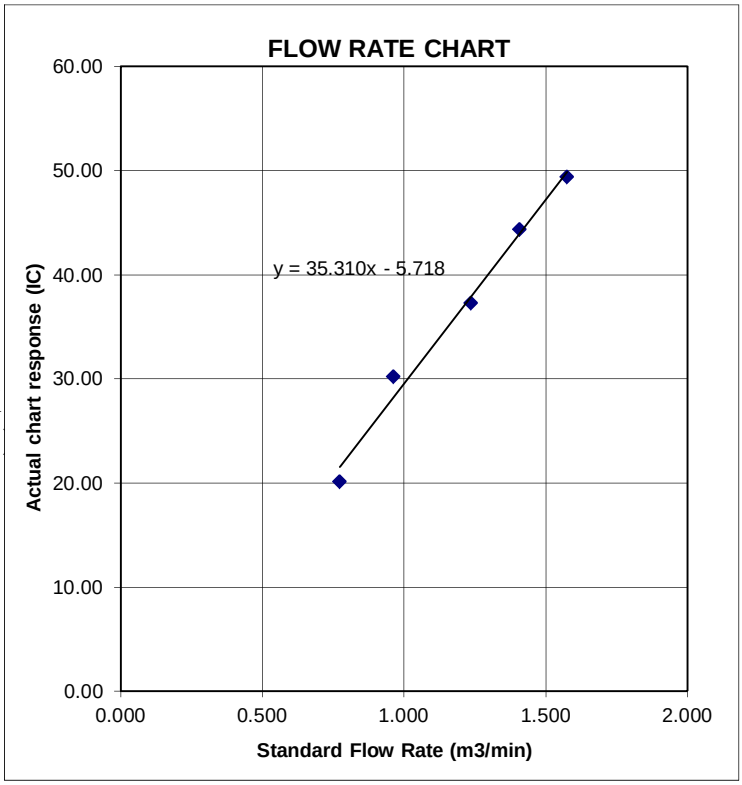
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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)

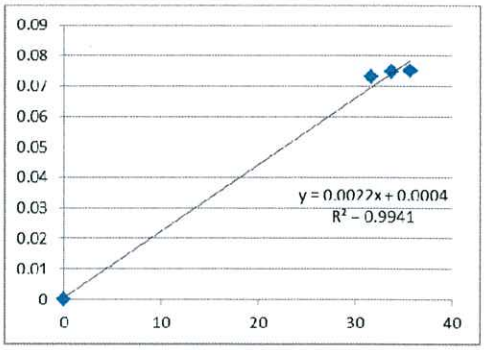
Sensitivity Adjustment Scale Setting (After Calibration) 615 (CPM)

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 :

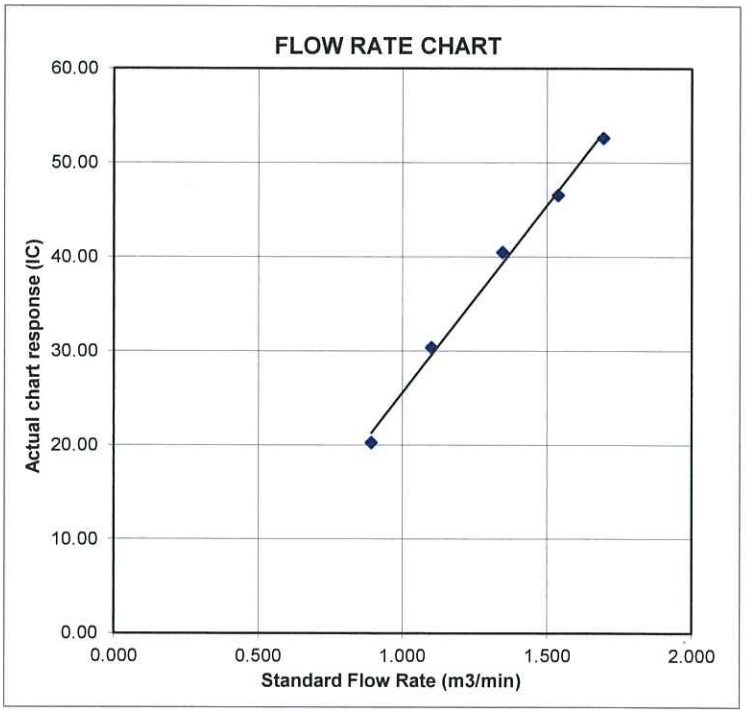
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

Certificate of Calibration
校正證書

Certificate No. : C183085
證書編號

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

2. Self-calibration 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.

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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
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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)

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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
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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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Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	WORK ORDER:	HK1853068
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:	05-Oct-2018
		DATE OF ISSUE:	11-Oct-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:	11 October, 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: HK1853068

SUB-BATCH: 0
DATE OF ISSUE: 11-Oct-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: 11 October, 2018 Date of Next Calibration: 11 January, 2019

PARAMETERS:

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.87	3.01	+0.14
5.23	5.16	-0.07
7.85	7.96	+0.11
	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)
9.0	10.8	+1.8
20.0	19.9	-0.1
38.5	37.4	-1.1
	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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	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

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	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.

Ms. Lin Wai Yu
Assistant Manager - Inorganic

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR BEN TAM	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
Assistant Manager - Inorganic

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

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	MR 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 – October 2018

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

✓	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 next Month – November 2018

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

Remark: Impact monitoring for CV/2017/02 will be commenced on 5 November 2018.

✓	Monitoring Day
	Sunday or Public Holiday

Environmental Aspect	Location ID	Description of Location	Related Contract
Construction Noise	CN-1	Village house to the west of Sha Ling Road	CV/2016/10
	CN-3	San Uk Ling Village House No. 18	CV/2017/02
	CN-4	Muk Wu Village House No. 267	
Air Quality	ASR-1	Sha Ling Village House No. 6	CV/2016/10
	ASR-2	San Uk Ling Village House No.1	CV/2017/02
	ASR-3	Muk Wu Nga Yiu House No.28	
Water Quality	M3	Wetland in the Conservation Area near Yuen Leng Chai	CV/2016/10
	M1	Midstream of Nam Hang Stream	CV/2017/02
	M2	Downstream of Nam Hang Stream	
	M4	Watercourse across Lin Ma Hang Road	

Appendix H

Monitoring Data

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

Air Quality (24-hour TSP)

24-Hour TSP Monitoring Data for ASR-1

DATE	SAMPLE NUMBER	ELAPSED TIME			CHART READING			AVG TEMP	AVG AIR PRESS	STANDARD FLOW RATE	AIR VOLUME	FILTER WEIGHT (g)		DUST WEIGHT COLLECTED	24-Hr TSP ($\mu g/m^3$)
		INITIAL	FINAL	(min)	MIN	MAX	AVG	(℃)	(hPa)	(m^3/min)	(std m^3)	INITIAL	FINAL	(g)	
2-Oct-18	23147	8892.02	8915.54	1411.20	30	31	30.5	26.8	1012.3	1.15	1618	2.6614	2.8265	0.1651	102
8-Oct-18	23114	8915.54	8939.05	1410.60	30	31	30.5	26.3	1013	1.15	1618	2.6590	2.8144	0.1554	96
13-Oct-18	23062	8939.05	8962.55	1410.00	29	30	29.5	26.1	1013.8	1.12	1585	2.6888	2.8433	0.1545	97
19-Oct-18	23201	8962.55	8986.05	1410.00	31	33	32.0	24.2	1017.2	1.07	1510	2.6645	2.7774	0.1129	75
25-Oct-18	23238	8986.05	9009.55	1410.00	30	30	30.0	30.3	999.8	1.00	1408	2.6469	2.7758	0.1289	92
31-Oct-18	23220	9009.55	9033.08	1411.80	38	38	38.0	25	1014.2	1.24	1749	2.6393	2.8048	0.1655	95

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
3-Oct-18	9:50	61.8	60.6	58.3	62.7	60.9	58.0	61.5	59.8	57.3	61.8	60.4	58.5	62.7	61.1	58.6	60.7	60.4	59.9	*62*	*65*
9-Oct-18	9:16	69.8	72.5	61.4	72.5	75.5	64.4	68.2	71.5	63.5	70.2	73.0	64.2	67.3	70.2	63.3	69.4	72.1	62.2	*70*	*73*
15-Oct-18	9:43	67.1	70.0	62.1	67.1	69.7	62.0	64.5	66.9	60.1	61.7	63.5	59.4	65.5	68.4	60.0	62.9	65.7	60.1	*65*	*68*
26-Oct-18	10:00	60.0	62.0	53.0	65.7	68.5	58.5	67.5	62.0	57.5	68.3	65.0	59.5	66.7	66.5	59.5	70.8	73.0	63.0	*68*	*71*

Water Quality

Water Quality Impact Monitoring at M3

Date	2-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	9:50	2.50	26.7	26.7	0.1	0.1	4.74	4.8	59.1	59.4	8.07	8.0	7.58	7.6	0.0	0.0	6	6.0
			26.7		0.1		4.78		59.7		7.95		7.58		0.0		6	

Date	4-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	9:45	2.50	27	27.0	0.1	0.1	4.92	4.9	61.8	61.8	5.42	5.5	7.38	7.4	0.0	0.0	9	8.5
			27		0.1		4.92		61.8		5.55		7.38		0.0		8	

Date	6-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	9:45	2.50	24.9	24.9	0.1	0.1	5.19	5.2	66.1	66.4	5.53	5.6	6.69	6.7	0.0	0.0	5	6.5
			24.9		0.1		5.25		66.7		5.63		6.69		0.0		8	

Date	9-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:05	2.50	27.1	27.1	0.1	0.1	4.64	4.6	55.6	55.7	5.23	5.6	7.25	7.3	0.0	0.0	9	9.0
			27.1		0.1		4.61		55.8		5.93		7.25		0.0		9	

Date	11-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:00	2.50	24.5	24.5	0.2	0.2	4.63	4.6	53.8	53.8	7.49	7.8	5.23	6.7	0.0	0.0	8	7.0
			24.5		0.2		4.64		53.8		8.08		8.23		0.0		6	

Date	13-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	10:00	2.50	24.2	24.2	0.1	0.1	5.54	5.4	69.1	67.3	5.20	5.3	7.33	7.3	0.0	0.0	6	6.0
			24.2		0.1		5.25		65.5		5.30		7.33		0.0		6	

Date	16-Oct-18																	
Location	Time	Depth (m)	Temp (oC)		Flow Velocity (m/s)		DO (mg/L)		DO (%)		Turbidity (NTU)		pH		Salinity		SS(mg/L)	
M3	11:00	2.50	25.5	25.5	0.1	0.1	5.65	5.7	69.0	69.1	4.00	4.0	8.48	8.5	0.0	0.0	3	3.0
			25.5		0.1		5.67		69.2		4.00		8.48		0.0		3	

Date	18-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	10:30	2.50	24	24.0	0.2	0.2	5.3	5.3	62.9	63.0	5.43	5.5	7.42	7.4	0.0	0.0	5	5.0
			24		0.2		5.31		63.1		5.55		7.42		0.0		5	

Date	20-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	9:40	2.50	24.5	24.5	0.1	0.1	5.79	5.8	72.7	72.9	5.13	5.3	7.18	7.2	0.0	0.0	3	3.0
			24.5		0.1		5.82		73.1		5.43		7.18		0.0		3	

Date	23-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	10:00	2.50	25.4	25.4	0.1	0.1	5.4	5.4	65.8	65.9	5.22	5.3	7.40	7.4	0.0	0.0	9	8.5
			25.4		0.1		5.4		65.9		5.39		7.40		0.0		8	

Date	25-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	9:45	2.50	25.6	25.6	0.1	0.1	5.09	5.1	62.2	62.4	7.54	7.9	8.66	8.7	0.0	0.0	11	11.5
			25.6		0.1		5.11		62.5		8.31		8.66		0.0		12	

Date	27-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	9:55	2.50	25.5	25.5	0.1	0.1	5.97	6.0	76.8	76.9	4.16	4.4	7.68	7.7	0.0	0.0	8	8.0
			25.5		0.1		5.99		77.0		4.6		7.68		0.0		8	

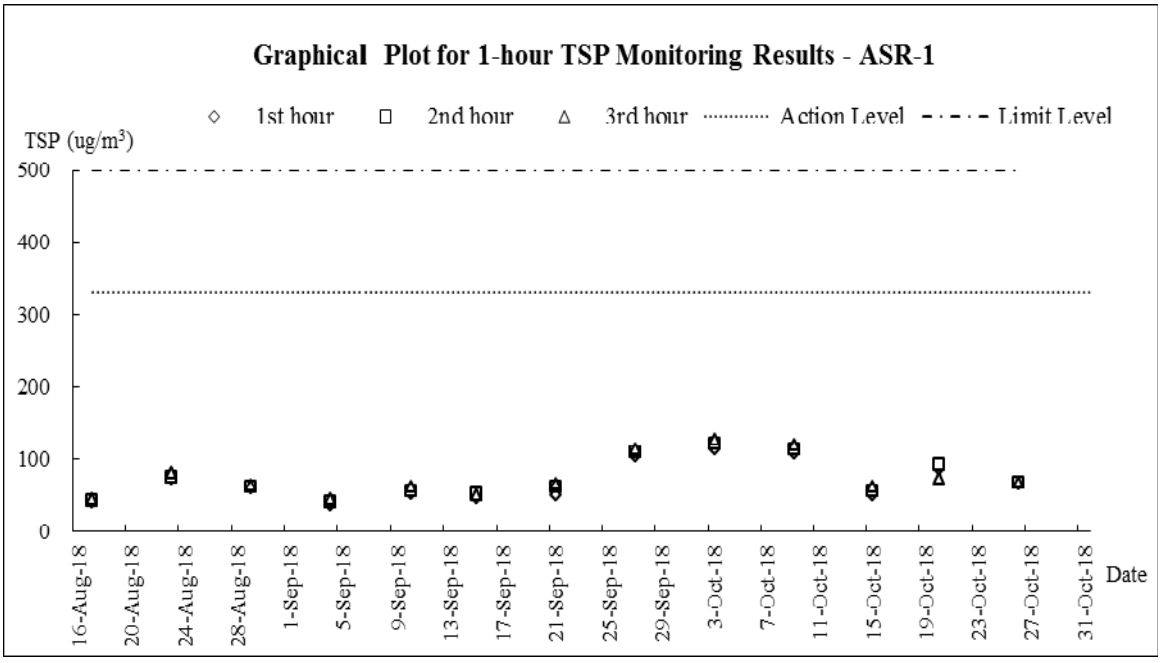
Date	29-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	10:05	2.50	24.2	24.2	0.1	0.1	5.49	5.5	65.5	65.6	4.88	4.9	7.74	7.7	0.0	0.0	6	4.5
			24.2		0.1		5.5		65.6		4.9		7.74		0.0		3	

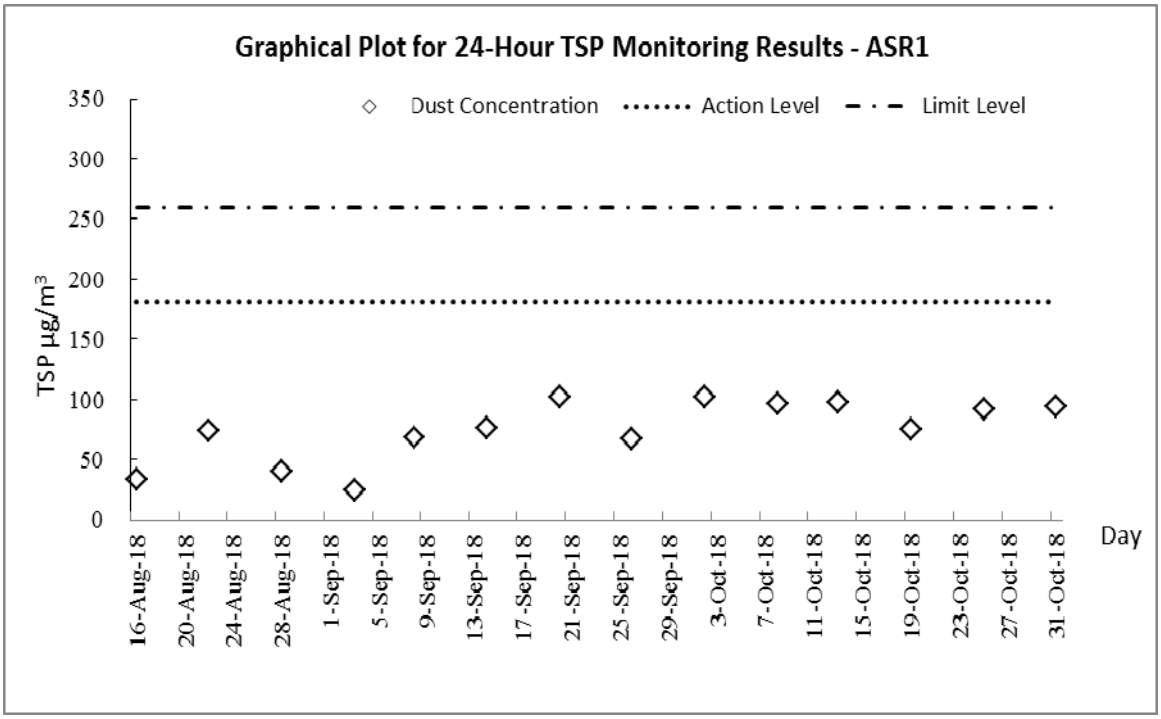
Date	31-Oct-18																	
Location	**Time**	**Depth (m)**	**Temp (oC)**		**Flow Velocity (m/s)**		**DO (mg/L)**		**DO (%)**		**Turbidity (NTU)**		**pH**		**Salinity**		**SS(mg/L)**	
M3	10:00	2.50	23	23.0	0.1	0.1	5.12	5.1	62.1	62.2	5.18	5.2	8.06	8.1	0.0	0.0	5	4.5
			23		0.0		5.13		62.2		5.22		8.06		0.0		4	

Appendix I

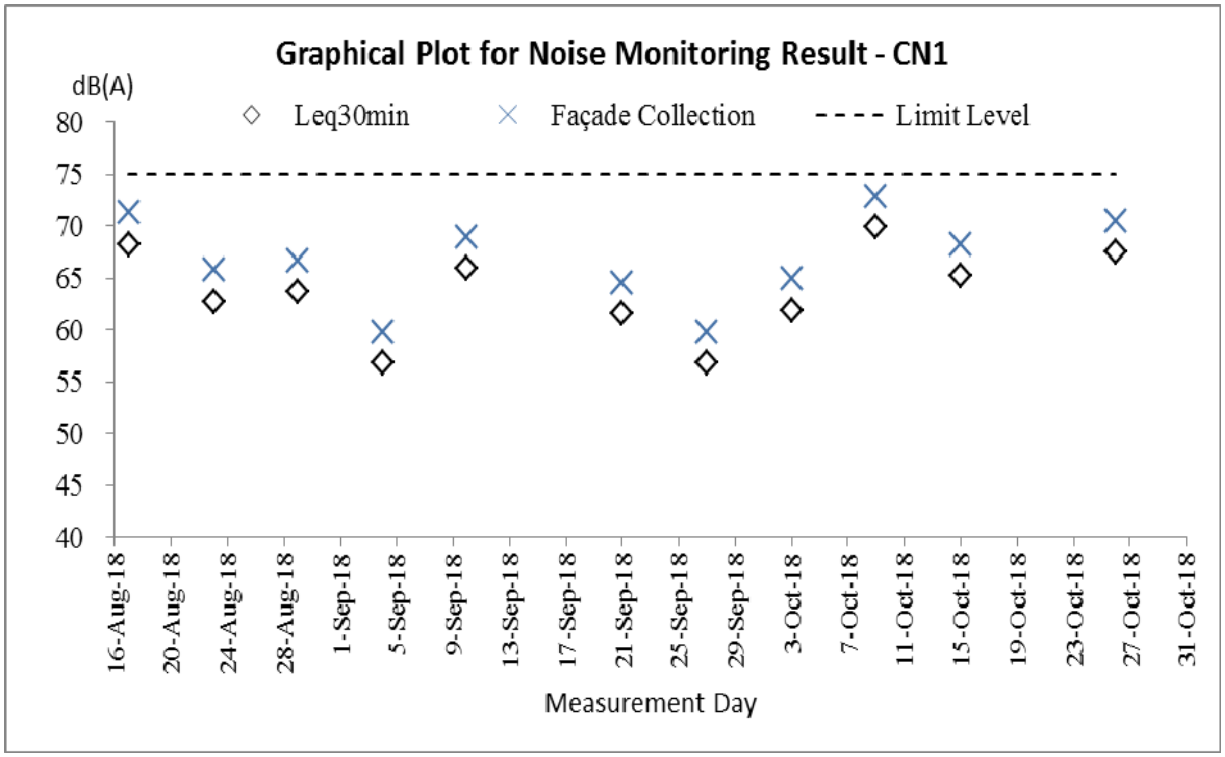
Graphical Plots of Air Quality, Noise and Water Quality

Air Quality Impact Monitoring

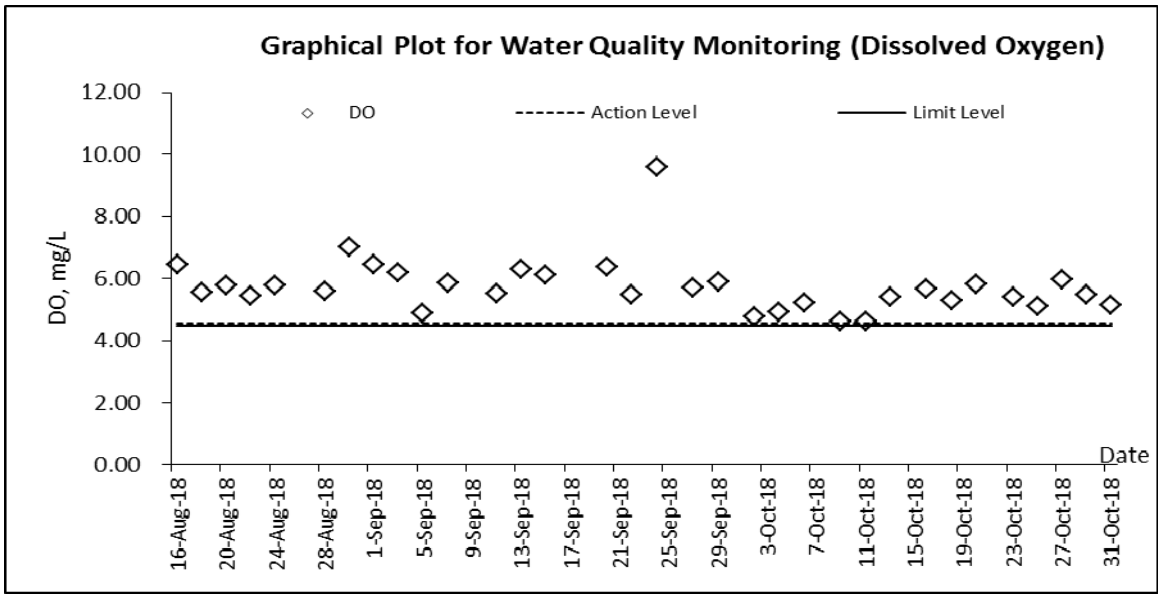


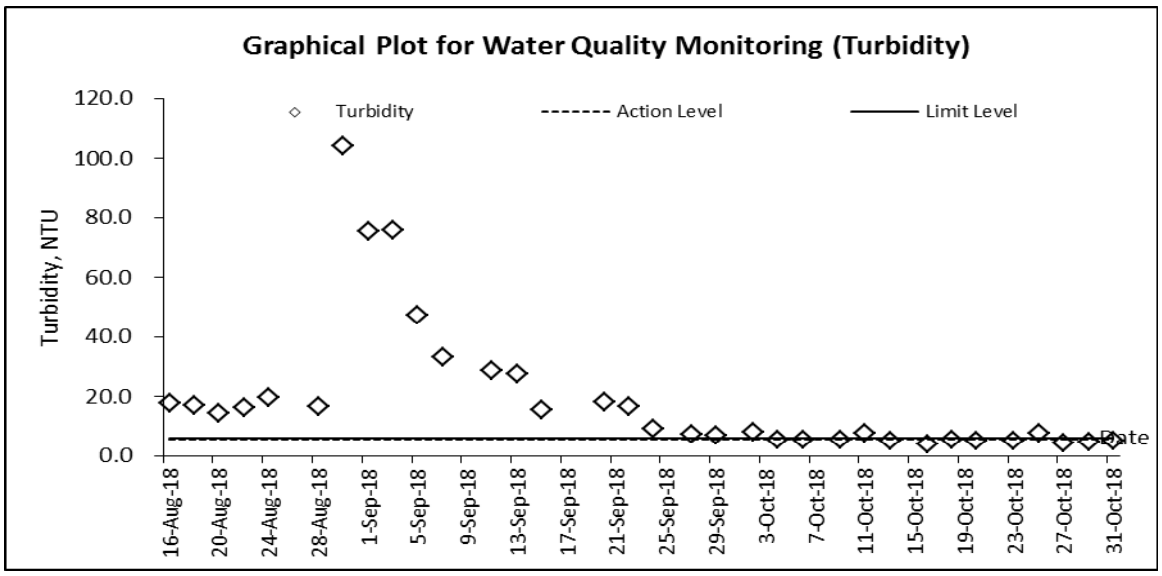


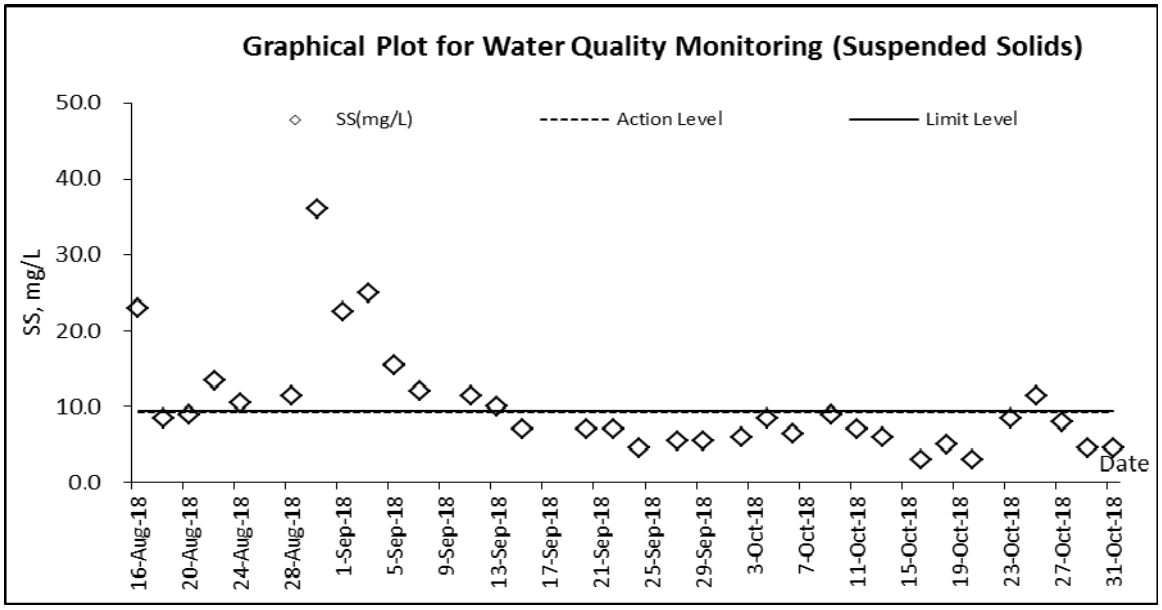
Construction Noise Impact Monitoring



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
1-Oct-18	Mon	Mainly cloudy with a few showers and isolated thunderstorms.	32	26	12.7	93.0	SE
2-Oct-18	Tue	Mainly cloudy with isolated showers	9.8	27.3	5.5	84	S/SE
3-Oct-18	Wed	Hot with sunny periods	0.3	27.7	6.5	80.7	E/SE
4-Oct-18	Thu	Mainly fine and hot,	0	28.9	6	77.2	W/SW
5-Oct-18	Fri	Very hot. Sunny periods with isolated showers and thunderstorms.	0.1	30	12.3	77.7	S/SW
6-Oct-18	Sat	Very hot with sunny periods and a few showers.	0	29.3	6.8	81.2	E/NE
7-Oct-18	Sun	Hot with sunny periods.	Trace	29.6	7.5	79.2	E/SE
8-Oct-18	Mon	Very hot with sunny periods and a few showers.	24.6	27.7	16.1	81.0	N
9-Oct-18	Tue	Mainly cloudy. Sunny intervals and isolated showers	16.7	27.2	6	73.7	E/NE
10-Oct-18	Wed	Sunny periods. Isolated showers in the afternoon. Moderate easterly winds.	0.2	26	5.6	78.7	E/NE
11-Oct-18	Thu	Mainly fine but hazy. Hot during the day. Moderate northerly winds.	0	27.4	6.5	68.7	N/NW
12-Oct-18	Fri	Mainly cloudy with a few squally showers. Showers will be more frequent with thunderstorms	Trace	28.8	9.5	73	E/NE
13-Oct-18	Sat	Mainly cloudy with showers. Isolated squally thunderstorms	167.5	28.5	8.4	78.7	E/NE
14-Oct-18	Sun	Mainly cloudy with showers. Isolated squally thunderstorms at first.	0	29.5	6	75.7	N/NW
15-Oct-18	Mon	Mainly fine but hazy. Hot during the day. Moderate northerly winds.	Trace	30	11	50.5	N
16-Oct-18	Tue	occasionally strong on high ground	167.5	27.8	37	90	E/SE
17-Oct-18	Wed	Mainly fine. Moderate to fresh east to southeasterly winds	12	28.5	17.2	78.5	E/SE
18-Oct-18	Thu	Mainly fine. Moderate to fresh east to southeasterly winds	1.2	28.6	11	77.5	E
19-Oct-18	Fri	Fine and hot. Light winds.	0	28.4	5.5	76	SW
20-Oct-18	Sat	Sunny periods. Isolated showers later. Light winds.	0	29.4	4.7	75.7	S/SW
21-Oct-18	Sun	Fine. Very hot in the afternoon. Light winds.	Trace	29.4	5.5	70.7	S/SW
22-Oct-18	Mon	Fine and hot. Light winds.	0	29.7	8.3	76.0	E
23-Oct-18	Tue	Sunny periods. Isolated showers later. Light winds.	Trace	29.5	9.6	74.7	E/SE
24-Oct-18	Wed	Mainly cloudy with occasional showers and thunderstorms.	72.2	27.4	9.7	83.2	E/SE
25-Oct-18	Thu	Mainly cloudy with one or two showers. Sunny periods tomorrow.	34.5	27.8	6.5	75	E/SE
26-Oct-18	Fri	Mainly cloudy with one or two showers. Sunny periods tomorrow.	9.7	26.5	4.5	82	S/SW
27-Oct-18	Sat	Fine and hot. Light winds.	Trace	Maintenance	5	Maintenance	E
28-Oct-18	Sun	Mainly fine. Dry in the afternoon. Moderate northerly winds.	0	26.7	9	76.5	N
29-Oct-18	Mon	Fine. Very hot in the afternoon. Light winds.	0	27.4	25.2	60.0	N
30-Oct-18	Tue	Mainly fine and dry. Moderate east to northeasterly winds.	0	27	22.9	60.0	N
31-Oct-18	Wed	Very dry with sunny periods in the afternoon.	0	23.9	14.3	35.7	N/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 – Oct 2018

Revision	0	
Date of issue	24 Oct 2018	
Prepared by	Alan Lam	
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 3rd monitoring survey started on 4th October 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
  There was no mammal recorded in the monitoring area.

- Bird
  There were a total of 32 bird individuals from 10 species recorded during the survey.

- Herpetofauna
  There were no reptile recorded in the monitoring area.
  There were two amphibian (*Kaloula pulchra* ,Asiatic Painted Frog, 花狹口蛙) and *Microhyla fissipes*, Ornate Pigmy Frog, 飾紋姬蛙) found in the monitoring area.

- Dragonfly
  There were a total of 13 odonate individuals from 2 species.

- Butterfly
  There were a total of 3 butterfly individuals from 3 species recorded.

- Freshwater communities
  2 crabs of conservation importance *Somanniathelphusa zanklon* (鐮刀束腰蟹) were found in marsh.

Figure 1

Somanniathelphusa zanklon (鐮 刀 束 腰 蟹)

Figure 2

Microhyla fissipes Ornate Pigmy Frog 飾紋姬蛙

Table 4 Result of Avifauna in survey

Scientific Name	English Name	Chinese Name	Conservation Status	4-Oct-18	
				Non-wetland	Wetland
Apus nipalensis	House Swift	小白腰雨燕		15	
Lanius schach	Long-tailed Shrike	棕背伯勞			1
Dicrurus macrocercus	Black Drongo	黑卷尾		1	
Corvus macrorhynchos	Large-billed Crow	大嘴烏鴉		2	
Pycnonotus jocosus	Red-whiskered Bulbul	紅耳鵯		2	
Pycnonotus aurigaster	Sooty-headed Bulbul	白喉紅臀鵯		2	
Prinia inornata	Plain Prinia	純色鶲鶯			1
Garrulax chinensis	Black-throated Laughingthrush	黑喉噪鶥			2
Zosterops japonicus	Japanese White-eye	暗綠繡眼鳥		4	
Gracupica nigricollis	Black-collared Starling	黑領椋鳥			2

Table 5 Result of reptile in survey

Scientific Name	Common Name	Chinese Name	4-Oct-18	
			Non-wetland	Wetland
N/A				

Table 6 Result of amphibian in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	4-Oct-18	
				Non-wetland	Wetland
Kaloula pulchra	Asiatic Painted Frog, Piebald Digging Frog	花狹口蛙			1
Microhyla fissipes	Ornate Pigmy Frog, Ornate Ricefrog, Ornamented Pygmy Frog	飾紋姬蛙		1	

Table 7 Result of butterfly in survey

Scientific Name	Common Name	Chinese Name	4-Oct-18	
			Non-wetland	Wetland
Parnara guttata	Common Straight Swift	直紋稻弄蝶	1	
Rapala manea	Slate Flash	燕灰蝶	1	
Abisara echerius	Plum Judy	蛇目褐蜆蝶		1

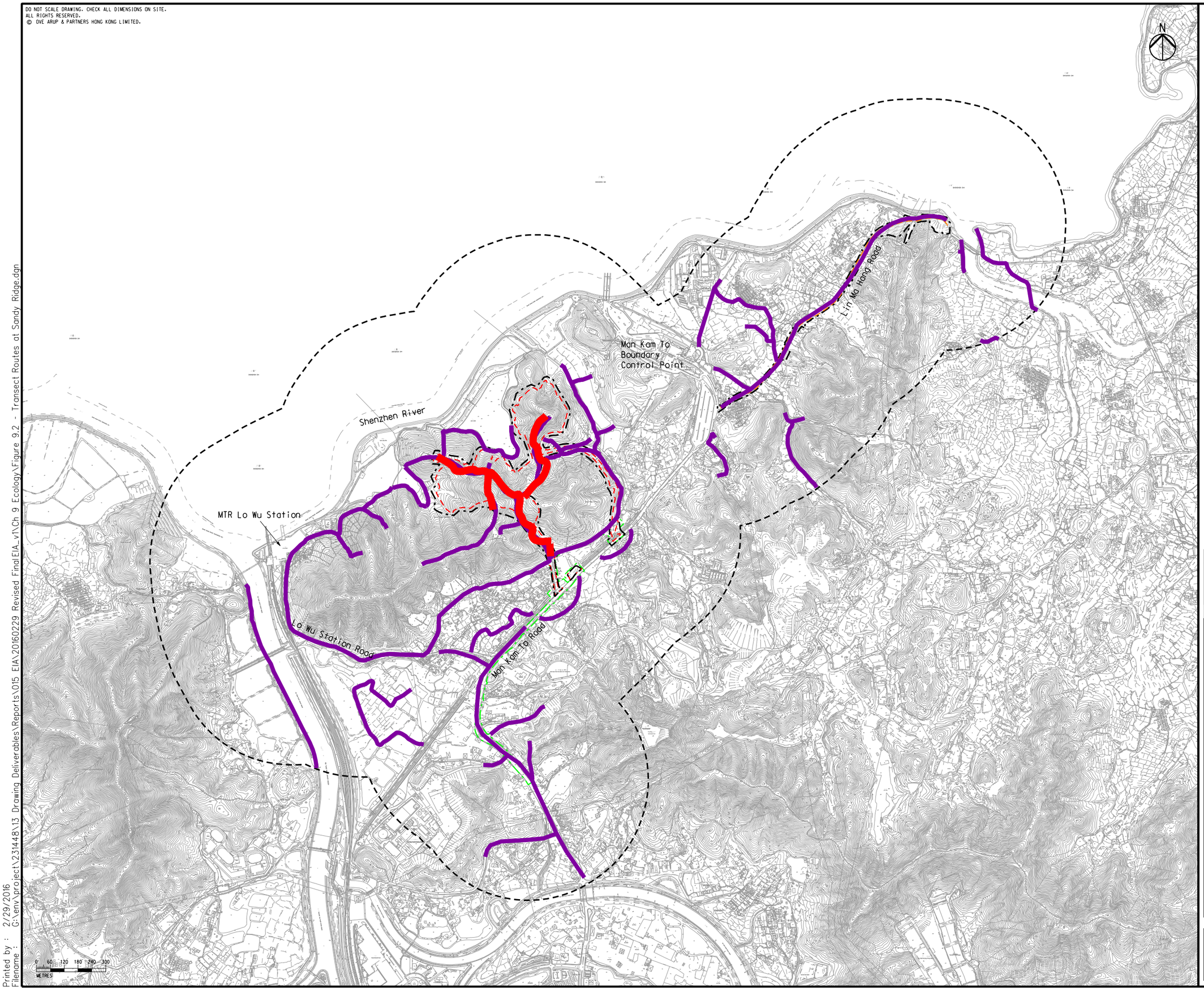
Table 8 Result of Odonate in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	4-Oct-18	
				Non-wetland	Wetland
Ceriagrion auranticum	Orange-tailed Sprite	琉球橘黃蟌		1	
Pantala flavescens	Wandering Glider	黃蜻		12	

Table 9 Result of freshwater communities in survey

Scientific Name	Common Name	Chinese Name	Conservation Status	4-Oct-18
Somanniathelphusa zanklon		鐮刀束腰蟹	Fellowes et al. (2002): GC	2

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

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
Landscape and Visual Impact Assessment Checklist for Site Audit

Date: 29/10/2018 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)	✔			Observation 4 and 5
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, 3, 4 and 6
1.7	Are the trees which are in direct conflict with the development proposal being transplanted as far as practical in accordance with and DEVB TC(W) No. 07/2015?	✔			
1.8	Are compensatory planting for trees being provided to compensate the trees felled in accordance with DEVB TC(W) No. 07/2015?			✔	Tree planting works have not yet been commenced.
1.9	Are precautionary control measures to protect natural streams and rivers from adverse impact being implemented in accordance with ETWWB TCW No. 5/2005? (E.g. Construction debris and spoil should be covered up and properly disposed)	✔			
1.10	Is light and glare control such as hooding being implemented during construction and operation to minimize light pollution and night time glare? (E.g. All security floodlights for construction sites should be equipped with adjustable shield, frosted diffusers and reflective covers)	✔			

Summary / Remarks:

Follow up actions taken by Contractor for previous comments:

1. Trench Steel Sheet Piles were inserted in the earth bund. (Fig C)
2. Raised soil level to prevent muddy water enters the wet wood land**.** (Fig D)

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

1. No hoarding and barrier was provided for demarcating the construction site. (Fig A)
2. No proper TPZ was provided for some of the retained trees. (Fig B)
3. Typhoon Mangkhut lead to fallen trees on site. (Fig E)

New Observation:

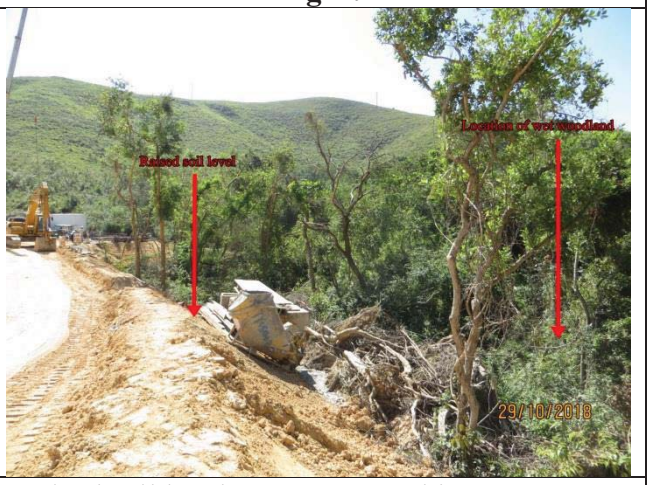
4. Construction material placing next to retained tree (Fig F)
5. Concrete leakage observed on the construction site (Fig G)
6. Raised soil level near root flare of tree (Fig H)

Reminders:

1. Construction works were being started. According to 'Tree Preservation' No7/2015, 26a, Contractor was reminded to provide TPZ with proper and robust fence at the dripline of all retained trees. No works were allowed to undertake within the TPZ.
2. Typhoon Mangkhut lead to fallen trees on site, contractor was reminded to remove these risk trees.
3. Construction material was found placing next to the retained tree, the contractor is reminded to provide robust TPZ and do not place any construction material in it.
4. Concrete leakage on the construction site was observed, contractor is reminded to keep the site clean and tidy. Contractor reported that they will remove the concrete once they are solidified.
5. Raised soil level near root flare of tree was observed, as it may lead to suffocation of tree root, contractor is reminded to lower the soil level around the tree root flare.

Photo Record:

Fig A.	**Fig B.**
	
No hoarding or barrier was provided	No proper TPZ was provided for some of the retained trees

Fig C.	Fig D.
	
Trench Steel Sheet Piles were inserted in the earth bund	Raised soil level to prevent muddy water enters the wet wood land
Fig E.	**Fig F.**
	
Retain trees affected by typhoon Mangkhut	Construction material placing next to retained tree
Fig G.	**Fig H.**
	
Concrete leakage on the construction site	Raised soil level near root flare of tree

Muni Arborist

Signature:

		Signature	Date
Recorded by	Registered Landscape Architect		14/11/2018
Checked by	Environmental Team Leader		14 November 2018
	Independent Environmental Checker		14 November 2018

Appendix M

Monthly Summary Waste Flow Table

Monthly Summary Waste Flow Table for October 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	22.980	0.000	0.991	0.000	21.989	0.000	0.000	0.000	0.000	0.000	0.075
Oct	46.863	0.000	2.982	0.000	43.881	0.000	0.000	0.000	0.000	0.000	0.298
Nov											
Dec											
Total	**69.843**	**0.000**	**3.973**	**0.000**	**65.870**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**3.135**

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

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