Development at West Kowloon Cultural District

Monthly Environmental Monitoring and Audit (EM&A) Report

for October 2022

10 November 2022

In accordance with the Environmental Permit, Condition 3.4, this Monthly EM&A Report has been certified by the Environmental Team Leader (ETL) and verified by the Independent Environmental Checker (IEC) as complying with the requirements as set out in Sections 1, 10, 11, 12 and 13 of the EM&A Manual.

Certified by:

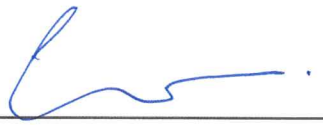
CK WU

Environmental Team Leader (ETL)

West Kowloon Cultural District Authority

Date 10 November 2022

Verified by:



Claudine LEE

Independent Environmental Checker (IEC)

Meinhardt Infrastructure and Environment Ltd

Date 11 NOV 2022

This Report Consists of:

Part-1: EM&A at Lyric Theatre Complex

and

Part-2: EM&A for Foundation and ELS Works in Zones 2A, 2B & 2C

Part-1: EM&A at Lyric Theatre Complex

MOTT MACDONALD

Lyric Theatre Complex

Mott MacDonald
3/F International Trade Tower
348 Kwun Tong Road
Kwun Tong
Kowloon
Hong Kong

T +852 2828 5757
mottmac.hk

Contents

Executive summary

Mott MacDonald Hong Kong Limited (MMHK) was commissioned to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the construction of M+ Museum Main Works (Contract No.: CC/2015/3A/022) and Lyric Theatre Complex including the Foundation Works (Contract No.: CC/2015/3A/014), L1 Contract (Contract No. CC/2017/3A/030) and L2 Contract (Contract No. CC/2017/3A/031) at West Kowloon Cultural District (WKCD) (The Project) as part of the WKCD development. The Project Proponent is the West Kowloon Cultural District Authority (WKCDA). The construction works and EM&A programme for M+ Museum was commenced on 31 October 2015 and completed on 28 February 2021; while the construction works and EM&A programme for Lyric Theatre Complex (L1 and L2 Contracts) was commenced on 1 March 2016, and the EM&A programme for L1 Contract was completed on 30 June 2021.

The overall works for the WKCD fall under two separate categories of Designated Project (DP) of the Environmental Impact Assessment Ordinance (EIAO), namely an "engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100 000" (Item 1 of Schedule 3) and "an underpass more than 100m in length under the built areas" (Item A.9, Part I, Schedule 2). An Environmental Permit No. EP-453/2013/B (EP) was issued with respect to the "Underpass Road and Austin Road Flyover Serving the West Kowloon Cultural District" which specifically includes the abovementioned category of DP under Item A.9, Part I, Schedule 2 of the EIAO.

This Monthly EM&A Report presents the monitoring works at Lyric Theatre Complex (L2 Contract) from 1 October to 31 October 2022.

Exceedance of Action and Limit Levels

There was no breach of Action or Limit levels for Air Quality (1-hour TSP and 24-hour TSP) and Noise in this reporting month.

Implementation of Mitigation Measures

Construction phase weekly site inspections were carried out on 5, 12, 20 and 26 October 2022 for Lyric Theatre Complex (L2 Contract) to confirm the implementation measures undertaken by the Contractor in the reporting month. The outcomes are presented in Section 4 and the status of implementation of mitigation measures in the site is shown in **Appendix J**.

Landscape and visual impact inspections were conducted as part of the abovementioned weekly site inspection during the reporting month. No adverse comment on landscape and visual aspects were made during the inspections.

Record of Complaints

Two environmental complaints were recorded in the reporting month.

Record of Notifications of Summons and Successful Prosecutions

No notifications of summons and successful prosecutions were recorded in the reporting month.

Future Key Issues

The major site works for L2 to be commissioned in the coming month include:

- LTC construction
  Structure (Slab, wall, columns and beam)
  - Falsework and formwork erection
  - Reinforcement work
  - Concrete work

  ABWF & MEP work
- ASDA and Lyric Theatre Promenade
  - Structure and BS works
  - Hoarding works
- DSC cofferdam (Cofferdam A)
  - Excavation
- Extended basement
  - ABWF & MEP work
  - Cabling works
  - Late cast RC works (top slab/ backfill sunken etc.)
  - Carpark area plaster and paint
  - Doors permanent frames
- Underpass and Associated Area
  - RC Structure
  - ABWF & MEP work
- M+ Day 2 Works
  - Remove plenum block wall & make good opening for Louvre
- P32 Interim Development
  - RC works

Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

1 Introduction

1.1 Background

Mott MacDonald Hong Kong Limited (MMHK) was commissioned to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the construction of M+ Museum Main Works (Contract No.: CC/2015/3A/022) and Lyric Theatre Complex including the Foundation Works (Contract No.: CC/2015/3A/014), L1 Contract (Contract No. CC/2017/3A/030) and L2 Contract (Contract No. CC/2017/3A/031) at West Kowloon Cultural District (WKCD) (The Project) as part of the WKCD development. The Project Proponent is the West Kowloon Cultural District Authority (WKCDA). The construction works and EM&A programme for M+ Museum was commenced on 31 October 2015 and completed on 28 February 2021; while the construction works and EM&A programme for Lyric Theatre Complex (L1 and L2 Contracts) were commenced on 1 March 2016, and the EM&A programme for L1 Contract was completed on 30 June 2021.

The overall works for the WKCD fall under two separate categories of Designated Project (DP) of the Environmental Impact Assessment Ordinance (EIAO), namely an “engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100 000” (Item 1 of Schedule 3) and “an underpass more than 100m in length under the built areas” (Item A.9, Part I, Schedule 2). An Environmental Permit No. EP-453/2013/B (EP) was issued with respect to the “Underpass Road and Austin Road Flyover Serving the West Kowloon Cultural District” which specifically includes the abovementioned category of DP under Item A.9, Part I, Schedule 2 of the EIAO. The captioned projects include part of the abovementioned underpass road located within the site boundary also falls under this same category.

The M+ Museum development aims to provide an iconic presence for the M+ Museum, semi-transparent vertical plane, housing education facilities, a public restaurant and museum offices. At ground and lower levels, generous access will be provided to the park and other West Kowloon Cultural District facilities, alongside a public resource centre, theatres, retail and dining, and back-of-house functions.

The 1,200-seat Lyric Theatre Complex will be Hong Kong’s first world-class facility for dance performances, including ballet, contemporary and Chinese dance forms. In the run up to the opening of further major performing arts venues in the WKCD, it will also be used for a wide variety of performing arts events including drama, opera and musical performances. The Lyric Theatre Complex will act as a platform for Hong Kong’s leading arts organisations and be a new major venue to show programmes from Asia and worldwide.

The Monthly EM&A Report is prepared in accordance with the Condition 3.4 of the Environmental Permit No. EP-453/2013/B. This Monthly EM&A Report presents the monitoring works at Lyric Theatre Complex (L2 Contract) from 1 October to 31 October 2022. The purpose of this report is to summarise the findings in the EM&A of the project over the reporting period.

1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix A**.

1.3 Status of Construction Works in the Reporting Period

During the reporting period, construction works at L2 undertaken include:

- LTC construction

  Structure (Slab, wall, columns and beam)
  - Falsework and formwork erection
  - Reinforcement work
  - Concrete work

  ABWF & MEP work
- ASDA and Lyric Theatre Promenade
  - Structure and BS works
  - Hoarding works
- DSC cofferdam (Cofferdam A)
  - Backfill and const. additional blinding layer & retaining wall
- Extended basement
  - ABWF & MEP work
  - Cabling works
  - Late cast RC works (top slab/ backfill sunken etc.)
  - Carpark area plaster and paint
- Underpass and Associated Area
  - RC Structure
  - ABWF & MEP work
- M+ Day 2 Works
  - Remove plenum block wall & make good opening for Louvre
- P32 Interim Development
  - Construct dog houses

The Construction Works Programme of Lyric Theatre Complex (L2 Contract) is provided in **Appendix B**. A layout plan of the Project is provided in **Figure 1**. Please refer to **Table 4.1** on the status of the environmental licenses.

1.4 Summary of EM&A Requirements and Alternative Monitoring Locations

The EM&A programme requires environmental monitoring of air quality, noise, landscape and visual as specified in the approved EM&A Manual.

1.4.1 EM&A Requirements

A summary of impact EM&A requirements is presented in **Table 1.1**.

Table 1.1: Summary of Impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies
Air Quality	24-Hour TSP	AM1 - International Commerce Centre	At least once every 6 days
	1-Hour TSP	AM1 - International Commerce Centre	At least 3 times every 6 days
	24-Hour TSP	AM2 - The Harbourside Tower 1	At least once every 6 days
	1-Hour TSP	AM2 - The Harbourside Tower 1	At least 3 times every 6 days
Noise	Leq, 30 minutes	NM1- The Harbourside Tower 1	Weekly
Landscape & Visual	Monitor implementation of proposed mitigation measures during the construction stage	As described in Table 9.1 and 9.2 of the EM&A Manual	Bi-weekly

1.4.2 Alternative Monitoring Locations

In the context of the monitoring activities at M+ Museum and the Lyric Theatre Complex, three monitoring stations had been considered, including AM1 (International Commerce Centre), AM2 (The Harbourside Tower 1) for air monitoring, and NM1 (The Harbourside Tower 1) for noise monitoring. Other monitoring locations (i.e. AM3 to AM5 and NM2 to NM5) were so far away from M+ Museum and the Lyric Complex and could not be representative for impact monitoring.

The Harbourside management office formally rejected our proposal of setting up air quality and noise monitoring equipment on its premises at the podium level of Tower 1 (AM2/NM1) on 10 November 2015. Nevertheless, a suitable air quality monitoring location at AM2 was identified on the ground floor in front of The Harbourside Tower 1, which is at the same location as that of baseline monitoring for consistency. No management approval is required on the ground floor for conducting the air monitoring. However, the electricity supply at AM2 was suspended from 31 August 2016. In order to have a more secure electricity supply, an alternative air monitoring location (AM2A) was identified at Austin Road West opposite to The Harbourside Tower 1, which is close to Lyric Theatre Complex site entrance. This alternative air monitoring location was approved by EPD on 28 September 2016. Due to the works programme, the air monitoring location AM2A has been relocated to the alternative monitoring location AM2B at the 1st floor of Gammon's site office, which was approved by EPD on 21 February 2019. In view of the upcoming construction works to be undertaken at the air monitoring station AM2B, AM2B was no longer available for conducting the impact air quality monitoring. Hence, an alternative air monitoring location was identified on the ground floor in front of The Harbourside Tower 1 (AM2) which is at the same location as the baseline monitoring and this previously approved monitoring location had also been used for the EM&A Programme from November 2015 to August 2016, the relocation was approved by EPD on 27 May 2021.

Alternative noise monitoring location was identified at The Arch (NM2); however, The Arch management office formally rejected our proposal of setting up noise monitoring equipment on its premises on 23 November 2015. On the other hand, noise monitoring at G/F of Harbourside could not be representative. However, approval from the management office of the International Commerce Centre has been granted on 29 February 2016 for conducting noise monitoring at the alternative noise monitoring location identified at the podium floor (NM1A) which is free from screening to the construction activities.

In short, 2 air quality monitoring stations and 1 noise impact monitoring station were confirmed for the impact monitoring.

The Environmental Quality Performance Limits for air quality and noise are shown in **Appendix C**.

The Event and Action Plan for air quality, construction noise, and landscape and visual are shown in **Appendix D**.

The EM&A programme followed the recommended mitigation measures in the EM&A Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix J**.

2 Impact Monitoring Methodology

2.1 Introduction

For air quality and noise, the monitoring methodology, including the monitoring locations, monitoring equipment used, monitoring parameters, and frequency and duration etc., for air quality and noise are detailed in this Section. The environmental monitoring schedules for the reporting period and the tentative monitoring schedule for the coming month are provided in **Appendix E**.

For landscape and visual impact, the relevant EM&A monitoring requirements and details are also presented in this Section.

2.2 Air Quality

2.2.1 Monitoring Parameters, Frequency and Duration

Table 2.1 summarizes the monitoring parameters, frequency and duration of the TSP monitoring.

Table 2.1: Air Quality Monitoring Parameters, Frequency and Duration

Parameter	Frequency	Duration
24-hour TSP	At least once in every six-days	24 hours
1-hour TSP	At least 3 times every six-days	60 minutes

2.2.2 Monitoring Locations

Currently, the works under the captioned project are confined in the western part of the WKCD site. Therefore, only the monitoring stations AM1 and AM2 were set up at the proposed locations in accordance with updated EM&A Manual. Location of the monitoring station is given in **Table 2.2** and shown in **Figure 1**.

Table 2.2: Air Quality Monitoring Station

Monitoring Station	Location
AM1	International Commerce Centre (ICC)
AM2	The Harbourside Tower 1 – Ground Floor

2.2.3 Monitoring Equipment

For 24-hour TSP air quality monitoring, High Volume Sampler (HVS) was used at air monitoring station AM1 and portable direct reading dust meter was used at air monitoring station AM2 due to the unavailability of power supply for HVS at / in the vicinity of the AM2. The portable direct reading dust meter is capable of producing comparable results as that by the HVS method. For 1-hour TSP monitoring, portable direct reading dust meter was used for the measurement.

Table 2.3 summarizes the equipment used in the impact air quality monitoring. Copies of the calibration certificates for the calibration kit and portable dust meters are attached in **Appendix F**.

Table 2.3: TSP Monitoring Equipment

Equipment	Model
24-hour TSP monitoring	
High Volume Sampler	TE-5170 (Serial No: 0767)
Calibrator	TE-5025A (Orifice I.D.: 2454)
Portable direct reading dust meter	Sibata LD-5R (Serial No.: 831656)
1-hour TSP monitoring	
Portable direct reading dust meter	Sibata LD-3B (Serial No.: 245834, 326285, 436553 and 476664)

Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. The HVS calibration orifice will be calibrated annually. Calibration certificate of the TE-5025A Calibration Kit and the HVS are provided in **Appendix F**.

The portable direct reading dust meter should be determined periodically (e.g. annually) by the HVS to check the validity and accuracy of the results measured by direct reading method.

2.2.4 Monitoring Methodology

24-hour TSP Monitoring (HVS)

Installation

The HVS was installed at the site boundary. The following criteria were considered in the installation of the HVS.

- A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
- The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
- A minimum of 2 metres separation from walls, parapets and penthouse was required for rooftop sampler.
- A minimum of 2 metres separation from any supporting structure, measured horizontally was required.
- No furnace or incinerator flues or building vent were nearby.
- Airflow around the sampler was unrestricted.
- The sampler has been more than 20 metres from any drip line.
- Permission was obtained to set up the sampler and to obtain access to the monitoring station.
- A secured supply of electricity is needed to operate the sampler.

Preparation of Filter Papers

- Glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected.
- The filters used are specified to have a minimum collection efficiency of 99 percent for 0.3 μm (DOP) particles.
- All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C with relative humidity (RH) < 50% and was not variable by more than ±5 %. A convenient working RH was 40%. All preparation of filters was done by Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory.

Field Monitoring Procedures

- The power supply was checked to ensure the HVS works properly.
- The filter holder and the area surrounding the filter were cleaned.
- The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and was secured with the aluminium strip.
- The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- A new flow rate record sheet was set into the flow recorder.
- The flow rate of the HVS was checked and adjusted at around 1.3 m^3/min. The range specified in the EM&A Manual was between 0.6-1.7 m^3/min.
- The programmable timer was set for a sampling period of 24 hours, and the starting time, weather condition and the filter number were recorded.
- The initial elapsed time was recorded.
- At the end of sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed.
- All monitoring information was recorded on a standard data sheet.
- Filters were sent to a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory for analysis.

Maintenance and Calibration

- The HVS and its accessories are maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVSs were calibrated upon installation and thereafter at bi-monthly intervals. The calibration kits were calibrated annually.

Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix H**.

<u>24-hour TSP Monitoring (Portable direct reading dust meter)</u>

Field Monitoring

The measuring procedures of the portable direct reading dust meter are in accordance with the Manufacturer's Instruction Manual as follows:

- Turn the power on.
- Close the air collecting opening cover.
- Push the "TIME SETTING" switch to [BG].
- Push "START/STOP" switch to perform background measurement for 6 seconds.
- Turn the knob at SENSI ADJ position to insert the light scattering plate.
- Leave the equipment for 1 minute upon "SPAN CHECK" is indicated in the display.

- Push “START/STOP” switch to perform automatic sensitivity adjustment. This measurement takes 1 minute.
- Pull out the knob and return it to MEASURE position.
- Setting time period of 24 hours for the 24-hour TSP measurement.
- Push “START/STOP” to start the 24-hour TSP measurement.
- Regular checking of the time period setting to ensure monitoring time of 24 hours.

Maintenance and Calibration

- The portable direct reading dust meter would be checked at 3-month intervals and calibrated at 1-year intervals throughout all stages of the air quality monitoring.
- Calibration records for direct dust meters are shown in **Appendix F**.

Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix H**.

1-hour TSP Monitoring

Field Monitoring

The measuring procedures of the 1-hour dust meter are in accordance with the Manufacturer’s Instruction Manual as follows:

- Turn the power on.
- Close the air collecting opening cover.
- Push the “TIME SETTING” switch to [BG].
- Push “START/STOP” switch to perform background measurement for 6 seconds.
- Turn the knob at SENSI ADJ position to insert the light scattering plate.
- Leave the equipment for 1 minute upon “SPAN CHECK” is indicated in the display.
- Push “START/STOP” switch to perform automatic sensitivity adjustment. This measurement takes 1 minute.
- Pull out the knob and return it to MEASURE position.
- Setting time period of 1 hour for the 1-hour TSP measurement.
- Push “START/STOP” to start the 1-hour TSP measurement.
- Regular checking of the time period setting to ensure monitoring time of 1 hour.

Maintenance and Calibration

- The 1-hour dust meter would be checked at 3-month intervals and calibrated at 1-year intervals throughout all stages of the air quality monitoring.
- Calibration records for direct dust meters are shown in **Appendix F**.

Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix H**.

2.3 Noise

2.3.1 Monitoring Parameters, Frequency and Duration

Table 2.4 summarizes the monitoring parameters, frequency and duration of noise monitoring. The noise in A-weighted levels L_{eq}, L_{10} and L_{90} are recorded in a 30-minute interval between 0700 and 1900 hours.

Table 2.4: Noise Monitoring Parameters, Period and Frequency

Time Period	Parameters	Frequency
Daytime on normal weekdays (0700-1900 hours)	L_{eq}(30 min), L_{90}(30 min) & L_{10} (30 min)	Once every week

2.3.2 Monitoring Location

Currently, the works under the captioned project are confined in the western part of the WKCD site. Therefore, only the monitoring station NM1A was set up. Location of the monitoring station is given in **Table 2.5** and shown in **Figure 1**.

Table 2.5: Noise Monitoring Station

Monitoring Station	Location
NM1A	International Commerce Centre (ICC)

2.3.3 Monitoring Equipment

Integrating Sound Level Meter was used for noise monitoring. It was a Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{Aeq}) and percentile sound pressure level (L_x). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). **Table 2.6** summarizes the noise monitoring equipment model being used.

Table 2.6: Noise Monitoring Equipment

Monitoring Station	Equipment Model	
	Integrating Sound Level Meter	Calibrator
NM1A	Rion NL-52 (Serial No. 00710259)	LARSON DAVIS CAL200 (Serial No.10227)

2.3.4 Monitoring Methodology

Field Monitoring

- The microphone of the Sound Level Meter was set at least 1.2 m above the ground.
- Free Field measurement was made at the monitoring locations.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting: A
  - time weighting: Fast
  - time measurement: 30 minutes intervals (between 0700-1900 on normal weekdays)
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1 kHz. If the difference in the calibration level before and after measurement

was more than 1 dB, the measurement would be considered invalid and has to be repeated after re-calibration or repair of the equipment.
- During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, any site observations and noise sources were recorded on a standard record sheet.
- A correction of +3dB(A) was made to the free field measurements.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator is cleaned with soft cloth at quarterly intervals.
- The sound level meter and calibrator are sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- Calibration records are shown in **Appendix F**.

Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix H**.

2.4 Landscape and Visual

2.4.1 Monitoring Program

Table 2.7 details the monitoring program (as proposed in the WKCD EIA report) for landscape and visual impact during the construction phase.

Table 2.7: Monitoring Program for Landscape and Visual Impact during Construction Phase

Stage	Monitoring Task	Frequency	Report	Approval
Construction	Monitor implementation of proposed mitigation measures during the construction stage.	Bi-weekly	ET to report on Contractor's compliance	Counter-signed by IEC

During the landscape and visual impact monitoring, any changes in relation to the landscape and visual amenity should be monitored with reference to the baseline conditions of the site. In addition, mitigation measures were proposed in the WKCD EIA report to minimise the landscape and visual impacts during the construction phase. The proposed mitigation measures as shown in Table 9.1 and Table 9.2 of the EM&A Manual should be checked for proper implementation.

3 Monitoring Results

3.1 Impact Monitoring

Construction impact monitoring for air quality, noise and landscape and visual impact was undertaken in compliance with the EM&A Manual during the reporting month.

3.2 Air Quality Monitoring

3.2.1 1-hour TSP

Results of 1-hour TSP at the monitoring location AM1 and AM2 are summarised in **Table 3.1**. Graphical plots of the monitoring results are shown in **Appendix G**.

Table 3.1: Summary of 1-hour TSP monitoring results

Monitoring Station	Monitoring Date	Start Time	1-hour TSP (μg/m3)			Range (μg/m3)	Action Level (μg/m3)	Limit Level (μg/m3)
			1st Result	2nd Result	3rd Result			
AM1	06-Oct-22	8:22	55	44	49	19-55	273.7	500
	12-Oct-22	8:22	31	28	37			
	18-Oct-22	8:33	29	21	19			
	24-Oct-22	8:30	19	20	28			
	28-Oct-22	8:28	31	29	26			
AM2	06-Oct-22	8:34	61	58	59	29-61	274.2	500
	12-Oct-22	8:36	46	50	52			
	18-Oct-22	8:48	31	29	35			
	24-Oct-22	8:44	43	40	39			
	28-Oct-22	8:43	44	51	49			

3.2.2 24-hour TSP

Results of 24-hour TSP at the monitoring location AM1 and AM2 are summarised in **Table 3.2**. Graphical plots of the monitoring results are shown in **Appendix G**.

Table 3.2: Summary of 24-hour TSP monitoring results

Monitoring Station	Monitoring Date	Start Time	Monitoring Results (μg/m^3)	Range (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
AM1	06-Oct-22	08:20	25	7-25	143.6	260
	12-Oct-22	08:20	13			
	18-Oct-22	08:30	7			
	24-Oct-22	08:28	12			
	28-Oct-22	08:25	22			
AM2	06-Oct-22	08:32	33	19-33	151.1	260
	12-Oct-22	08:34	25			
	18-Oct-22	08:45	19			
	24-Oct-22	08:42	25			
	28-Oct-22	08:40	25			

No exceedance of 1-hour and 24-hour TSP (Action or Limit Level) was recorded in the reporting period.

3.3 Noise Monitoring

The construction noise monitoring results at the monitoring location NM1A are summarized in **Table 3.3**. Graphical plots of the monitoring data and the station set-up of a free-field measurement are shown in **Appendix G**.

Table 3.3: Summary of noise monitoring results during normal weekdays

Monitoring Date	Start Time	End Time	L_{eq} (30 mins)*, dB(A)	Limit Level for L_{eq} (dB(A))
06-Oct-22	09:18	09:48	68	75
12-Oct-22	09:20	09:50	67	
18-Oct-22	09:33	10:03	68	
24-Oct-22	09:28	09:58	67	

Remarks:

* +3dB (A) correction was applied to free-field measurement.

No exceedance (Action/Limit Level) of construction noise was recorded in the reporting month.

3.4 Landscape and Visual Impact

Landscape and visual impact inspections were conducted as part of the weekly site inspection on 5 & 20 October 2022 for Lyric Theatre Complex (L2 Contract) during the reporting month. As reviewed by the registered Landscape Architect, no adverse comment on landscape and visual aspects was made during this inspection.

The landscape and visual mitigation measures were implemented during the reporting period. The summary of implementation status of the environmental mitigation measures is provided in **Appendix J**.

4 Site Environmental Management

4.1 Site Inspection

Construction phase weekly site inspections were carried out on 5, 12, 20 and 26 October 2022 at Lyric Theatre Complex (L2 Contract). While the site environmental management committee meeting with IEC, ET, ER and Contractor was held on 26 October 2022. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary.

The key observations from the site inspections and associated recommendations are summarized in **Table 4.1.**

Table 4.1: Summary of Site Inspections and Recommendations for L2

Inspection Date	Parameter	Observation / Recommendation	Contactor's Responses / Action(s) Undertaken	Close-out (Date)
05-Oct-22	Water Quality	Stagnant water was observed in the drip tray, the contractor was reminded to clear the stagnant water to avoid chemical overflow.	The contractor has cleared the stagnant water in the drip tray.	12-Oct-22
12-Oct-22	Air Quality	Opened cement bags were observed, the contractor was reminded to cover the cement bags properly.	The contractor has covered the cement bags properly.	14-Oct-22
20-Oct-22	Water Quality	Stagnant water was observed in the drip tray, the contractor was reminded to clear the stagnant water to avoid chemical overflow.	The contractor has cleared the stagnant water in the drip tray.	25-Oct-22
26-Oct-22	Water Quality	Stagnant water was observed within the drip tray, the contractor was reminded to clear the stagnant water to avoid chemical overflow.	The contractor has cleared the stagnant water at the drip tray.	01-Nov-22
26-Oct-22	Waste Management	Improper segregation of waste to recycling bins was observed, the contractor was reminded to practice proper segregation and disposal of waste.	The contractor has practiced proper segregation for waste and the waste was disposed regularly.	31-Oct-22
26-Oct-22	Waste Management	Idle chemical container was observed, the contractor was reminded to provide a suitable drip tray or remove it.	The contractor has properly covered the chemical container and stored it properly.	03-Nov-22
26-Oct-22	Waste Management	The contractor was remined to clear the waste regularly.	The contractor has cleared the waste regularly.	31-Oct-22

4.2 Advice on the Solid and Liquid Waste Management Status

The Contractor has been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting will be carried out on site. A sufficient number of receptacles were available for general refuse collection.

As advised by the Lyric Theatre Complex (L2 Contract) Contractor, 317.2 tonnes, 390.9 tonnes and 0.0 tonne of inert C&D materials were disposed of as public fill to Tseung Kwan O Area 137 Public Fill, Tuen Mun Area 38 Public Fill and Chai Wan Public Fill Barging Point respectively in

the reporting month, while 353.0 tonnes of general refuse were disposed of at SENT and WENT landfill. 13.8 tonnes of metals, 0.0 tonne of paper/cardboard packaging, 0.0 tonne of plastics and 0.0 tonne of timber were collected by recycling contractors in the reporting month. 0.0 tonne of inert C&D material was reused on site. 0.0 tonne of inert C&D material was reused in other projects and 0.0 tonne of inert C&D material was imported for reuse at site. 0.0 tonne of inert C&D material was disposed to sorting facility and 0.0 tonne of chemical waste were collected by licensed contractors in the reporting period.

The actual amounts of different types of waste generated by the activities of construction works at Lyric Theatre Complex in the reporting month are shown in **Appendix I**.

4.3 Status of Environmental Licenses and Permits

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period are summarised in **Table 4.2**.

Table 4.2: Status of Environmental Submissions, Licenses and Permits for L2

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Chemical Waste Producer Registration				
WPN:5213-217-G2347-39	13-Sep-21	-	Valid	
Billing Account Construction Waste Disposal				
7032787	02-Jan-19	-	Account Active	
Construction Noise Permit				
GW-RE0815-22	25-Aug-22	24-Nov-22	Valid	
Wastewater Discharge License				
WT-00030694-2018	11-Apr-18	30-Apr-23	Valid	
Notification under Air Pollution Control (Construction Dust) Regulation				
448474	27-Aug-19	-	Notified	

4.4 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EM&A Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix J**. In particular, the following mitigation measures were brought to attention during the site inspections:

Air Quality

- High standard of housekeeping should be maintained to prevent emission of fugitive dust.

Water Quality

- Oils and fuels should be stored in designated areas which have pollution prevention facilities.

Waste Management

- All wastes generated at site should be collected and disposed to an appropriate facility regularly.
- Different types of waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal.

– Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed.

5 Compliance with Environmental Permit

The status of the required submission under the EP during the reporting period is summarized in **Table 5.1**.

Table 5.1: Status of Submissions under the Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report for September 2022	13 October 2022

6 Report in Non-compliance, Complaints, Notification of Summons and Successful Prosecutions

6.1 Record on Non-compliance of Action and Limit Levels

There was no breach of Action or Limit Levels for Air Quality and Noise monitoring in the reporting month.

6.2 Record on Environmental Complaints Received

Two environmental complaints were received in the reporting month.

On 7 October 2022, the Environmental Protection Department (EPD) and Communications and Public Affairs Department of WKCDA have received a complaint from nearby resident regarding noise impact, and the complaint was referred by the EPD on the same day. The complainant claimed that large machineries were operating starting from 7:00 a.m., and loud construction noise was still being heard till 8:00 p.m. A video was provided by the complainant to demonstrate the situation. The complainant demanded that no high intrusive construction works should be undertaken before 9:00 a.m. and after 7:00 p.m. as well as on public holidays. From the information provided by the contractor, the major construction activities for Lyric Theatre Complex (L2 Contract) were carried out between 8:00 a.m. and 7:00 p.m. which is compliant with the statutory requirement. The potential noisy works (e.g. breaking) were rescheduled after 9:00 a.m. to minimise the potential impact to the nearby residents. Preventive and mitigation measures are well-deployed and maintained by the Contractor including noise insulating fabric for breaking works, as well as regular briefings and meetings with subcontractors. And from the regular noise monitoring results, the results were well below the action/limit levels such that the construction works of Lyric Theatre Complex (L2 Contract) should not be posing significant impacts to the nearby sensitive receivers. As concluded from the above investigation and findings, it could not directly imply the complaint was attributable to Lyric Theatre Complex (L2 Contract).

On 29 October 2022, EPD received a complaint from the office of District Councillor Mr. Derek Hung regarding construction noise at WKCD construction site, and the complaint was referred by EPD on 31 October 2022. The complainant (nearby residents) claimed that construction works were undertaken at the WKCD construction site at 10:00 p.m., such that the construction noise affects residents' living. A video clip was also provided to demonstrate the construction noise. The complainant also demanded the Contractors to reinforce the noise insulation measures and avoid undertaking noisy works before 9:00 a.m. and after 7:00 p.m. It was concluded that the complaint was not related to Lyric Theatre Complex. As confirmed by the Contractor, no construction works were carried out after 7:00 p.m. on 28 October 2022, such that there was no possible noise source that would generate construction noise. Moreover, as from the video provided by the complainant, the concerned area was not within the boundary of Lyric Theatre Complex (L2 Contract), hence it could not directly imply the complaint was attributable to Lyric Theatre Complex. However, noise control measures will continue to be strictly implemented on site to reduce impacts to the nearby residents.

Although the aforementioned complaints were not related to Lyric Theatre Complex, the contractor is reminded to strictly implement and maintain good site practices to avoid noise impact to the nearby residents and sensitive receivers.

The cumulative statistics on complaints were provided in **Appendix K**.

6.3 Record on Notifications of Summons and Successful Prosecution

No notifications of summons or successful prosecutions were received this month. The cumulative statistics on notifications of summons and successful prosecutions were provided in **Appendix K**.

7 Future Key Issues

7.1 Construction Works for the Coming Month(s)

The major site works for L2 to be commissioned in the coming month include:

- LTC construction

  Structure (Slab, wall, columns and beam)
  - Falsework and formwork erection
  - Reinforcement work
  - Concrete work

  ABWF & MEP work
- ASDA and Lyric Theatre Promenade
  - Structure and BS works
  - Hoarding works
- DSC cofferdam (Cofferdam A)
  - Excavation
- Extended basement
  - ABWF & MEP work
  - Cabling works
  - Late cast RC works (top slab/ backfill sunken etc.)
  - Carpark area plaster and paint
  - Doors permanent frames
- Underpass and Associated Area
  - RC Structure
  - ABWF & MEP work
- M+ Day 2 Works
  - Remove plenum block wall & make good opening for Louvre
- P32 Interim Development
  - RC works

7.2 Key Issues for the Coming Month

Key issues to be considered at Lyric Theatre Complex in the coming month include:

- Generation of dust from construction works;
- Noise impact from operating equipment and machinery on-site;
- Generation of site surface runoffs and wastewater from activities on-site;
- Management of stockpiles and slopes, particularly on rainy days;
- Sorting, recycling, storage and disposal of general refuse and construction waste;
- Management of chemicals and avoidance of oil spillage on-site; and
- Operating conditions of drainage facilities.

7.3 Monitoring Schedule for the Coming Month

The environmental site inspection and environmental monitoring will be continued in the coming month. The tentative monitoring schedule for the coming month is shown in the **Appendix E**.

8 Conclusions and Recommendations

8.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken. The construction works and EM&A programme for M+ Museum was commenced on 31 October 2015 and completed on 28 February 2021; while the construction works and EM&A programme for Lyric Theatre Complex (L1 and L2 Contracts) was commenced on 1 March 2016, and the EM&A programme for L1 Contract was completed on 30 June 2021.

Monitoring of air quality and noise with respect to the Project is underway. In particular, the 1-hour TSP, 24-hour TSP, noise level (as L_{eq}, 30 minutes) under monitoring have been checked against established Action and Limit levels. There was no breach of Action and Limit Levels for 1-hour TSP, 24-hour TSP and noise in the reporting month.

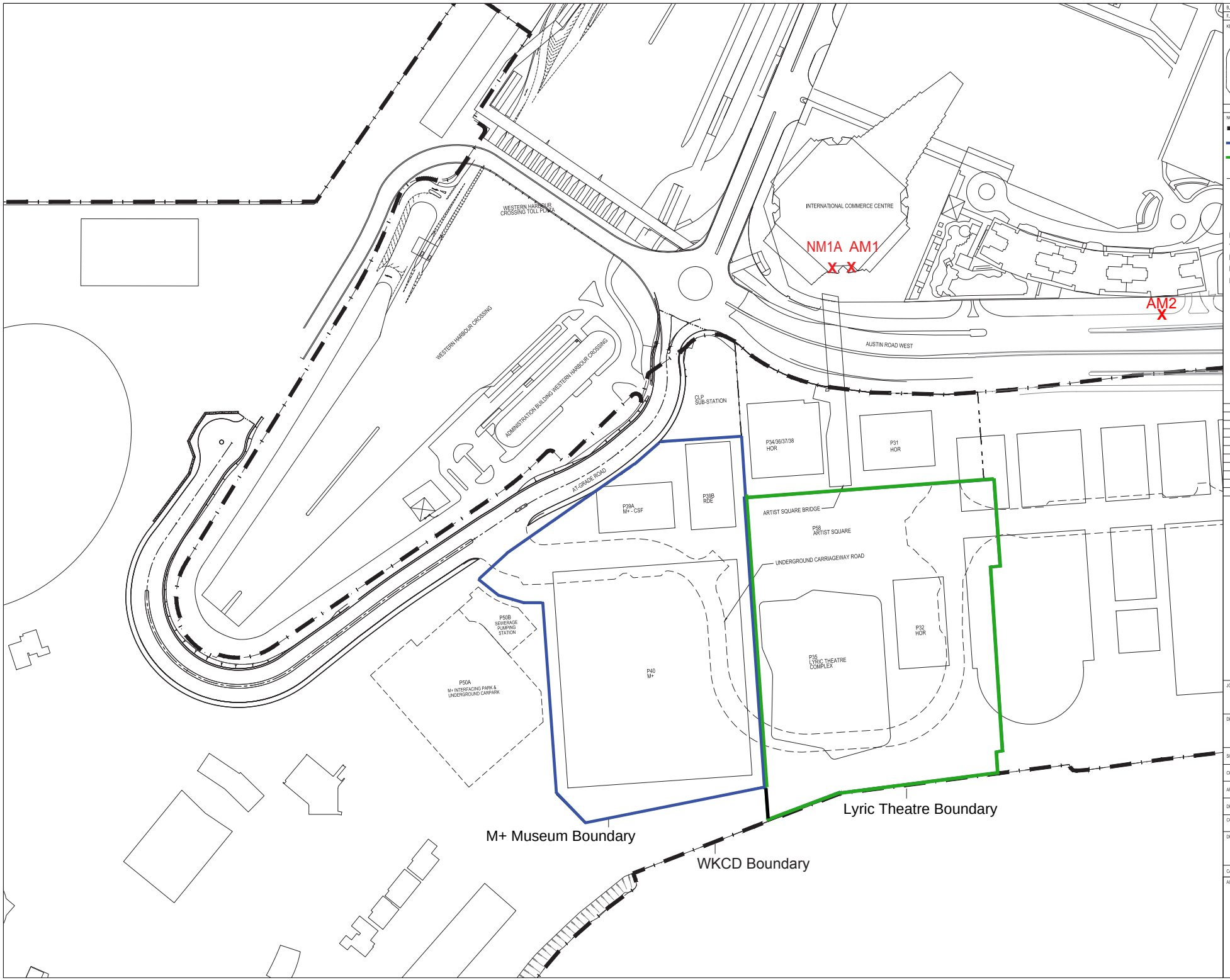
Two environmental complaints were recorded in the reporting month. No notifications of summons or successful prosecutions were received during the reporting month.

Weekly construction phase site inspections and bi-weekly landscape and visual impact inspections were conducted during the reporting month as required. It was observed that the Contractors had implemented all possible and feasible mitigation measures to mitigate the potential environmental impacts during construction phase works.

8.2 Recommendations

Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

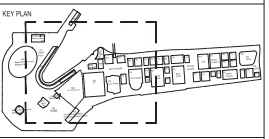
Figure 1 Site Layout Plan and Monitoring Stations



B.D. REF:

F.S.D. REF:

KEY PLAN



KEY PLAN

NOTES:

WKCD BOUNDARY

M+ MUSEUM BOUNDARY

LYRIC THEATRE BOUNDARY

BOUNDARY OF UNDERPASS ROAD SERVING THE PLANNED WKCD

X CONSTRUCTION AIR/NOISE MONITORING STATIONS

REMARKS:

THE AIR MONITORING STATION AM2B HAS BEEN RELOCATED TO THE ALTERNATIVE MONITORING STATION AM2 AT THE G/F OF HARBOURSIDE ON 1 JUNE 2021

REV.	DATE	DESCRIPTION	INITIAL

JOB TITLE: **M+ MUSEUM FOR VISUAL CULTURE (MAIN CONTRACT WORKS) & LYRIC THEATRE COMPLEX**

DRAWING TITLE: **PROPOSED LOCATIONS OF CONSTRUCTION AIR/NOISE MONITORING STATIONS**

SCALE	1:100	PRINTED	A1
CHECKED		DATE	
APPROVED		DATE	
DRAWN		DATE	
CONTRACT NO.			

DRAWING NO.: **FIGURE 1** REV.: XA

CAD REF NAME: XXXXX-AUT-PMS-DWG-P00-L000-0000-XXX.dwg

AUTHORITY

westKowloon 西九文化區

A1 (841mm x 594mm) Sheet Size

Appendices

A. Project Organisation
B. Tentative Construction Programme
C. Action and Limit Levels for Construction Phase
D. Event and Action Plan for Air Quality, Noise, Landscape and Visual Impact
E. Monitoring Schedule
F. Calibration Certifications
G. Graphical Plots of the Monitoring Results
H. Meteorological Data Extracted from Hong Kong Observatory
I. Waste Flow table
J. Environmental Mitigation Measures – Implementation Status
K. Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

A. Project Organisation

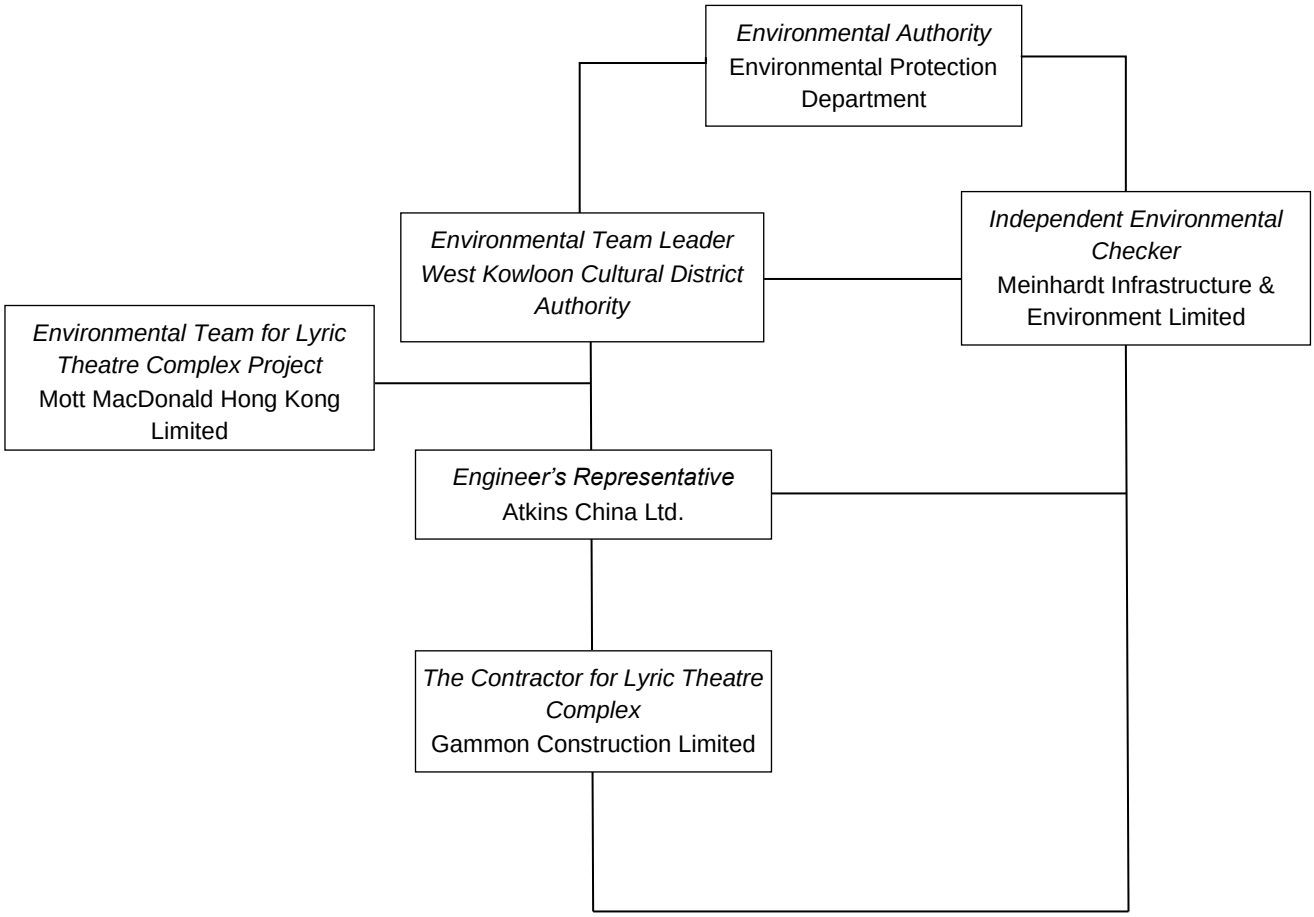


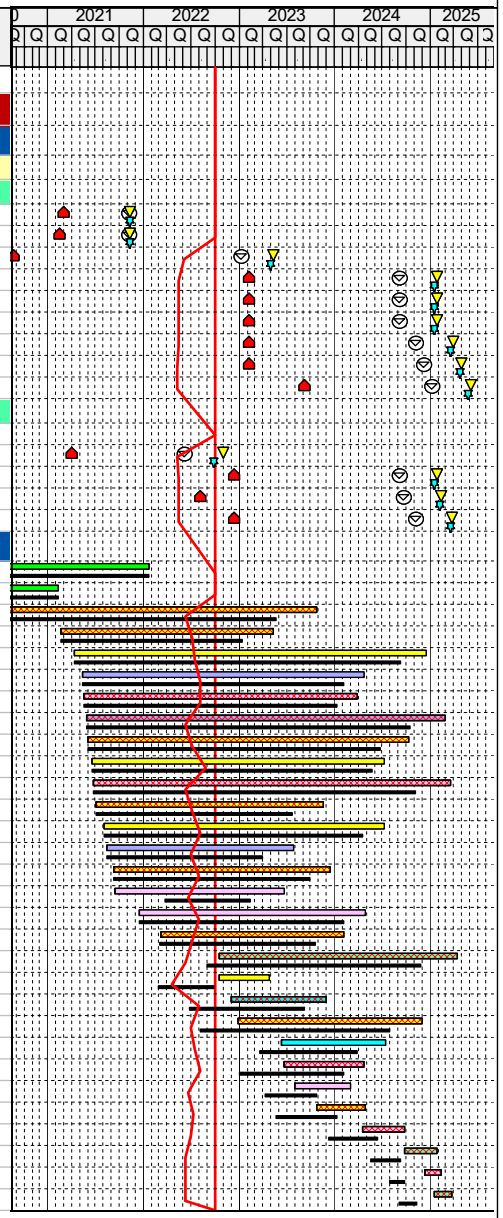
Table A-1: Contact information

Company Name	Role	Name	Telephone	Email
Atkins China Ltd.	Project Manager	Mr. Simha LytheRao	2204 8259	Simha.Lytherao@atkinsglobal.com
Meinhardt Infrastructure & Environment Limited	Independent Environmental Checker	Ms. Claudine Lee	2859 5409	claudinelee@meinhardt.com.hk
Gammon Construction Limited (L2)	Environmental Manager	Mr. Ivan Chiu	9416 1664	ivan.chiu@gammonconstruction.com
Mott MacDonald Hong Kong Ltd.	Contractor's Environmental Team Leader	Mr. Thomas Chan	2828 5757	thomas.chan@mottmac.com
West Kowloon Cultural District Authority	Senior Project Manager (Safety, Health and Environment)	Mr. C.K. Wu	5506 9178	ck.wu@wkcda.hk

B. Tentative Construction Programme

TASK filter: L2 UPD: Level 1 Prg [before compression].

ID	Activity	RD	BL_Rev_00 Start	BL_Rev_00 Finish	BL_Rev_02 Start	BL_Rev_02 Finish	Start	Finish	LoE SUMM TF (approx)	BL_R2 VAR	LM VAR
*L2 CMWP_R02_07 - IFA on 27Apr22 - ***LIVE*** (24th UPD; DD = 30Sep2022)*											
GENERAL & PRELIMINARIES											
Contract Significant Dates											
Commencement & Completion Dates - CMWP_Rev_01											
Section Keydates											
KD05A	Complete Required Pedestrian Access Corridor and Floor Finishes at AURW	0		28-Feb-21		12-Nov-21		12-Nov-21 A		0	0
KD05B	Complete Required Pedestrian Access Corridor & associated top slab at Avenue Level [if instructed]	0		14-Feb-21		12-Nov-21		12-Nov-21 A		0	0
KD05	PC for HO of the Remaining Works for M+ Promenade South	0		24-Aug-20		13-Jan-23		12-May-23*	-119	-119	-9
KD08	PC for HO Loc ICT/Risers Rms to APC for ICT Sys Instn Wrks	0		10-Feb-23		10-Sep-24		24-Jan-25*	-136	-136	-8
KD10	PC for HO of ASDA, Lyric Theatre Promenade South to Authority	0		10-Feb-23		10-Sep-24		24-Jan-25*	-136	-136	-8
KD09	PC for HO of RDE areas for Tenancy Fit-out Wrks	0		10-Feb-23		10-Sep-24		24-Jan-25*	-136	-136	-8
KD11	PC for HO of Extended Basement for HO to Authority & HO of Carriageway to Relevant Govt Authority	0		10-Feb-23		12-Nov-24		29-Mar-25*	-137	-137	-8
KD07	PRACTICAL COMPLETION for C'Way 3A (M+ Day 2 Works)	0		10-Feb-23		09-Dec-24		30-Apr-25*	-110	-142	-8
KD13	PRACTICAL COMPLETION for Lyric Theatre, EB & C'Way 3B (Incl. Provisional PPE License)	0		08-Sep-23		10-Jan-25		02-Jun-25*	-143	-143	-10
Stage Keydates											
KD01	Compl Dsgn Coor/Subm and obtn NNO for L1 Contr Bsmt constn wrks	0		20-Jul-19		20-Jul-19		20-Jul-19 A		0	0
KD06	PC for Fountain Related Plantroom(s) (allow access to Project Contractor)	0		01-Apr-21		07-Jun-22		31-Oct-22*	-146	-146	-33
KD03	OBTAIN OP for Lyric Theatre & Extended Basement	0		12-Dec-22		10-Sep-24		24-Jan-25*	-136	-136	-8
KD14	Complete U/G road and the associated plantrooms at Zone 3A&3B Integrated Basement	0		04-Aug-22		26-Sep-24		13-Feb-25*	-140	-140	-8
KD02	Obtain BA14 Acknowledge from BD for M+ Day2 A&A Works	0		12-Dec-22		08-Nov-24		26-Mar-25*	-138	-138	-8
CMWP - Summary Program - Level 1											
SUM10	[LoE] CC_B Lyric Theatre - Substructure RC Structural Concrete	0			06-May-20	22-Jan-22	06-May-20 A	22-Jan-22 A		0	0
SUM30	[LoE] CC_H - Vibration Isolation Spring System Remaining as of 30Apr2020 (AS=30Sep19)	0			09-May-20	10-Feb-21	09-May-20 A	10-Feb-21 A		0	0
SUM25	[LoE] CC_E - DCS Cofferdam A Works & Obtain BA14	289			23-Jun-20	23-May-23	23-Jun-20 A	26-Oct-23	-75	-111	-22
SUM24	[LoE] CC_D - Remaining Works for M+ Promenade South	170			18-Feb-21	13-Jan-23	18-Feb-21 A	12-May-23	-87	-87	-6
SUM21	[LoE] CC_C - LT EVA1 & EVA2	605			12-Apr-21	09-Sep-24	12-Apr-21 A	17-Dec-24	129	-77	-7
SUM27	[LoE] CC_G Extended Basement - ABWF Works (Incl. Deferred Areas Under Deck)	453			15-May-21	02-Feb-24	15-May-21 A	22-Apr-24	156	-58	0
SUM28	[LoE] CC_G Extended Basement - MEP 1st Fix to Final Fix (Incl. Deferred Areas Under Deck)	435			17-May-21	12-Jan-24	17-May-21 A	27-Mar-24	-17	-58	0
SUM14	[LoE] CC_B Lyric Theatre - ABWF Work Including Theatres (Exd. Punch List Works)	707			28-May-21	14-Oct-24	28-May-21 A	28-Feb-25	-38	-111	-7
SUM35	[LoE] CC_J - M+ Day 2 Works (excl. connections to M+ and SZ_1 FS Changeover)	592			03-Jun-21	25-Jun-24	03-Jun-21 A	08-Oct-24	-66	-87	-9
SUM23	[LoE] CC_C - Artist SQ. Bridge (ASB_1/2/3; ASB_3; P31_2; P34_2; AS_1/2; ASB-6/P31 EVA)	483			21-Jun-21	22-May-24	21-Jun-21 A	09-Jul-24	46	-33	0
SUM15	[LoE] CC_B Lyric Theatre - MEP 1st to Final Fix (Excl. TH SYS done by SVE)	725			22-Jun-21	04-Nov-24	22-Jun-21 A	21-Mar-25	-74	-111	-7
SUM11	[LoE] CC_B Lyric Theatre - Superstructure RC Structural Concrete	308			02-Jul-21	22-Jul-23	02-Jul-21 A	17-Nov-23	-41	-87	-7
SUM22	[LoE] CC_C - HoR Development (P32-1, P29-1, P31-EVA)	483			03-Aug-21	17-Apr-24	03-Aug-21 A	09-Jul-24	46	-58	0
SUM31	[LoE] CC_I Carriageway 3B - ABWF Works	240			12-Aug-21	01-Apr-23	12-Aug-21 A	29-Jul-23	343	-94	0
SUM42	[LoE] CC_E - DCS Outside of Cofferdam A Works (Connect DIA1,600 & Remove Temp O'fall)	331			08-Sep-21	29-Sep-23	08-Sep-21 A	14-Dec-23	-42	-60	-5
SUM32	[LoE] CC_I Carriageway 3B - MEP Works (1st Fix to Final Fix)	209			22-Mar-22	13-Feb-23	15-Sep-21 A	21-Jun-23	173	-104	-5
SUM40	[LoE] CC_N Lifts & Escalators	457			14-Dec-21	02-Feb-24	14-Dec-21 A	26-Apr-24	27	-62	0
SUM41	[LoE] CC_B Lyric Theatre - Structural Steel by CSD	371			04-Mar-22	20-Oct-23	11-Mar-22 A	02-Feb-24	-68	-86	-8
SUM17	[LoE] CC_B Lyric Theatre - TH Systems (by SVE) Incl. T&C, Precom. & Commissioning	732			30-Aug-22	25-Nov-24	17-Oct-22	16-Apr-25	-74	-111	-7
SUM26	[LoE] CC_F - Mods to Existing Pump Cell Civil & MEP Works (Excl. Options 2 Add. Pumps)	150			01-Mar-22	26-Sep-22	17-Oct-22	25-Apr-23	53	-162	-14
SUM12	[LoE] CC_B Lyric Theatre - EWS Weather Tight Type	269			25-Jun-22	09-Sep-23	05-Dec-22	01-Dec-23	6	-63	0
SUM20	[LoE] CC_C - LT Promenade & Pocket Square Bridge	520			04-Aug-22	31-Jul-24	31-Dec-22	02-Dec-24	-63	-93	-22
SUM13	[LoE] CC_B Lyric Theatre - EWS Non-Weather Tight Type 4.1 & 4.3	293			23-Mar-23	25-Mar-24	14-Jun-23	13-Jul-24	16	-77	-7
SUM29	[LoE] CC_G Extended Basement - T&C	243			03-Jan-23	02-Feb-24	24-Jun-23	22-Apr-24	-17	-58	0
SUM33	[LoE] CC_I Underpass 3B & Associated Area - T&C	171			13-Apr-23	25-Oct-23	02-Aug-23	01-Mar-24	23	-101	-7
SUM39	[LoE] CC_K - Water Main at Promenade	143			24-May-23	08-Jan-24	27-Oct-23	27-Apr-24	-65	-83	-22
SUM16	[LoE] CC_B Lyric Theatre - T&C (Excluding Non-FSD ELV & Electrical)	136			12-Dec-23	11-Jun-24	16-Apr-24	26-Sep-24	-29	-90	-7
SUM18	[LoE] CC_B Lyric Theatre, EB, C'Way 3B - Stat. Insp. & Approval (from Form 314/501 to BD OP)	98			17-May-24	10-Sep-24	27-Sep-24	24-Jan-25	-111	-111	-7
SUM38	[LoE] CC_J - M+ Day 2 FS Changeover in 3A SZ_1, Connections to M+, Integrated T&C	51			29-Jul-24	26-Sep-24	09-Dec-24	13-Feb-25	-111	-111	-7
SUM34	[LoE] CC_J Carriageway 3A - Stat. Insp. & Approvals (from Form 314A to BA14)	56			02-Sep-24	08-Nov-24	16-Jan-25	26-Mar-25	-111	-111	-7



Gammon

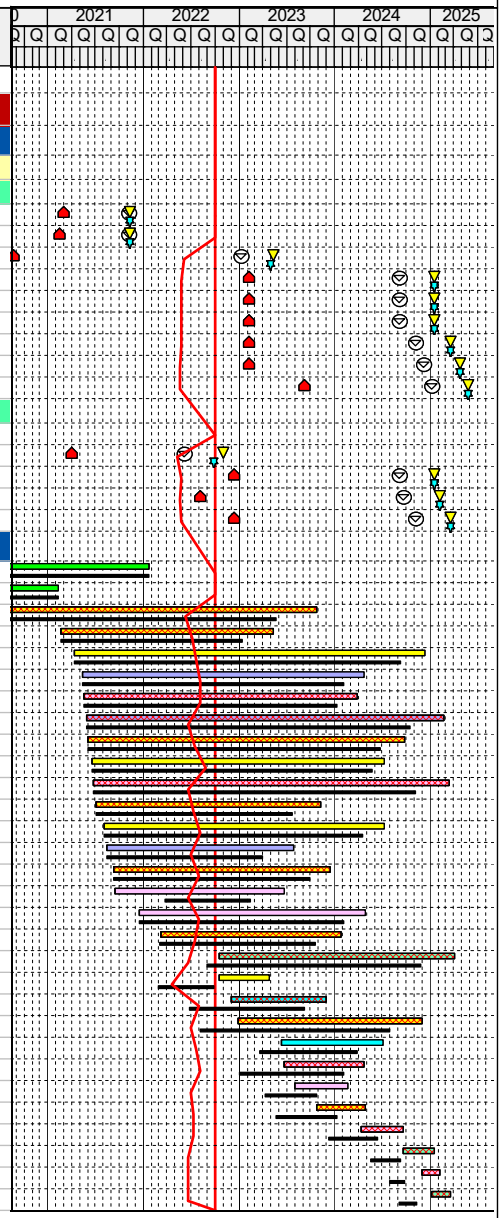
Base Line ACT
Rev_0 KD
Base Line MS
Milestone
Current - Other Works
Current - Struct Works
Current - MEP Works
Current - ABWF Works
Current - Facade Works
Critical Works

L2 CMWP_R02_07 - IFA on 27Apr22 - ***LIVE*** (24th UPD; DD = 30Sep2022)

Date	Revision	Checked	Approved
11-Oct-22	CMWP Rev_2_07 - 24th Update DD 30Sep22	NS	IH

TASK filter: L2 UPD: Level 1 Prg [after compression].

ID	Activity	RD	BL_Rev_00 Start	BL_Rev_00 Finish	BL_Rev_02 Start	BL_Rev_02 Finish	Start	Finish	LoE SUMM TF (approx)	BL_R2 VAR	LM VAR
	*L2 CMWP_R02_07 - IFA on 27Apr22 - ***LIVE*** (24th UPD; DD = 30Sep2022)*										
	GENERAL & PRELIMINARIES										
	Contract Significant Dates										
	Commencement & Completion Dates - CMWP_Rev_01										
	Section Keydates										
KD05A	Complete Required Pedestrian Access Corridor and Floor Finishes at AURW	0		28-Feb-21		12-Nov-21		12-Nov-21 A		0	0
KD05B	Complete Required Pedestrian Access Corridor & associated top slab at Avenue Level [if instructed]	0		14-Feb-21		12-Nov-21		12-Nov-21 A		0	0
KD05	PC for HO of the Remaining Works for M+ Promenade South	0		24-Aug-20		13-Jan-23		12-May-23*	-119	-119	-9
KD08	PC for HO Loc ICT/Risers Rms to APC for ICT Sys Instn Wrks	0		10-Feb-23		10-Sep-24		16-Jan-25*	-128	-128	0
KD10	PC for HO of ASDA, Lyric Theatre Promenade South to Authority	0		10-Feb-23		10-Sep-24		16-Jan-25*	-128	-128	0
KD09	PC for HO of RDE areas for Tenancy Fit-out Wrks	0		10-Feb-23		10-Sep-24		16-Jan-25*	-128	-128	0
KD11	PC for HO of Extended Basement for HO to Authority & HO of Carriageway to Relevant Govt Authority	0		10-Feb-23		12-Nov-24		21-Mar-25*	-129	-129	0
KD07	PRACTICAL COMPLETION for C'Way 3A (M+ Day 2 Works)	0		10-Feb-23		09-Dec-24		22-Apr-25*	-102	-134	0
KD13	PRACTICAL COMPLETION for Lyric Theatre, EB & C'Way 3B (Incl. Provisional PPE License)	0		08-Sep-23		10-Jan-25		23-May-25*	-133	-133	0
	Stage Keydates										
KD01	Compl Dsgn Coor/Subm and obtn NNO for L1 Contr Bsmt constn wrks	0		20-Jul-19		20-Jul-19		20-Jul-19 A		0	0
KD06	PC for Fountain Related Plantroom(s) (allow access to Project Contractor)	0		01-Apr-21		07-Jun-22		31-Oct-22*	-146	-146	-33
KD03	OBTAIN OP for Lyric Theatre & Extended Basement	0		12-Dec-22		10-Sep-24		16-Jan-25*	-128	-128	0
KD14	Complete U/G road and the associated plantrooms at Zone 3A&3B Integrated Basement	0		04-Aug-22		26-Sep-24		05-Feb-25*	-132	-132	0
KD02	Obtain BA14 Acknowledge from BD for M+ Day2 A&A Works	0		12-Dec-22		08-Nov-24		18-Mar-25*	-130	-130	0
	CMWP - Summary Program - Level 1										
SUM10	[LoE] CC_B Lyric Theatre - Substructure RC Structural Concrete	0			06-May-20	22-Jan-22	06-May-20 A	22-Jan-22 A		0	0
SUM30	[LoE] CC_H - Vibration Isolation Spring System Remaining as of 30Apr2020 (AS=30Sep19)	0			09-May-20	10-Feb-21	09-May-20 A	10-Feb-21 A		0	0
SUM25	[LoE] CC_E - DCS Cofferdam A Works & Obtain BA14	289			23-Jun-20	23-May-23	23-Jun-20 A	26-Oct-23	-75	-111	-22
SUM24	[LoE] CC_D - Remaining Works for M+ Promenade South	170			18-Feb-21	13-Jan-23	18-Feb-21 A	12-May-23	-87	-87	-6
SUM21	[LoE] CC_C - LT EVA1 & EVA2	598			12-Apr-21	09-Sep-24	12-Apr-21 A	09-Dec-24	129	-70	0
SUM27	[LoE] CC_G Extended Basement - ABWF Works (Incl. Deferred Areas Under Deck)	453			15-May-21	02-Feb-24	15-May-21 A	22-Apr-24	156	-58	0
SUM28	[LoE] CC_G Extended Basement - MEP 1st Fix to Final Fix (Incl. Deferred Areas Under Deck)	435			17-May-21	12-Jan-24	17-May-21 A	27-Mar-24	-17	-58	0
SUM14	[LoE] CC_B Lyric Theatre - ABWF Work Including Theatres (Exd. Punch List Works)	700			28-May-21	14-Oct-24	28-May-21 A	20-Feb-25	-31	-104	0
SUM35	[LoE] CC_J - M+ Day 2 Works (excl. connections to M+ and SZ_1 FS Changeover)	583			03-Jun-21	25-Jun-24	03-Jun-21 A	26-Sep-24	-57	-78	0
SUM23	[LoE] CC_C - Artist SQ. Bridge (ASB_1/2/3; ASB_3; P31_2; P34_2; AS_1/2; ASB-6/P31 EVA)	483			21-Jun-21	22-May-24	21-Jun-21 A	09-Jul-24	46	-33	0
SUM15	[LoE] CC_B Lyric Theatre - MEP 1st to Final Fix (Excl. TH SYS done by SVE)	718			22-Jun-21	04-Nov-24	22-Jun-21 A	13-Mar-25	-67	-104	0
SUM11	[LoE] CC_B Lyric Theatre - Superstructure RC Structural Concrete	301			02-Jul-21	22-Jul-23	02-Jul-21 A	09-Nov-23	-34	-80	0
SUM22	[LoE] CC_C - HoR Development (P32-1, P29-1, P31-EVA)	483			03-Aug-21	17-Apr-24	03-Aug-21 A	09-Jul-24	46	-58	0
SUM31	[LoE] CC_I Carriageway 3B - ABWF Works	240			12-Aug-21	01-Apr-23	12-Aug-21 A	29-Jul-23	343	-94	0
SUM42	[LoE] CC_E - DCS Outside of Cofferdam A Works (Connect DIA1,600 & Remove Temp O'fall)	331			08-Sep-21	29-Sep-23	08-Sep-21 A	14-Dec-23	-42	-60	-5
SUM32	[LoE] CC_I Carriageway 3B - MEP Works (1st Fix to Final Fix)	209			22-Mar-22	13-Feb-23	15-Sep-21 A	21-Jun-23	173	-104	-5
SUM40	[LoE] CC_N Lifts & Escalators	457			14-Dec-21	02-Feb-24	14-Dec-21 A	26-Apr-24	27	-62	0
SUM41	[LoE] CC_B Lyric Theatre - Structural Steel by CSD	363			04-Mar-22	20-Oct-23	11-Mar-22 A	24-Jan-24	-60	-78	0
SUM17	[LoE] CC_B Lyric Theatre - TH Systems (by SVE) Incl. T&C, Precom. & Commissioning	725			30-Aug-22	25-Nov-24	17-Oct-22	03-Apr-25	-67	-104	0
SUM26	[LoE] CC_F - Mods to Existing Pump Cell Civil & MEP Works (Excl. Options 2 Add. Pumps)	150			01-Mar-22	26-Sep-22	17-Oct-22	25-Apr-23	53	-162	-14
SUM12	[LoE] CC_B Lyric Theatre - EWS Weather Tight Type	269			25-Jun-22	09-Sep-23	05-Dec-22	01-Dec-23	6	-63	0
SUM20	[LoE] CC_C - LT Promenade & Pocket Square Bridge	520			04-Aug-22	31-Jul-24	31-Dec-22	02-Dec-24	-63	-93	-22
SUM13	[LoE] CC_B Lyric Theatre - EWS Non-Weather Tight Type 4.1 & 4.3	286			23-Mar-23	25-Mar-24	14-Jun-23	03-Jul-24	23	-70	0
SUM29	[LoE] CC_G Extended Basement - T&C	243			03-Jan-23	02-Feb-24	24-Jun-23	22-Apr-24	-17	-58	0
SUM33	[LoE] CC_I Underpass 3B & Associated Area - T&C	164			13-Apr-23	25-Oct-23	02-Aug-23	22-Feb-24	30	-94	0
SUM39	[LoE] CC_K - Water Main at Promenade	143			24-May-23	08-Jan-24	27-Oct-23	27-Apr-24	-65	-83	-22
SUM16	[LoE] CC_B Lyric Theatre - T&C (Excluding Non-FSD ELV & Electrical)	131			12-Dec-23	11-Jun-24	13-Apr-24	17-Sep-24	-22	-83	0
SUM18	[LoE] CC_B Lyric Theatre, EB, C'Way 3B - Stat. Insp. & Approval (from Form 314/501 to BD OP)	98			17-May-24	10-Sep-24	19-Sep-24	16-Jan-25	-104	-104	0
SUM38	[LoE] CC_J - M+ Day 2 FS Changeover in 3A SZ_1, Connections to M+, Integrated T&C	51			29-Jul-24	26-Sep-24	30-Nov-24	05-Feb-25	-104	-104	0
SUM34	[LoE] CC_J Carriageway 3A - Stat. Insp. & Approvals (from Form 314A to BA14)	56			02-Sep-24	08-Nov-24	08-Jan-25	18-Mar-25	-104	-104	0



Gammon

Base Line ACT
Rev_0 KD
Base Line MS
Milestone
Current - Other Works
Current - Struct Works
Current - MEP Works
Current - ABWF Works
Current - Facade Works
Critical Works

L2 CMWP_R02_07 - IFA on 27Apr22 - ***LIVE*** (24th UPD; DD = 30Sep2022)

Date	Revision	Checked	Approved
11-Oct-22	CMWP Rev_2_07 - 24th Update DD 30Sep22	NS	IH

C. Action and Limit Levels for Construction Phase

Air Quality

The Action and Limit Levels for 1-hour and 24-hour TSP for the monitoring station are presented in following tables:

Table C-1: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level (mg/m^3)	Limit Level (mg/m^3)
AM1	273.7	500
AM2	274.2	500

Table C-2: Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM1	143.6	260
AM2	151.1	260

Noise

The Action and Limit Levels for Noise for the monitoring stations are presented in following table:

Table C-3: Action and Limit Levels for Construction Noise

Time Period & Monitoring Locations	Action Level	Limit Level
NM1A		
0700-1900 hours on normal weekdays	When one valid documented complaint is received.	75 dB(A)

D. Event and Action Plan for Air Quality, Noise, Landscape and Visual Impact

Air Quality

In case the Action and Limit Levels are not complied during construction stage, the following Event and Action Plan should be followed:

Table D-1: Event and Action Plan for Air Quality

Event	Action			
	ET	IEC	WKCDA	Contractor
Action Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and WKCDA; 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.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and WKCDA; 3. Advise the WKCDA 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 WKCDA; 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. Monitor the 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 WKCDA within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform WKCDA, 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 WKCDA 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 WKCDA on the effectiveness of the proposed remedial measures; 5. Monitor the 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 three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
2. Exceedance for two or more consecutive samples	1. Notify IEC, WKCDA, 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 WKCDA to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCDA informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst WKCDA, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCDA accordingly; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation 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 three 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 WKCDA until the exceedance is abated.

Construction Noise

In case the Action and Limit Levels are not complied during construction stage, the following Event and Action Plan should be followed:

Table D-2: Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	WKCDA	Contractor
Action Level	1. Notify WKCDA, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, WKCDA and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the WKCDA accordingly; 3. Advise the WKCDA on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures.	1. Submit noise mitigation proposals to IEC and WKCDA; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, WKCDA, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and WKCDA on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCDA informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst WKCDA, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCDA accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and WKCDA within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the WKCDA until the exceedance is abated.

Landscape and Visual Impact

In case of non-compliance of landscape and visual impacts, procedures in accordance with the Event and Action Plan should be followed:

Table D-3: Event and Action Plan for Landscape and Visual Impact

Event	Action			
	ET	IEC	WKCDA	Contractor
Design Check	1. Design check to make sure the design complies with all the proposed mitigation measures in the EIA report; 2. Prepare and submit report.	1. Check report submitted by ET; 2. Recommend remedial design if necessary.	1. Undertake remedial design if necessary.	-
Non-conformity on one occasion	1. Identify source of non-conformity; 2. Report to IEC and WKCDA; 3. Discuss remedial actions with IEC, WKCDA and Contractor; 4. Monitor remedial actions until rectification has been completed.	1. Check and verify source of non-conformity; 2. Discuss remedial actions with ET and Contractor; 3. Advise WKCDA on effectiveness of proposed remedial actions; 4. Check implementation of remedial actions.	1. Notify Contractor; 2. Ensure remedial actions are properly implemented.	1. Amend working method as necessary; 2. Rectify damage and undertake necessary replacement and remedial actions.
Repeated non-conformity	1. Identify source of non-conformity; 2. Report to IEC and WKCDA; 3. Increase monitoring frequency; 4. Discuss remedial actions with IEC, WKCDA and Contractor; 5. Monitor remedial actions until rectification has been completed; 6. If non-conformity rectified, reduce monitoring frequency back to normal.	1. Check and verify source of non-conformity; 2. Check Contractor's working method; 3. Discuss remedial actions with ET and Contractor; 4. Advise WKCDA on effectiveness of proposed remedial actions; 5. Supervise implementation of remedial actions.	1. Notify Contractor; 2. Ensure remedial actions are properly implemented.	1. Amend working method as necessary; 2. Rectify damage and undertake necessary replacement and remedial actions.

E. Monitoring Schedule

October 2022

September '22

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

November '22

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

December '22

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5 Lyric Landscape & Visual Inspection	6 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	7	8
9	10	11	12 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	13	14	15
16	17	18 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	19	20 Lyric Landscape & Visual Inspection	21	22
23	24 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	25	26	27	28 AM1, AM2 - 24hrTSP, 1hr TSP x3	29
30	31	Notes AM1 - International Commerce Centre (ICC) AM2 - The Harbourside Tower 1 - Ground Floor NM1A - International Commerce Centre (ICC)				

November 2022

October '22

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

December '22

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

January '23

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	4	5
6	7	8	9 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	10	11	12
13	14	15 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	16	17	18	19
20	21 AM1, AM2 - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	22	23	24	25 AM1, AM2 - 24hrTSP, 1hr TSP x3	26
27	28	29	30			
		Notes AM1 - International Commerce Centre (ICC) AM2 - The Harbourside Tower 1 - Ground Floor NM1A - International Commerce Centre (ICC)				

F. Calibration Certifications

High-Volume TSP Sampler
5-Point Calibration Record

Location	:	AM1(ICC)
Calibrated by	:	K.T.Ho
Date	:	13/09/2022

Sampler

Model	:	TE-5170
Serial Number	:	S/N 0767

Calibration Orifice and Standard Calibration Relationship

Serial Number	:	2454
Service Date	:	27 December 2021
Slope (m)	:	2.07035
Intercept (b)	:	-0.03737
Correlation Coefficient(r)	:	0.99990

Standard Condition

Pstd (hpa)	:	1013
Tstd (K)	:	298.18

Calibration Condition

Pa (hpa)	:	1005
Ta(K)	:	305

Resistance Plate		dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1	18 holes	10.2	3.160	1.544	60	59.37
2	13 holes	7.6	2.728	1.336	50	49.47
3	10 holes	6.0	2.424	1.189	40	39.58
4	7 holes	4.0	1.979	0.974	28	27.70
5	5 holes	2.6	1.595	0.789	18	17.81

Notes:Z=SQRT{dH(Pa/Pstd)(Tstd/Ta)}, X=Z/m-b ,Y(Corrected Flow)=IC*{SQRT(Pa/Pstd)(Tstd/Ta)}

Sampler Calibration Relationship

Slope(m):55.898 Intercept(b):-26.276 Correlation Coefficient(r): 0.9991

Checked by:_____ Date: 16/09/2022
Magnum Fan

TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	December 27, 2021	**Rootsmeter S/N:** 438320	**Ta:** 295	°K	
Operator:	Jim Tisch		**Pa:** 740.4	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **2454**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4130	3.2	2.00
2	3	4	1	0.9970	6.4	4.00
3	5	6	1	0.8950	7.9	5.00
4	7	8	1	0.8480	8.8	5.50
5	9	10	1	0.7060	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9799	0.6935	1.4029	0.9957	0.7047	0.8927
0.9756	0.9786	1.9841	0.9914	0.9943	1.2624
0.9736	1.0879	2.2183	0.9893	1.1054	1.4114
0.9724	1.1467	2.3265	0.9881	1.1652	1.4803
0.9673	1.3700	2.8059	0.9828	1.3921	1.7853
QSTD	**m=**	**2.07035**	**QA**	**m=**	**1.29642**
	b=	**-0.03737**		**b=**	**-0.02378**
	r=	**0.99990**		**r=**	**0.99990**

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

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

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

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

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

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: **HK2153962**
CLIENT	: **ENVIROTECH SERVICES CO.**		
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 31-DEC-2021
		DATE OF ISSUE	: 13-JAN-2022
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

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

Signatories	*Position*
Richard Fung	Managing Director

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

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

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group
11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 www.alsglobal.com

WORK ORDER : HK2153962
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2153962-001	S/N: 831656	Equipments	31-Dec-2021	S/N: 831656

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-5R
Serial No.	831656
Equipment Ref:	Nil
Job Order	HK2153962

Standard Equipment:

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

Equipment Verification Results:

Verification Date: 7 January 2022

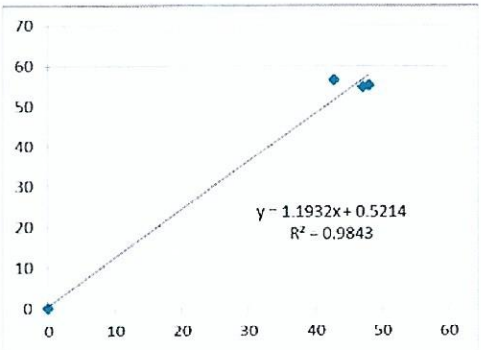
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr	11:55 ~ 13:55	18.6	1021.6	55.1	5760	48.3
2hr27min	14:23 ~ 16:50	18.6	1021.6	54.8	6913	47.3
2hr09min	16:50 ~ 18:59	18.6	1021.6	56.5	5506	42.7

Linear Regression of Y or X

Slope (K-factor): 1.1932 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9921

Date of Issue 12 January 2022



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 1.1932 (µg/m^3)/CPM should be applied for TSP monitoring

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

Operator : Martin Li Signature : Date : 12 January 2022

QC Reviewer : Ben Tam Signature : Date : 12 January 2022

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location : Gold King Industrial Building, Kwai Chung
Location ID : Calibration Room

Date of Calibration: 5-Nov-21
Next Calibration Date: 5-Feb-22

CONDITIONS

Sea Level Pressure (hPa)	1012.5	Corrected Pressure (mm Hg)	759.37
Temperature (°C)	25.6	Temperature (K)	29

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6.2	6.2	12.4	1.675	52	51.93
13	5	5	10.0	1.504	48	47.93
10	3.9	3.9	7.8	1.329	42	41.94
8	2.5	2.5	5.0	1.065	36	35.95
5	1.0	1.0	2.0	0.675	28	27.96

LINEAR REGRESSION

Slope = 24.2092
Intercept = 10.8881
Corr. coeff. = 0.9959

Calculations :

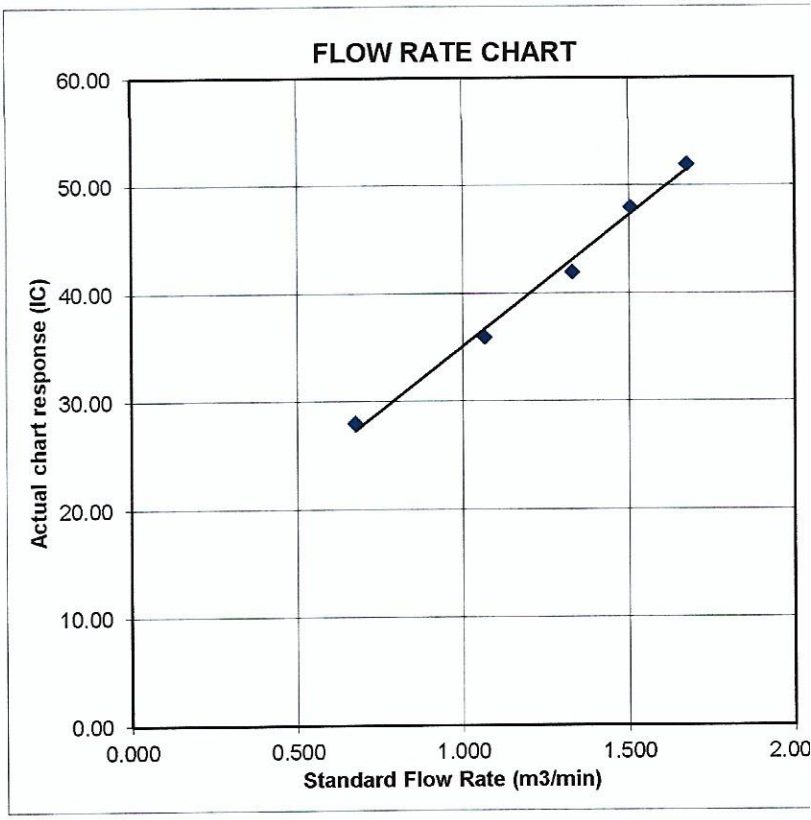
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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:
January 19, 2022

Certificate of Calibration

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

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

Data Tabulation

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

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.
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www.tisch-env.com
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FAX: (513)467-9009

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	:	**HK2144583**
CLIENT	: **ENVIROTECH SERVICES CO.**			
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	:	1
		DATE RECEIVED	:	2-NOV-2021
		DATE OF ISSUE	:	11-NOV-2021
PROJECT	: ----	NO. OF SAMPLES	:	1
		CLIENT ORDER	:	----

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

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

Signatories	*Position*
Richard Fung	Managing Director

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

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

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

11/F. Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax. +852 2610 2021 **www.alsglobal.com**

WORK ORDER : HK2144583
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2144583-001	S/N: 245834	Equipments	02-Nov-2021	245834

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	245834
Equipment Ref:	Nil
Job Order	HK2144583

Standard Equipment:

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

Equipment Verification Results:

Verification Date: 5 November 2021

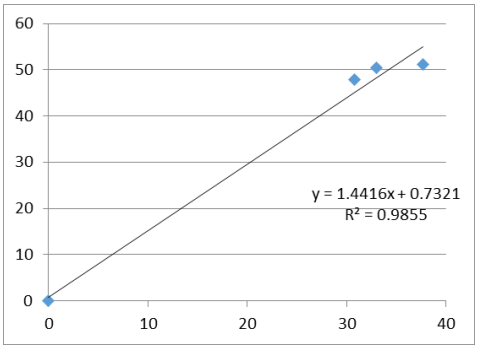
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr01min	09:11 ~ 11:12	25.6	1012.5	51.2	4570	37.7
2hr01min	11:15 ~ 13:16	25.6	1012.5	47.8	3735	30.8
2hr02min	13:20 ~ 15:22	25.6	1012.5	50.4	4022	33.0

Linear Regression of Y or X

Slope (K-factor): 1.4416 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9927

Date of Issue 8 November 2021



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 1.4416 (µg/m^3)/CPM should be applied for TSP monitoring

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

Operator : Fai So Signature : Date : 8 November 2021

QC Reviewer : Ben Tam Signature : Date : 8 November 2021

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.2	6.2	12.4	1.675	52	51.93	Slope = 24.2092
13	5	5	10.0	1.504	48	47.93	Intercept = 10.8881
10	3.9	3.9	7.8	1.329	42	41.94	Corr. coeff. = 0.9959
8	2.5	2.5	5.0	1.065	36	35.95	
5	1.0	1.0	2.0	0.675	28	27.96	

Calculations :

Qstd = 1/m[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)

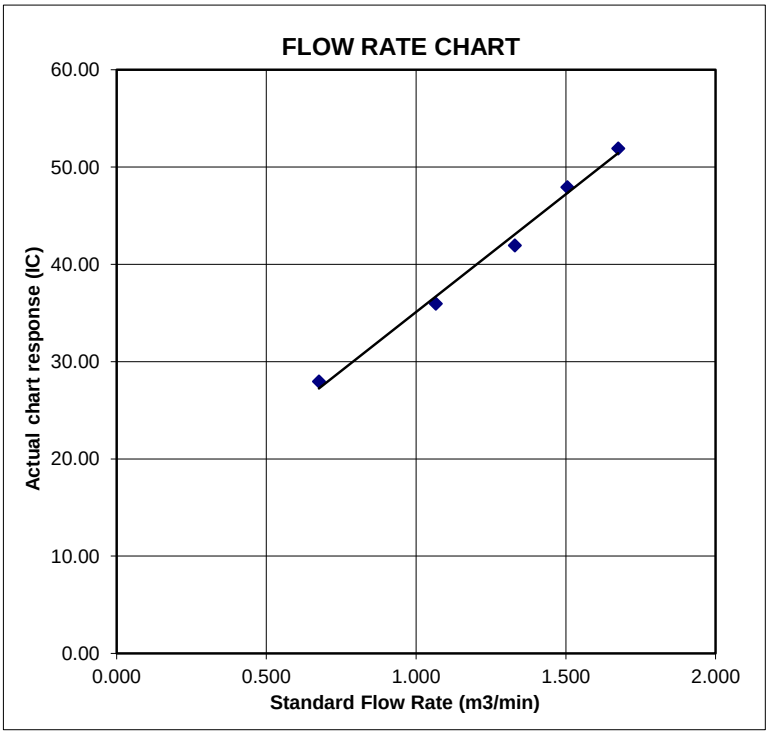
m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



TISCH Environmental

RECALIBRATION DUE DATE:
January 19, 2022

Certificate of Calibration

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

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

Data Tabulation

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

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

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ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: **HK2141279**
CLIENT	: **ENVIROTECH SERVICES CO.**		
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 11-OCT-2021
		DATE OF ISSUE	: 21-OCT-2021
PROJECT	: ---	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

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

Signatories	*Position*
Richard Fung	Managing Director

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

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

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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 : HK2141279
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2141279-001	S/N: 436553	Equipments	11-Oct-2021	S/N: 436553

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD-3B
Serial No.	436553
Equipment Ref:	Nil
Job Order	HK2141279

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	2 August 2021

Equipment Verification Results:

Verification Date: 18 October 2021

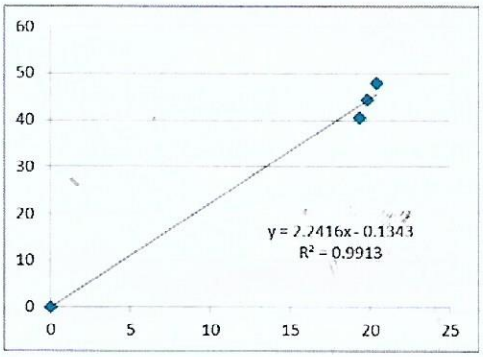
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m³ (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr01min	09:16 ~ 11:17	23.9	1018.3	40.5	2344	19.3
2hr01min	11:20 ~ 13:21	23.9	1018.3	44.4	2391	19.8
2hr	13:25 ~ 15:25	23.9	1018.3	48.0	2447	20.4

Linear Regression of Y or X

Slope (K-factor): 2.2416 (μg/m³)/CPM

Correlation Coefficient (R) 0.9956

Date of Issue 20 October 2021



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.2416 (μg/m³)/CPM should be applied for TSP monitoring

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

Operator : Fai So Signature : Date : 20 October 2021

QC Reviewer : Ben Tam Signature : Date : 20 October 2021

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	2-Aug-21
Location ID :	Calibration Room	Next Calibration Date:	2-Nov-21

CONDITIONS

Sea Level Pressure (hPa)	998.3	Corrected Pressure (mm Hg)	748.725
Temperature (°C)	30.0	Temperature (K)	303

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected	LINEAR REGRESSION
18	6.4	6.4	12.8	1.677	50	49.22	Slope = 30.5541
13	5.3	5.3	10.6	1.527	48	47.25	Intercept = -0.5839
10	4.4	4.4	8.8	1.391	44	43.31	Corr. coeff. = 0.9906
8	2.6	2.6	5.2	1.071	31	30.51	
5	1.6	1.6	3.2	0.841	26	25.59	

Calculations :

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

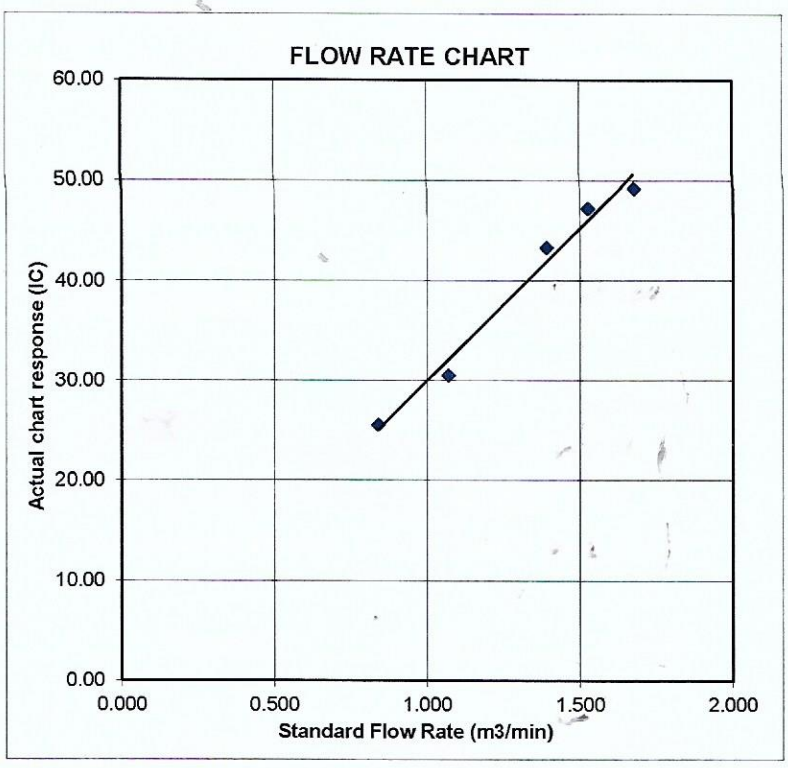
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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:
January 19, 2022

Certificate of Calibration

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

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

Data Tabulation

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

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

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ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: **HK2208527**
CLIENT	: **ENVIROTECH SERVICES CO.**		
ADDRESS	: RM113, 1/F, MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T. HONG KONG	SUB-BATCH	: 1
		DATE RECEIVED	: 7-MAR-2022
		DATE OF ISSUE	: 15-MAR-2022
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ----

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

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

Signatories	*Position*
Richard Fung	Managing Director

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

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

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group
11/F Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Tel. +852 2610 1044 Fax +852 2610 2021 www.alsglobal.com

WORK ORDER : HK2208527
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2208527-001	S/N: 326285	Equipments	07-Mar-2022	S/N: 326285

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD – 3B
Serial No.	326285
Equipment Ref:	NA
Job Order	HK2208527

Standard Equipment:

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

Equipment Verification Results:

Verification Date: 8 March 2022

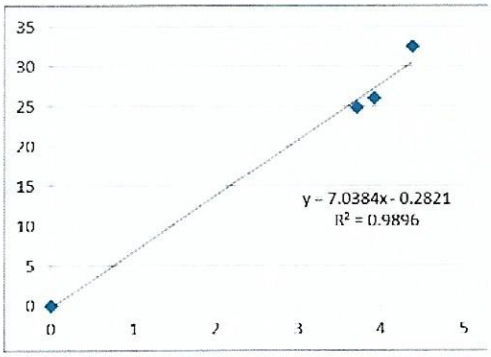
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr01mins	09:31 ~ 11:32	19.5	1012.7	26.1	475	3.9
2hr01mins	11:34 ~ 13:35	19.5	1012.7	24.9	450	3.7
2hr03mins	13:37 ~ 15:40	19.5	1012.7	32.5	539	4.4

Linear Regression of Y or X

Slope (K-factor): 7.0384 (µg/m^3)/CPM

Correlation Coefficient (R) 0.9947

Date of Issue 10 March 2022



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 7.0384 (µg/m^3)/CPM should be applied for TSP monitoring

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

Operator : Martin Li Signature : Date : 10 March 2022

QC Reviewer : Ben Tam Signature : Date : 10 March 2022

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

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

CONDITIONS

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

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	5.8	5.8	11.6	1.713	54	54.13
13	4.7	4.7	9.4	1.543	49	49.12
10	3.6	3.6	7.2	1.351	44	44.11
8	2.3	2.3	4.6	1.080	37	37.09
5	1.4	1.4	2.8	0.844	30	30.07

LINEAR REGRESSION

Slope = 27.3242
Intercept = 7.2177
Corr. coeff. = 0.9997

Calculations :

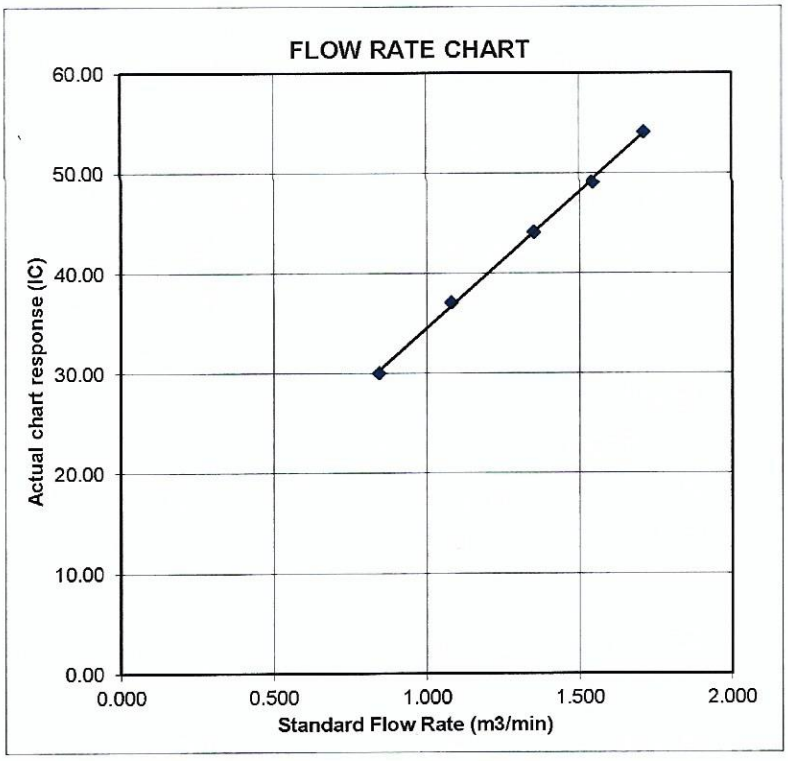
Qstd = 1/m[Sqrt(H20(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

Certificate of Calibration

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

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

Data Tabulation

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

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

RECALIBRATION

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

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

www.tisch-env.co
TOLL FREE: (877)263-76
FAX: (513)467-90

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

SUB-CONTRACTING REPORT

CONTACT	: MR K.W. FAN	WORK ORDER	: **HK2219480**
CLIENT	: ENVIROTECH SERVICES CO.		
ADDRESS	: RM 712, 7/F, MY LOFT 9 HOI WING ROAD, TUEN MUN, N.T., HK	SUB-BATCH	: 1
		DATE RECEIVED	: 26-MAY-2022
		DATE OF ISSUE	: 7-JUN-2022
PROJECT	: ----	NO. OF SAMPLES	: 1
		CLIENT ORDER	: ---

General Comments

- **Sample(s) was/ were submitted by client. Sample(s) arrived laboratory in ambient condition. The result(s) related only to the item(s) tested.**
- **Sample information (Project name, Sample ID, Sampling date/time, etc.) is provided by client.**
- **Calibration was subcontracted to and analysed by Action-United Environmental Services & Consulting.**

Signatories

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

Signatories	*Position*
Richard Fung	Managing Director

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

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

ALS Technichem (HK) Pty Ltd
Part of the ALS Laboratory Group
11/F Chung Shun Knitting Centre 1 - 3 Wing Yip Street Kwai Chung N.T. Hong Kong
Kwai Tsing Hong Kong

WORK ORDER : HK2219480
SUB-BATCH : 1
CLIENT : ENVIROTECH SERVICES CO.
PROJECT : ----

ALS Lab ID	Client's Sample ID	Sample Type	Sample Date	External Lab Report No.
HK2219480-001	S/N: 476664	Equipments	26-May-2022	S/N: 476664

Equipment Verification Report (TSP)

Equipment Calibrated:

Type:	Laser Dust monitor
Manufacturer:	Sibata LD – 3B
Serial No.	476664
Equipment Ref:	NA
Job Order	HK2219480

Standard Equipment:

Standard Equipment:	Higher Volume Sampler (TSP)
Location & Location ID:	AUES office (calibration room)
Equipment Ref:	HVS 018
Last Calibration Date:	27 May 2022

Equipment Verification Results:

Verification Date: 27 May 2022

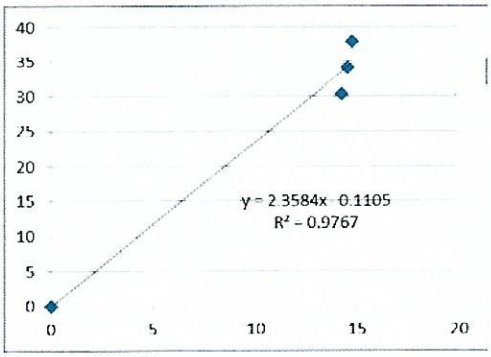
Hour	Time	Mean Temp °C	Mean Pressure (hPa)	Concentration in ug/m^3 (Standard Equipment)	Total Count (Calibrated Equipment)	Count/Minute (Total Count/min)
2hr01mins	09:27 ~ 11:28	27.4	1004.3	38.0	1779	14.8
2hr01mins	11:32 ~ 13:33	27.4	1004.3	30.3	1727	14.2
2hr	13:37 ~ 15:37	27.4	1004.3	34.1	1751	14.6

Linear Regression of Y or X

Slope (K-factor): 2.3584 (μg/m^3)/CPM

Correlation Coefficient (R) 0.9883

Date of Issue 2 June 2022



Remarks:

1. **Strong** Correlation (R>0.8)
2. Factor 2.3584 (μg/m^3)/CPM should be applied for TSP monitoring

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

Operator : Fai So Signature : Date : 2 June 2022

QC Reviewer : Ben Tam Signature : Date : 2 June 2022

TSP SAMPLER CALIBRATION CALCULATION SPREADSHEET

Location :	Gold King Industrial Building, Kwai Chung	Date of Calibration:	27-May-22
Location ID :	Calibration Room	Next Calibration Date:	27-Aug-22

CONDITIONS

Sea Level Pressure (hPa)	1004.3	Corrected Pressure (mm Hg)	753.225
Temperature (°C)	27.4	Temperature (K)	300

CALIBRATION ORIFICE

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

CALIBRATION

Plate No.	H20 (L) (in)	H2O (R) (in)	H20 (in)	Qstd (m3/min)	I (chart)	IC corrected
18	6	6	12.0	1.723	54	53.54
13	5	5	10.0	1.574	48	47.59
10	3.7	3.7	7.4	1.354	44	43.63
8	2.4	2.4	4.8	1.092	36	35.70
5	1.6	1.6	3.2	0.892	28	27.76

LINEAR REGRESSION

Slope =	29.5236
Intercept =	2.4681
Corr. coeff. =	0.9935

Calculations :

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

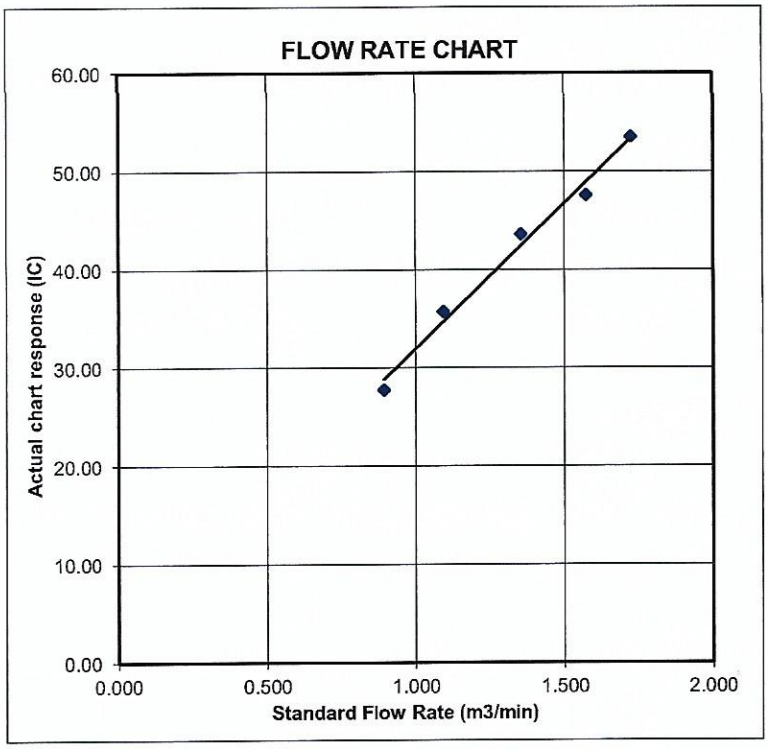
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

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

For subsequent calculation of sampler flow:

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

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



TISCH Environmental

RECALIBRATION DUE DATE:
December 27, 2022

Certificate of Calibration

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

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

Data Tabulation

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

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

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

RECALIBRATION

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

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

www.tisch-env.
TOLL FREE: (877)263-7
FAX: (513)467-9

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

Certificate of Calibration
校正證書

Certificate No. : C216702
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC21-2322) Date of Receipt / 收件日期 : 9 November 2021

Description / 儀器名稱	:	Sound Level Meter
Manufacturer / 製造商	:	Rion
Model No. / 型號	:	NL-52
Serial No. / 編號	:	00710259
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

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

DATE OF TEST / 測試日期 : 20 November 2021

TEST RESULTS / 測試結果

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

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

Tested By 測試 : H T Wong
Assistant Engineer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 22 November 2021

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

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

Certificate of Calibration
校正證書

Certificate No. : C216702
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 the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.

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	C210084
CL281	Multifunction Acoustic Calibrator	AV210017

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	* 96.0	± 1.1

* Out of IEC 61672 Class 1 Spec.

6.1.1.2 After Adjustment

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

6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
30 - 130	L_A	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.1
				114.00		114.1

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

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Certificate No. : C216702
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6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L_A	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	± 0.3

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_A	A	Fast	94.00	63 Hz	67.7	-26.2 ± 1.5
					125 Hz	77.7	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	92.9	-1.1 (+2.1 ; -3.1)
					16 kHz	86.0	-6.6 (+3.5 ; -17.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L_C	C	Fast	94.00	63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.6
					4 kHz	93.2	-0.8 ± 1.6
					8 kHz	91.0	-3.0 (+2.1 ; -3.1)
					16 kHz	84.1	-8.5 (+3.5 ; -17.0)

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Calibration & Testing Laboratory

Certificate of Calibration
校正證書

Certificate No. : C216702
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Remarks : - UUT Microphone Model No. : UC-59 & S/N : 13748

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB	: 63 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	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)

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

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

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

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C217234
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC21-2432) Date of Receipt / 收件日期 : 25 November 2021

Description / 儀器名稱	:	Precision Acoustic Calibrator
Manufacturer / 製造商	:	LARSON DAVIS
Model No. / 型號	:	CAL200
Serial No. / 編號	:	10227
Supplied By / 委託者	:	Envirotech Services Co. Room 113, 1/F, My Loft, 9 Hoi Wing Road, Tuen Mun, New Territories, Hong Kong

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 : 16 December 2021

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results are detailed in the subsequent page(s).

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

Tested By 測試 : Cheuk
K P Cheuk
Project Engineer

Certified By 核證 : K C Lee
Engineer

Date of Issue 簽發日期 : 16 December 2021

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
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Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

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

Certificate of Calibration
校正證書

Certificate No. : C217234
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	C213954
CL281	Multifunction Acoustic Calibrator	AV210017
TST150A	Measuring Amplifier	C201309

4. Test procedure : MA100N.

5. Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.8	± 0.2
114 dB, 1 kHz	113.8	

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Uncertainty of Measured Value (Hz)
1	1.000	± 1

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

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

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

The test equipment used for calibration is traceable to the National Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.
本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗所書面批准。

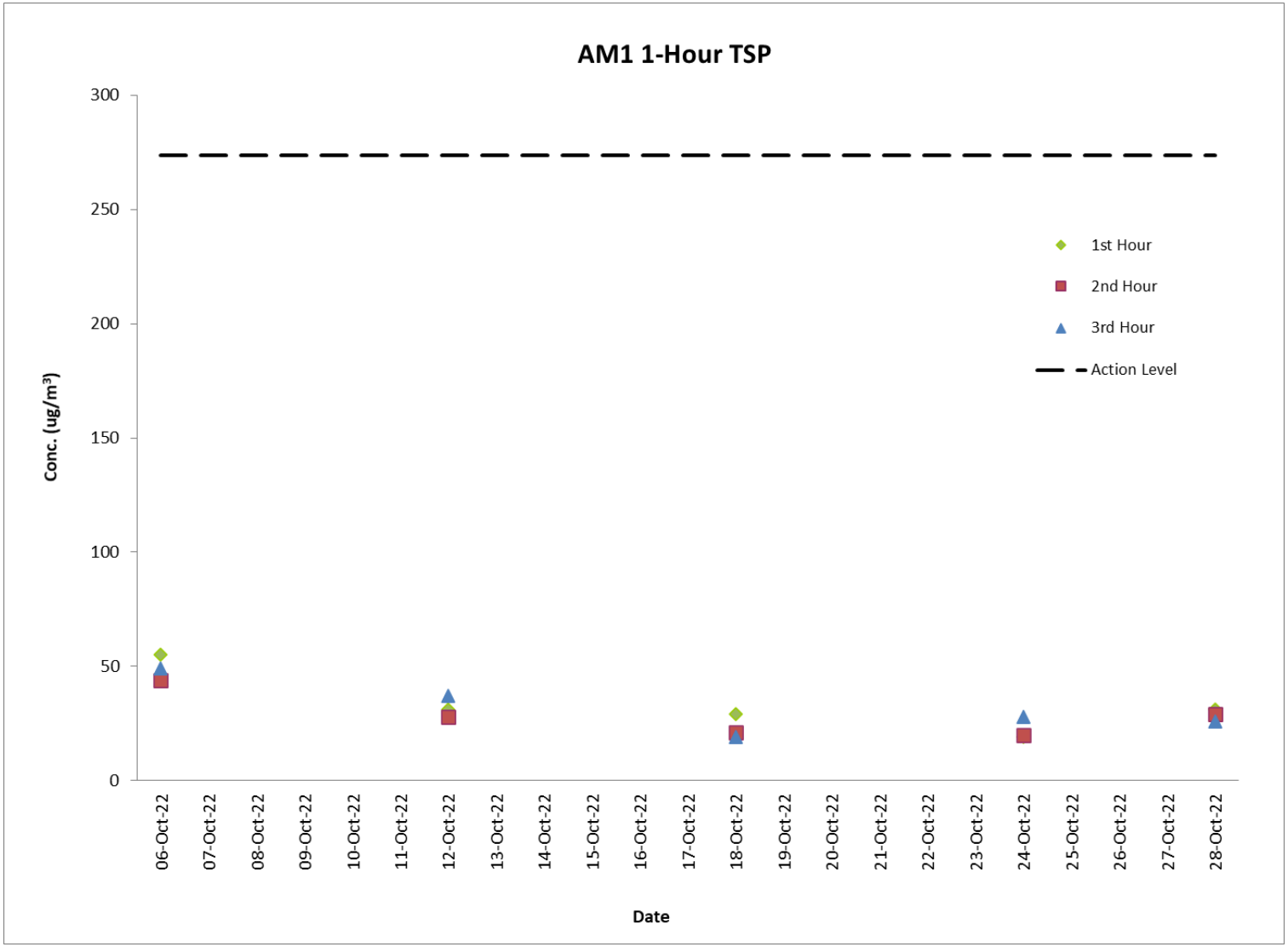
Sun Creation Engineering Limited – Calibration & Testing Laboratory
c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong
輝創工程有限公司 – 校正及檢測實驗所
c/o 香港新界屯門興安里一號四樓
Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com

G. Graphical Plots of the Monitoring Results

Air Quality Monitoring Result at Station AM1 (1-hour TSP)

Date	Weather Condition	Time	Conc. (μg/m^3)			Action Level (μg/m^3)	Limit Level (μg/m^3)
			1st Hour	2nd Hour	3rd Hour		
06-Oct-22	Fine	8:22 - 11:22	55	44	49	273.7	500
12-Oct-22	Sunny	8:22 - 11:22	31	28	37	273.7	500
18-Oct-22	Cloudy	8:33 - 11:33	29	21	19	273.7	500
24-Oct-22	Fine	8:30 - 11:30	19	20	28	273.7	500
28-Oct-22	Sunny	8:28 - 11:28	31	29	26	273.7	500

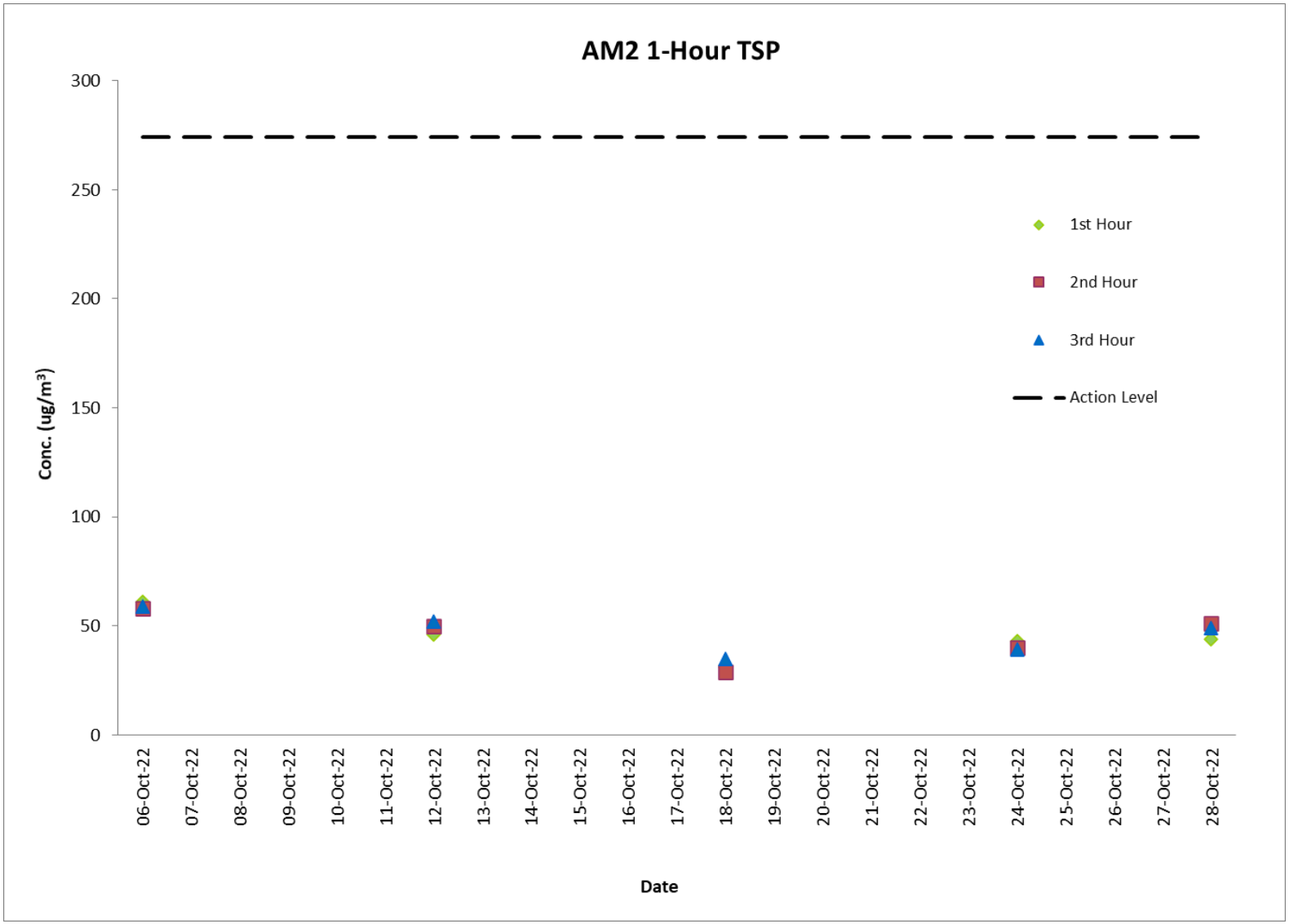
Graphical Presentation of Air Quality Monitoring Result at Station AM1 (1-hour TSP)



Air Quality Monitoring Result at Station AM2 (1-hour TSP)

Date	Weather Condition	Time	Conc. (µg/m^3)			Action Level (µg/m^3)	Limit Level (µg/m^3)
			1st Hour	2nd Hour	3rd Hour		
06-Oct-22	Fine	8:34 - 11:34	61	58	59	274.2	500
12-Oct-22	Sunny	8:36 - 11:36	46	50	52	274.2	500
18-Oct-22	Cloudy	8:48 - 11:48	31	29	35	274.2	500
24-Oct-22	Fine	8:44 - 11:44	43	40	39	274.2	500
28-Oct-22	Sunny	8:43 - 11:43	44	51	49	274.2	500

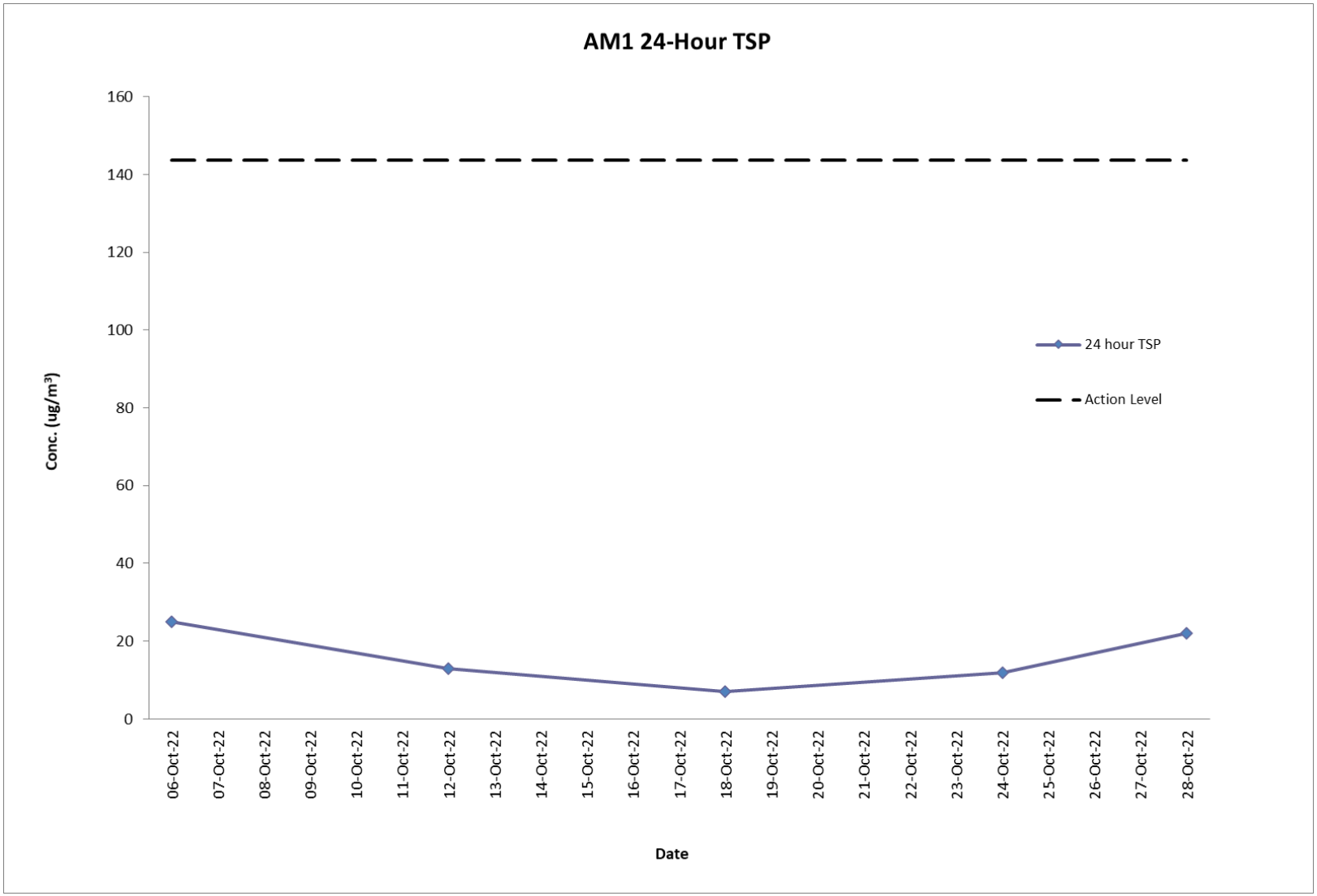
Graphical Presentation of Air Quality Monitoring Result at Station AM2 (1-hour TSP)



Air Quality Monitoring Result at Station AM1 (24-hour TSP)

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. ($\mu g/m^3$)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
06-Oct-22	08:20	07-Oct-22	08:20	2.7209	2.7655	25568.38	25592.38	24	1.26	1.26	1.26	25	Fine	143.6	260
12-Oct-22	08:20	13-Oct-22	08:20	2.7389	2.7633	25592.38	25616.38	24	1.26	1.26	1.26	13	Sunny	143.6	260
18-Oct-22	08:30	19-Oct-22	08:30	2.7656	2.7792	25616.38	25640.38	24	1.26	1.26	1.26	7	Cloudy	143.6	260
24-Oct-22	08:28	25-Oct-22	08:28	2.7590	2.7811	25640.38	25664.38	24	1.26	1.26	1.26	12	Fine	143.6	260
28-Oct-22	08:25	29-Oct-22	08:25	2.7838	2.8242	25664.38	25688.38	24	1.26	1.26	1.26	22	Sunny	143.6	260

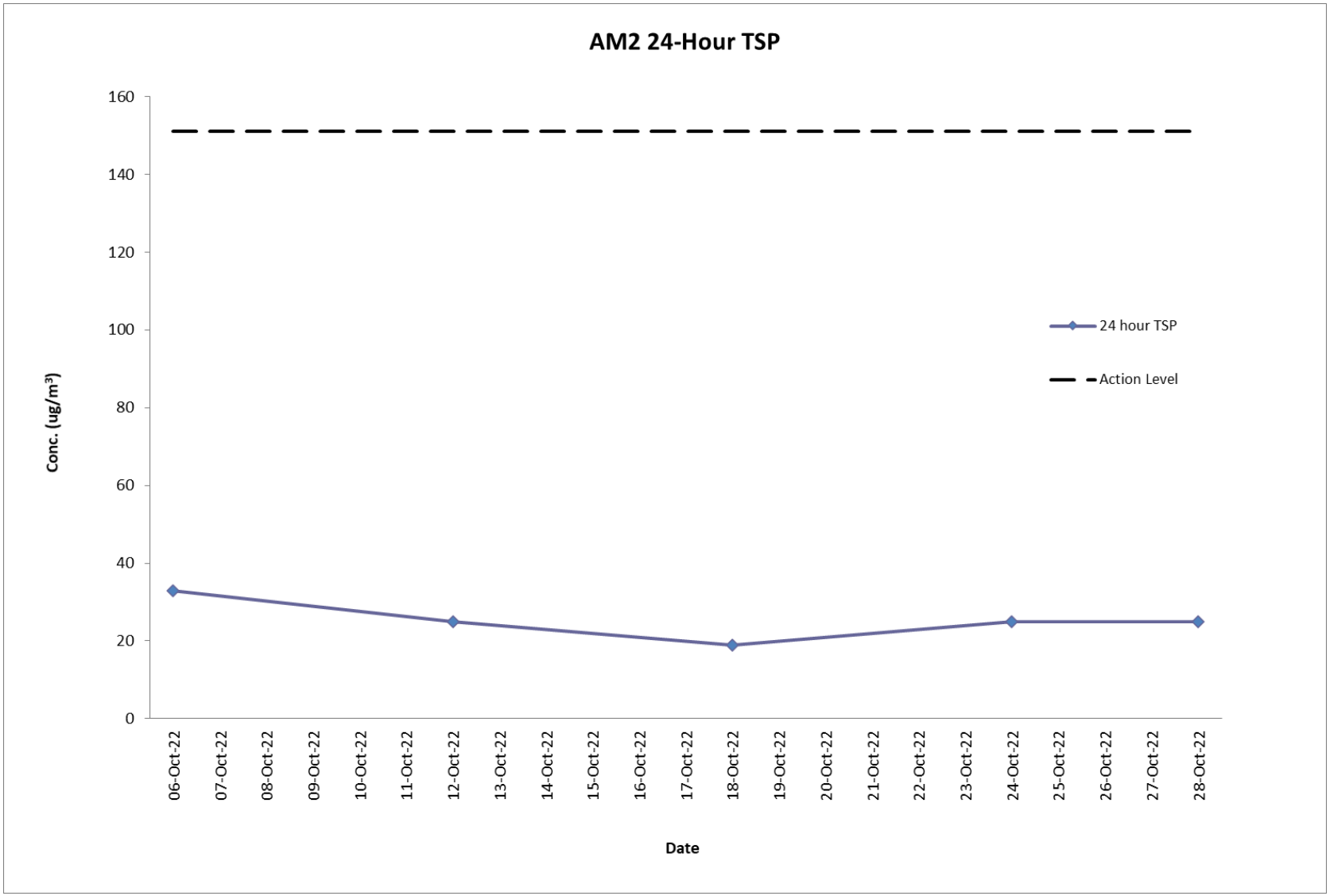
Graphical Presentation of Air Quality Monitoring Result at Station AM1 (24-hour TSP)



Air Quality Monitoring Result at Station AM2 (24-hour TSP)

Start		Finish		Sampling Time (hrs)	Conc. ($\mu g/m^3$)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time					
06-Oct-22	08:32	07-Oct-22	08:32	24	33	Fine	151.1	260
12-Oct-22	08:34	13-Oct-22	08:34	24	25	Sunny	151.1	260
18-Oct-22	08:45	19-Oct-22	08:45	24	19	Cloudy	151.1	260
24-Oct-22	08:42	25-Oct-22	08:42	24	25	Fine	151.1	260
28-Oct-22	08:40	29-Oct-22	08:40	24	25	Sunny	151.1	260

Graphical Presentation of Air Quality Monitoring Result at Station AM2 (24-hour TSP)



Noise Monitoring Result at Station NM1A

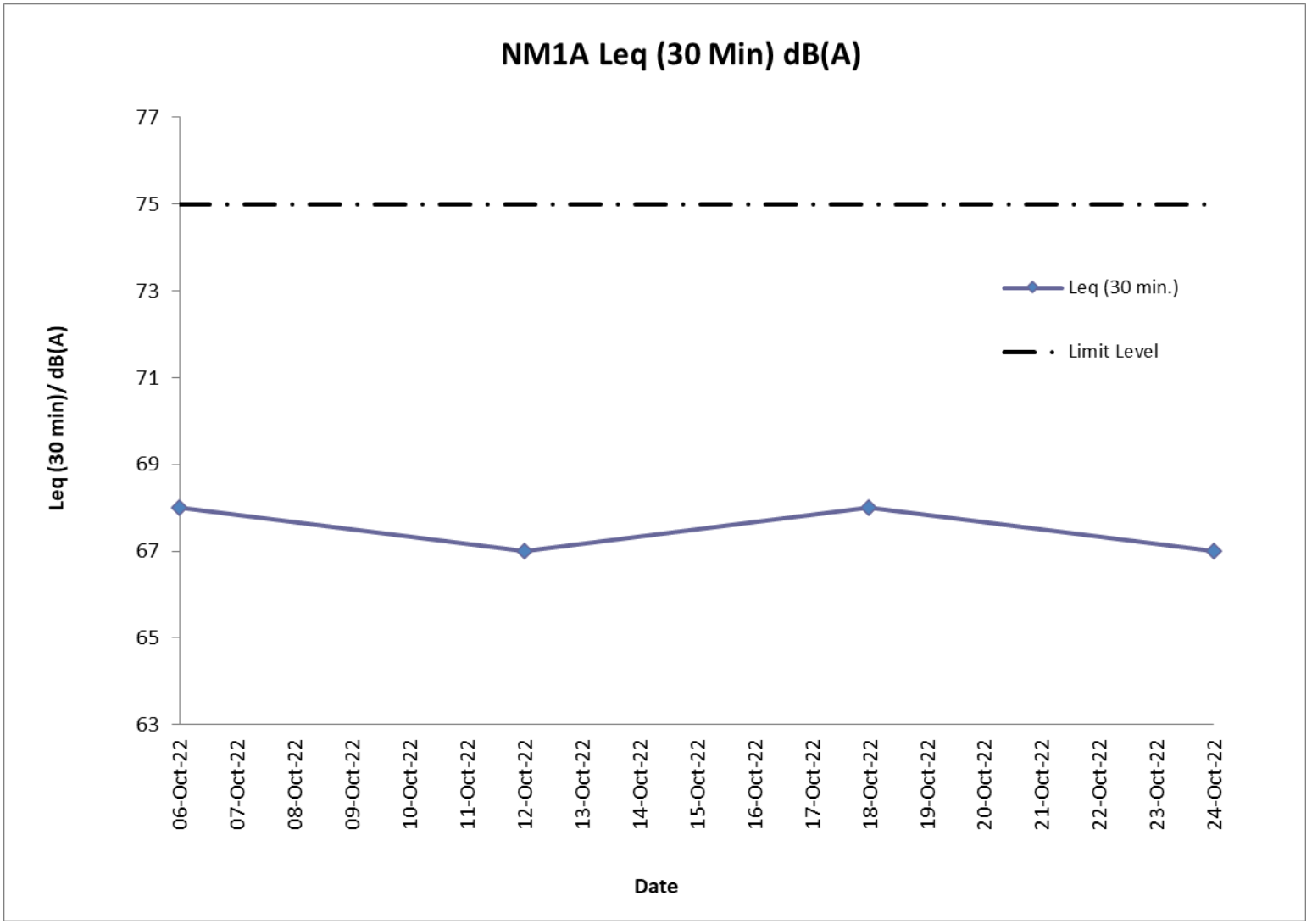
Date	Time	Measured L_{10}, dB(A)	Measured L_{90}, dB(A)	L_{eq} (30 min.)*, dB(A)
06-Oct-22	09:18	65.4	61.4	68
06-Oct-22	09:23	66.6	62.3	
06-Oct-22	09:28	67.2	63.7	
06-Oct-22	09:33	66.0	62.9	
06-Oct-22	09:38	66.9	62.1	
06-Oct-22	09:43	67.5	63.0	
12-Oct-22	09:20	64.1	60.5	67
12-Oct-22	09:25	65.3	61.6	
12-Oct-22	09:30	66.2	62.7	
12-Oct-22	09:35	66.8	62.9	
12-Oct-22	09:40	65.0	61.2	
12-Oct-22	09:45	66.7	62.0	
18-Oct-22	09:33	66.3	62.4	68
18-Oct-22	09:38	67.7	63.5	
18-Oct-22	09:43	67.2	63.8	
18-Oct-22	09:48	66.9	62.1	
18-Oct-22	09:53	66.0	62.7	
18-Oct-22	09:58	67.6	63.6	
24-Oct-22	09:28	65.5	61.6	67
24-Oct-22	09:33	65.0	61.6	
24-Oct-22	09:38	66.1	62.1	
24-Oct-22	09:43	66.2	62.8	
24-Oct-22	09:48	65.9	61.4	
24-Oct-22	09:53	66.7	62.3	

Remarks:

* +3dB (A) correction was applied to free-field measurement.

The station set-up of a free-field measurement at Station NM1A.

Graphical Presentation Noise Monitoring Result at Station NM1A

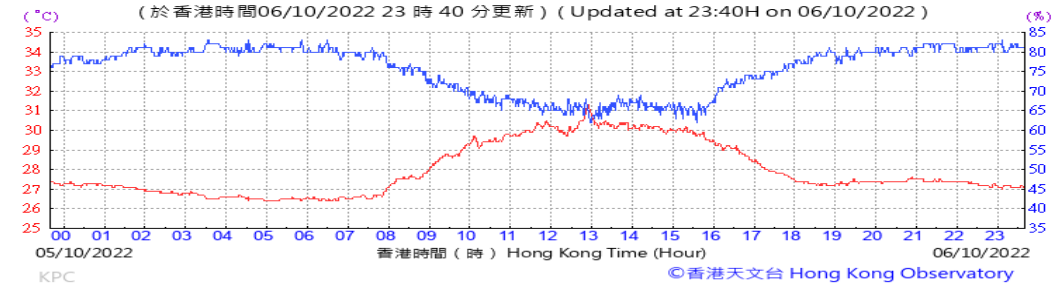


H. Meteorological Data Extracted from Hong Kong Observatory

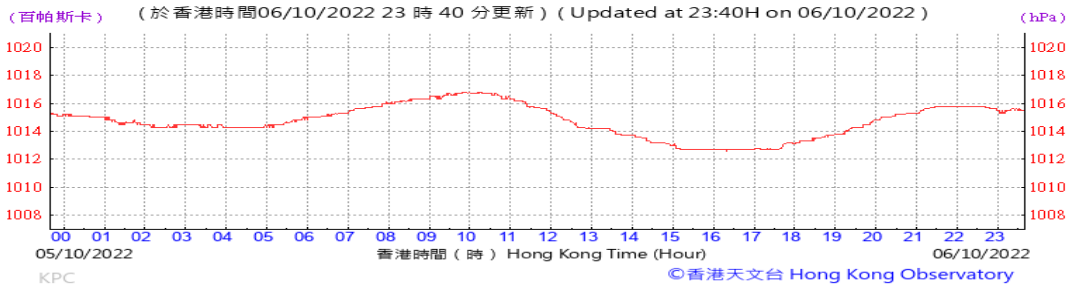
Extract of Meteorological Observations for King's Park Automatic Weather Station

October 2022

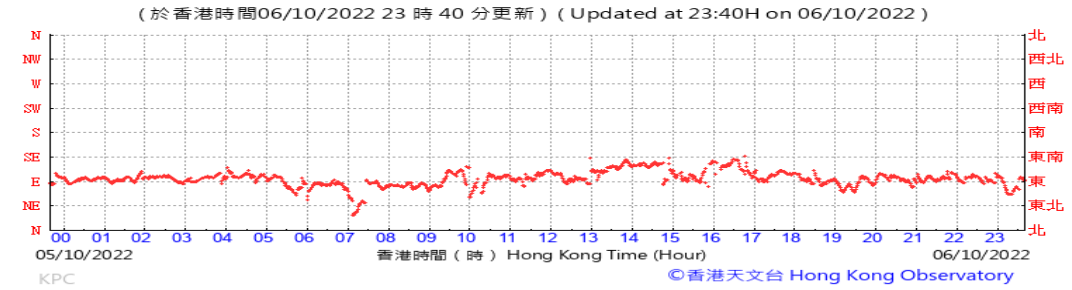
Temperature/Humidity:



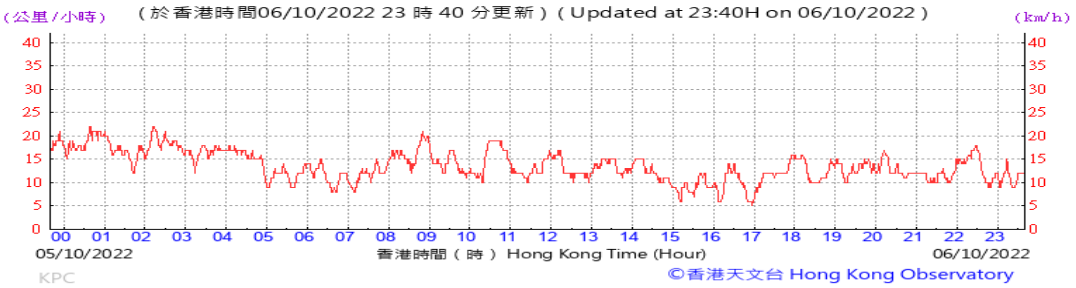
Pressure:



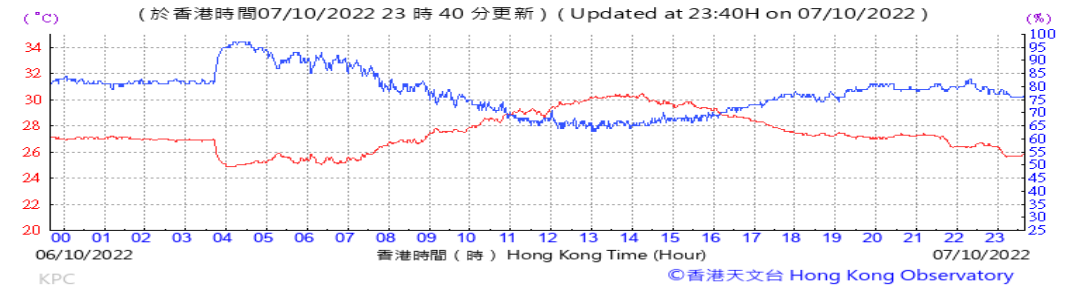
Wind Direction:



Wind Speed:



Temperature/Humidity:



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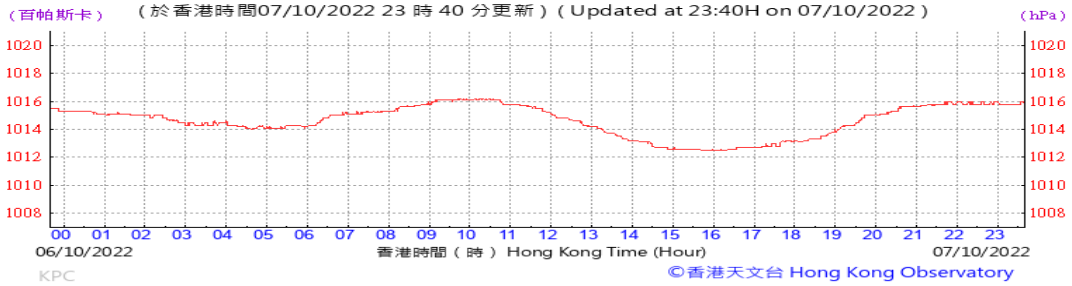

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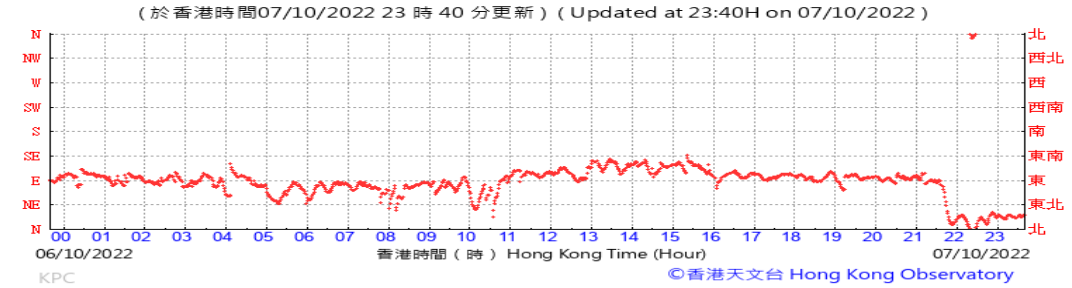

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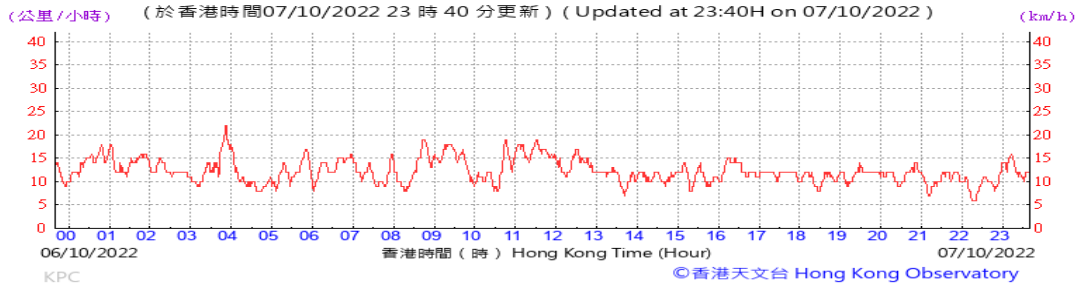
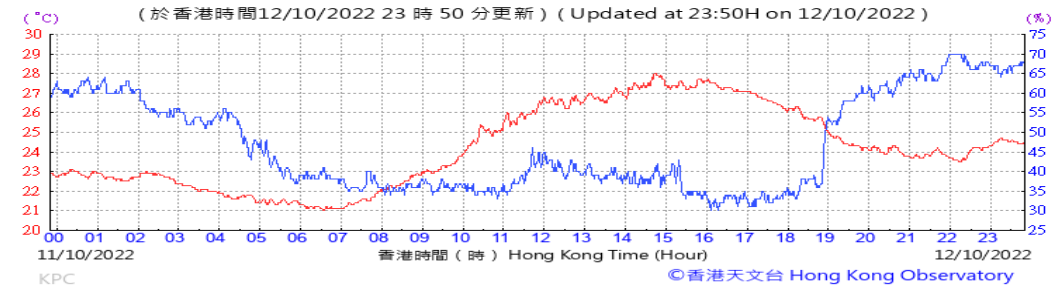


Temperature/Humidity:



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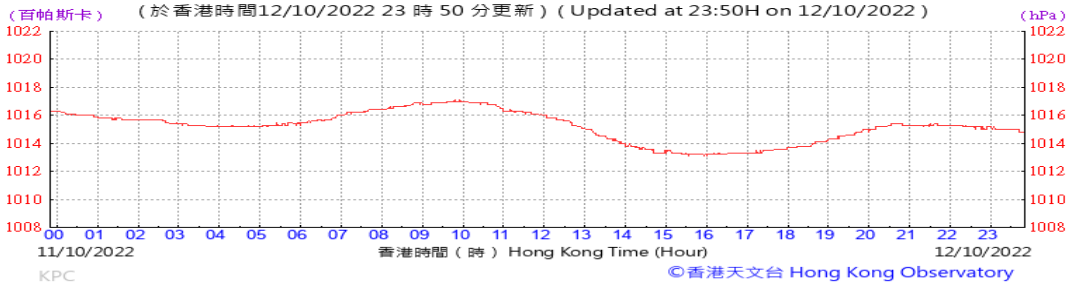

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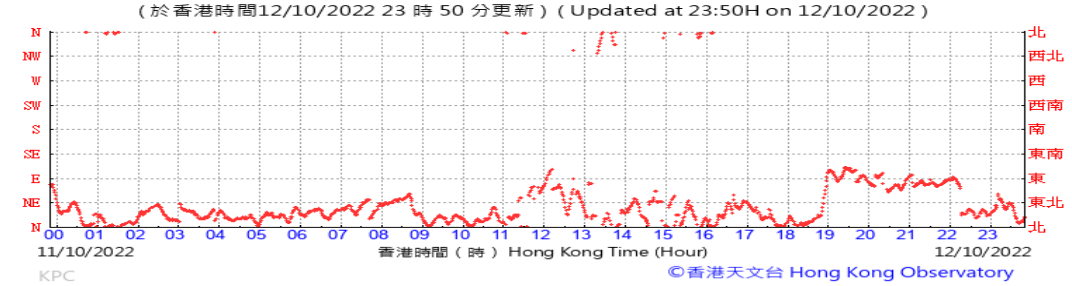
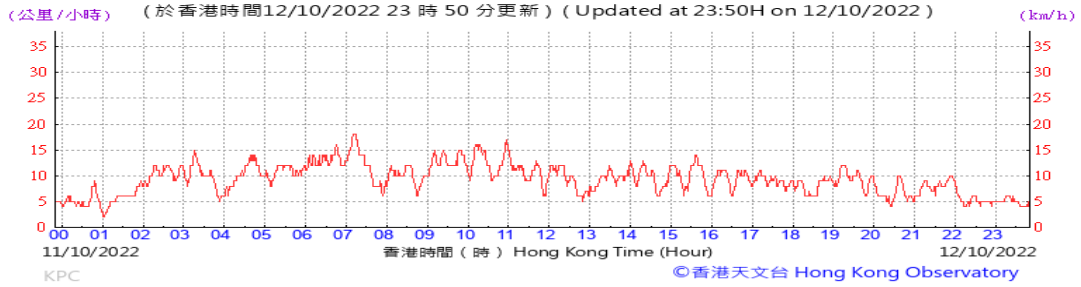
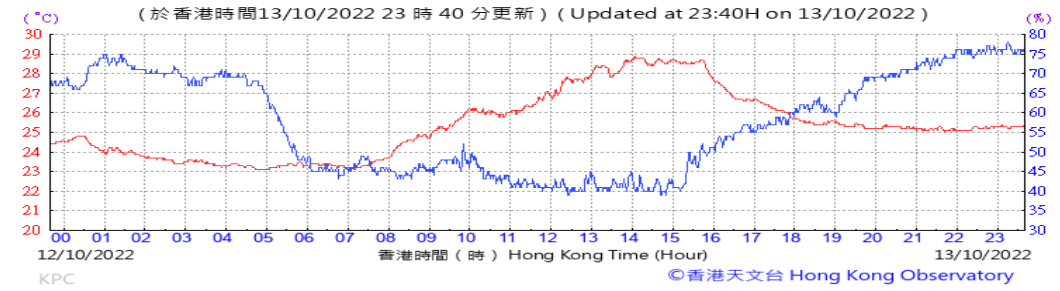


Wind Speed:



Temperature/Humidity:



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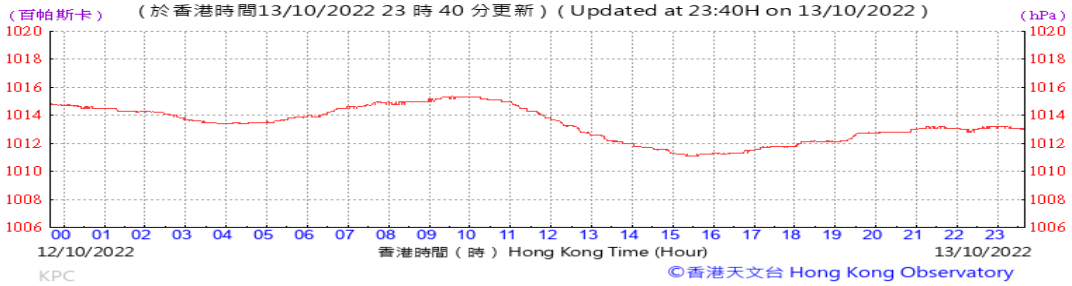

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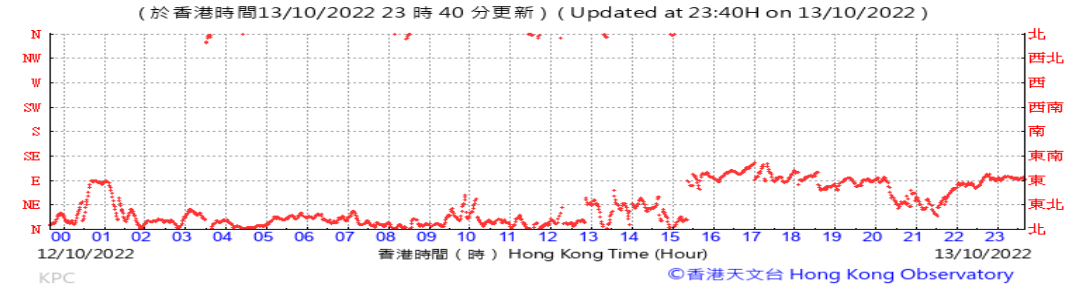
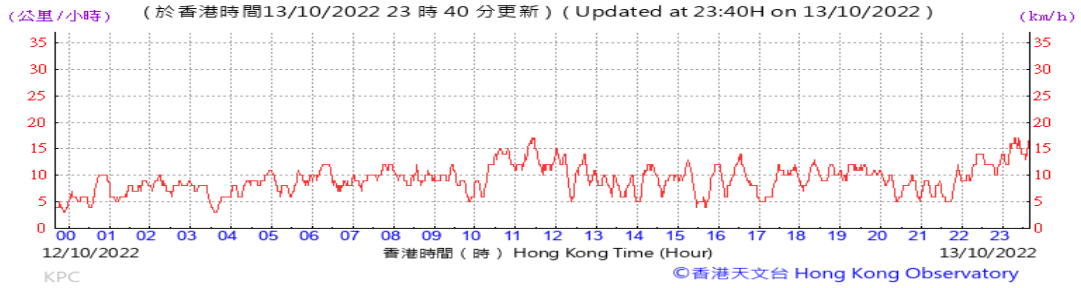


Wind Speed:



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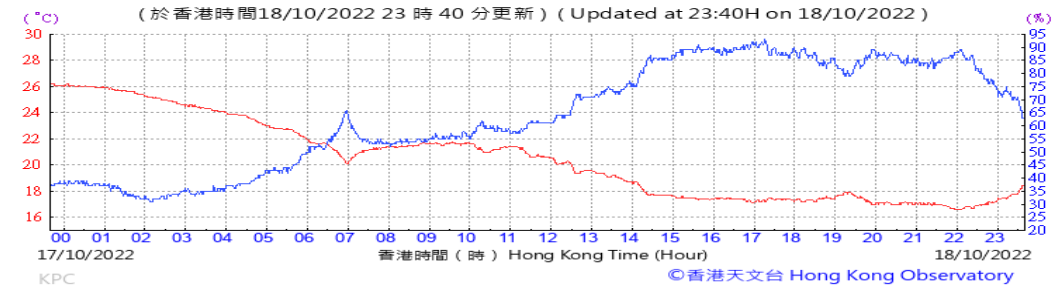

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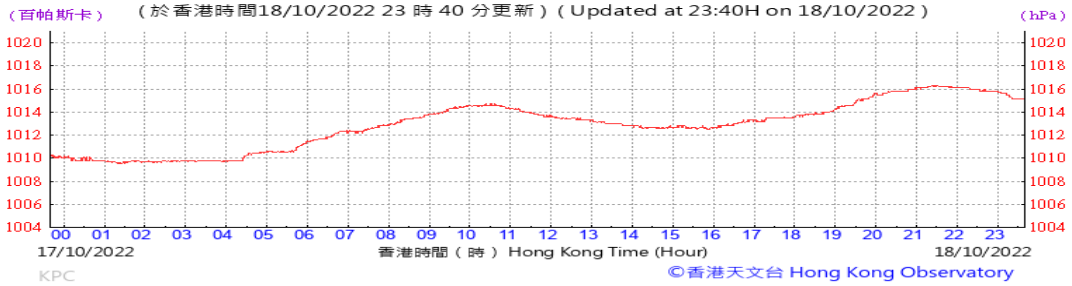

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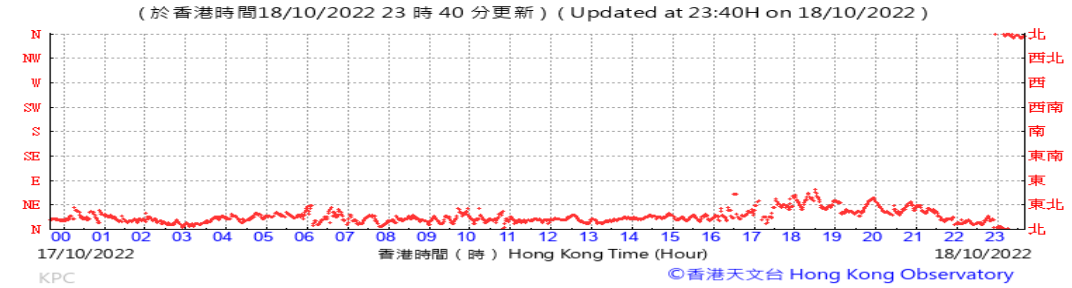
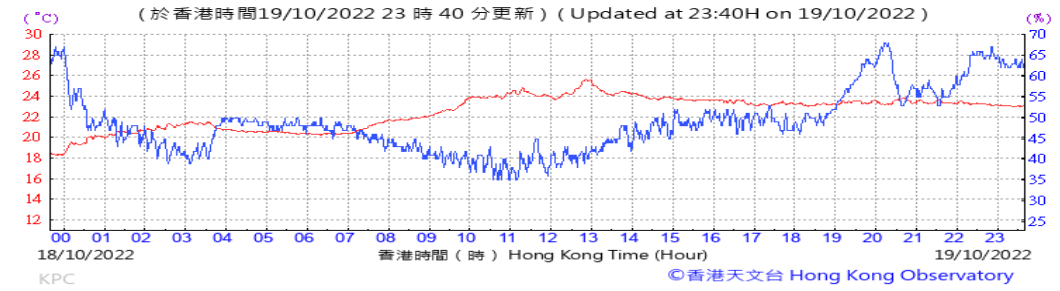


Wind Speed:

Temperature/Humidity:



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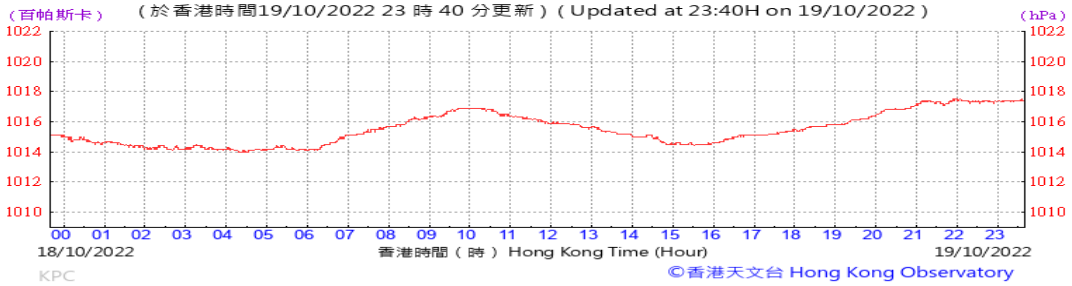

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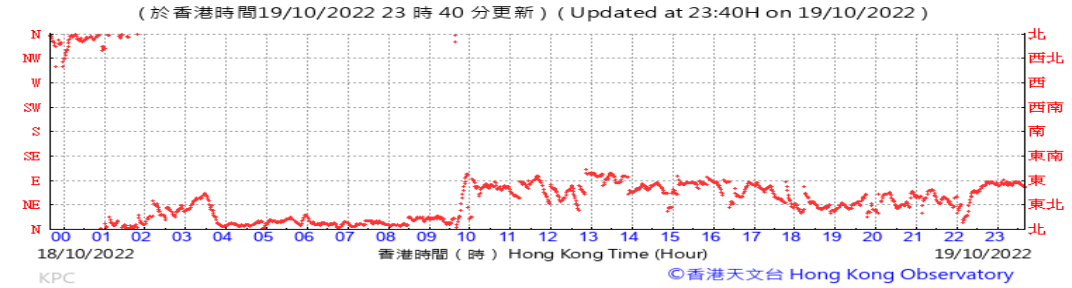
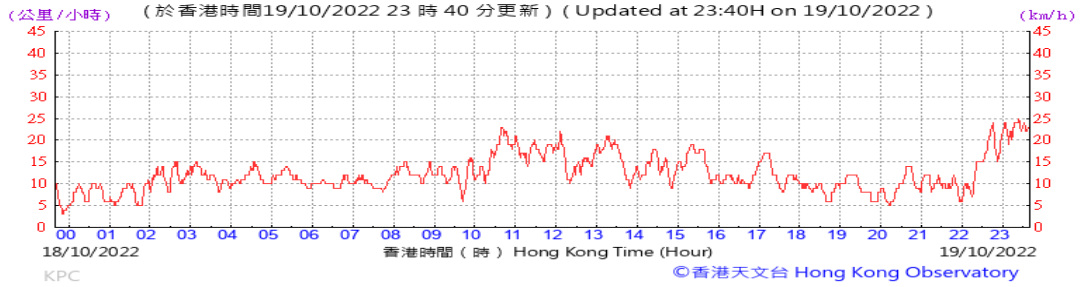
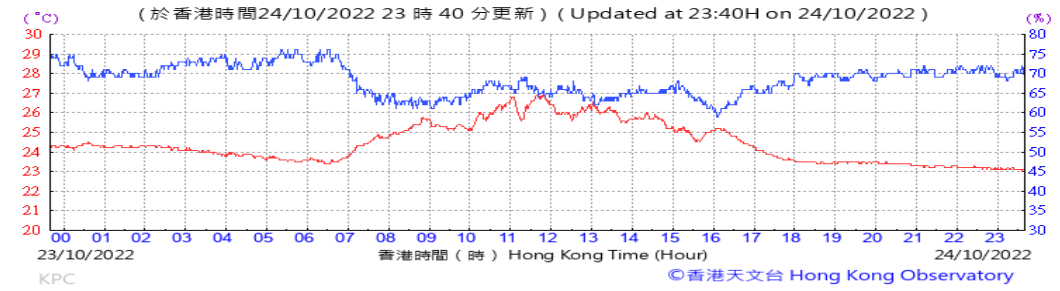


Wind Speed:



Temperature/Humidity:



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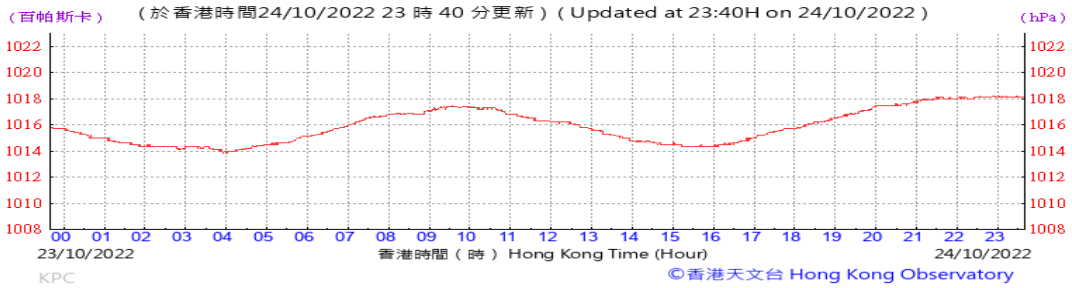

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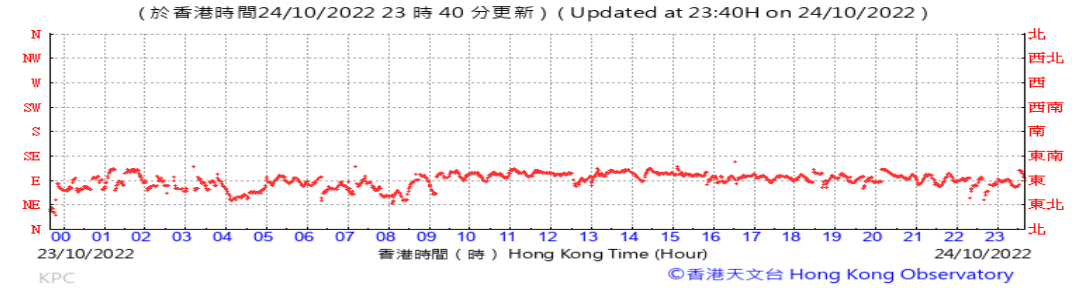

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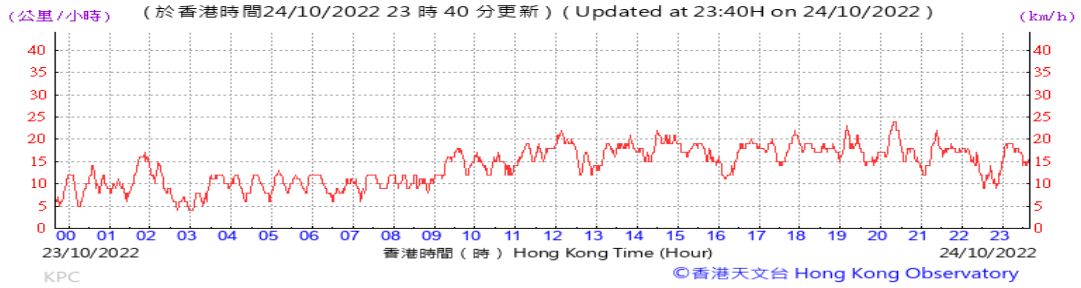
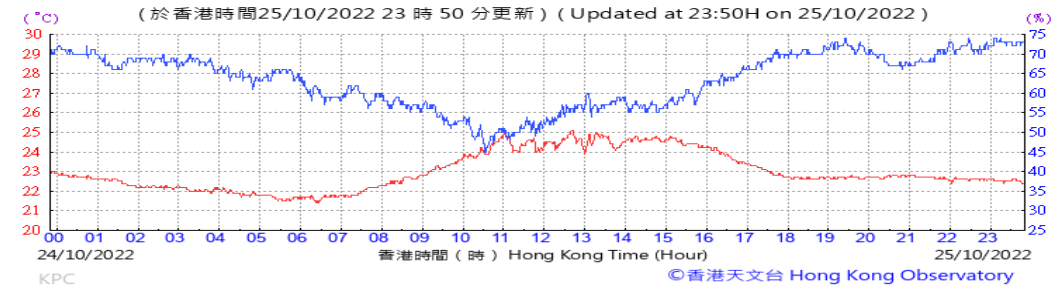


Temperature/Humidity:



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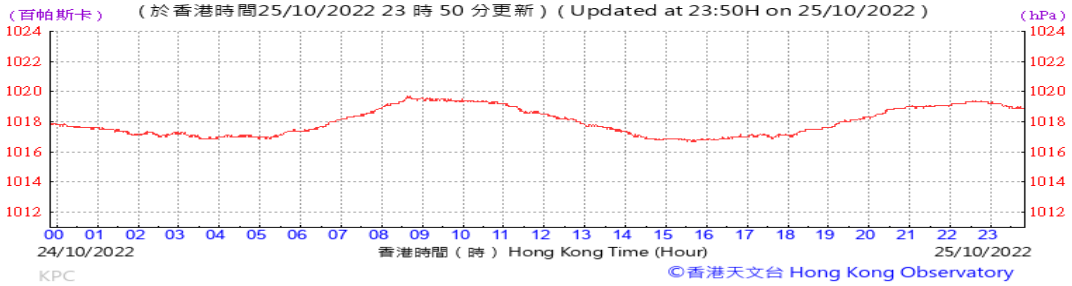

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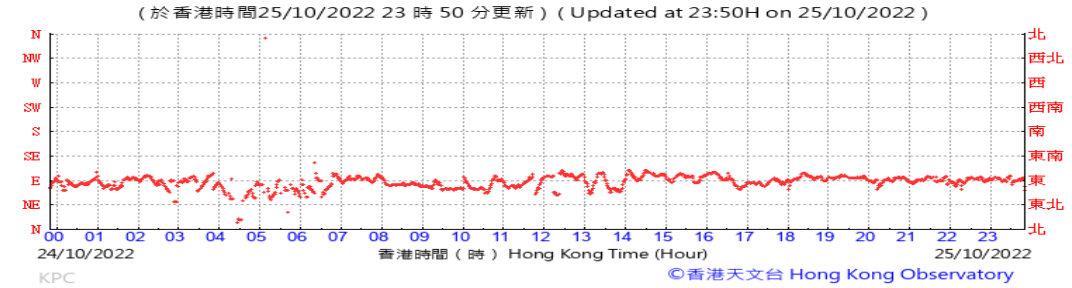
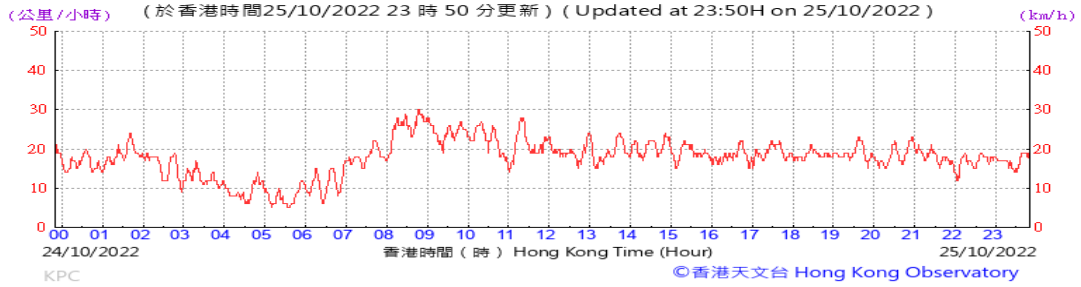
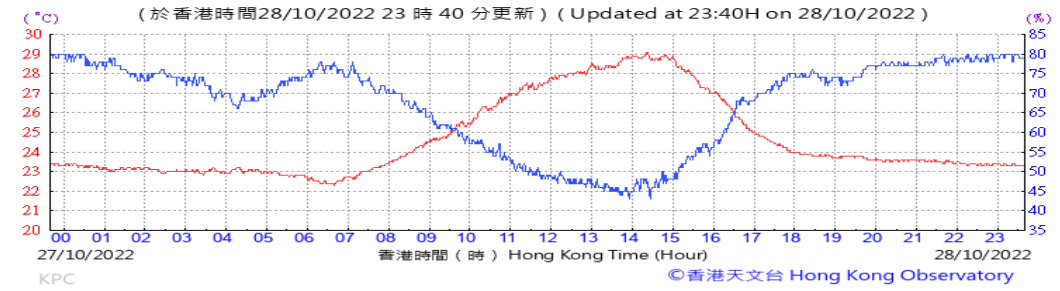


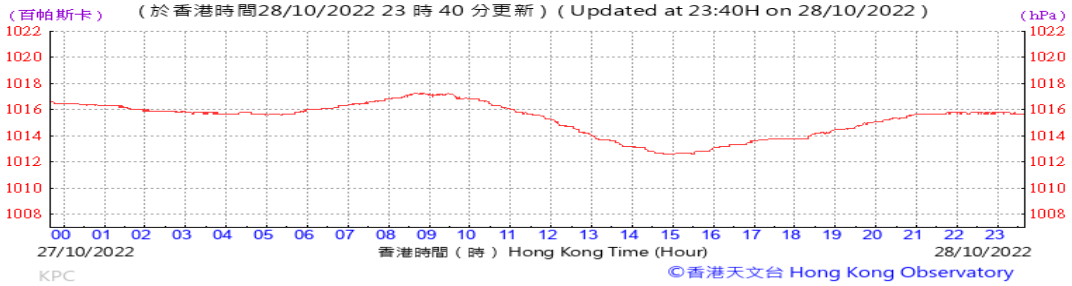
Wind Speed:



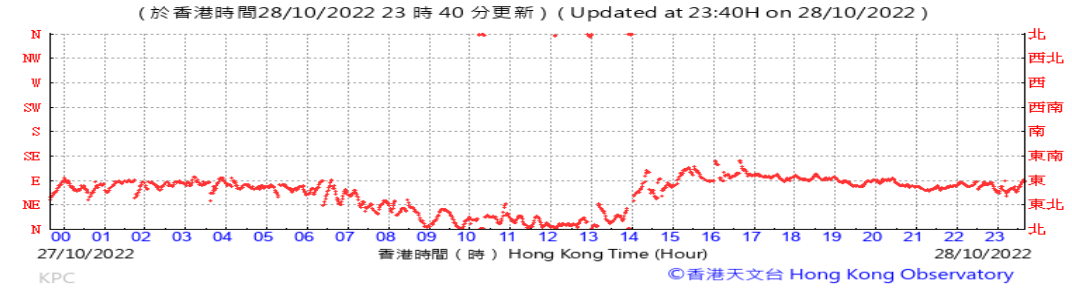
Temperature/Humidity:



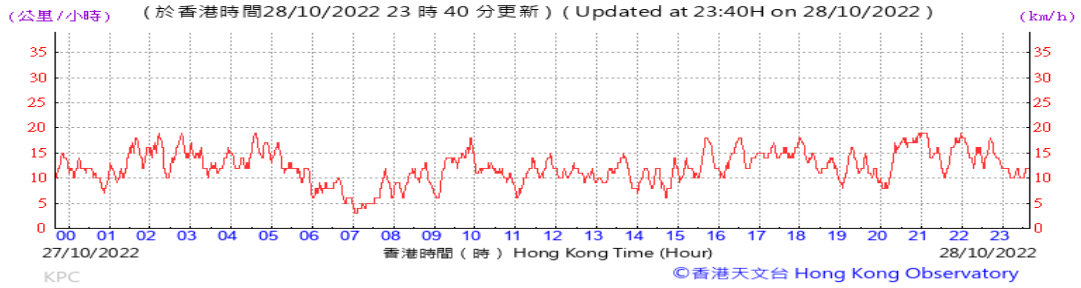
Pressure:



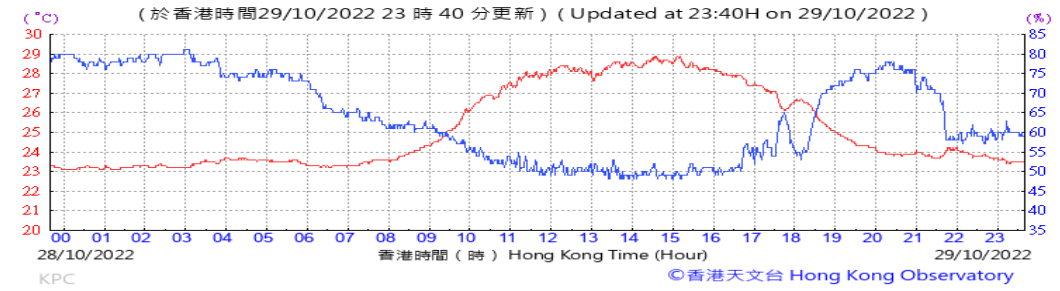
Wind Direction:



Wind Speed:



Temperature/Humidity:



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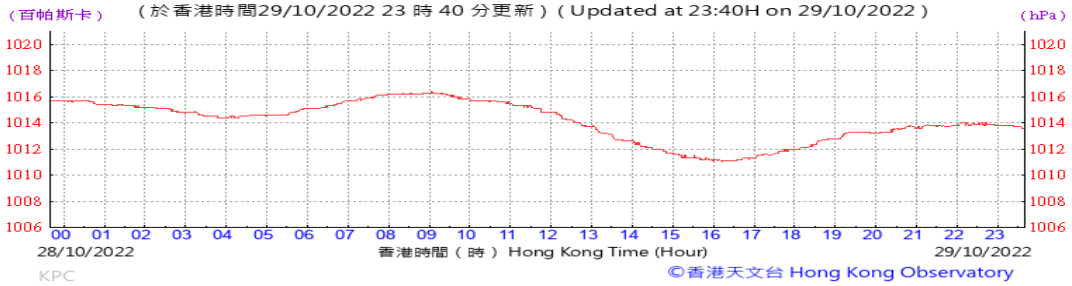

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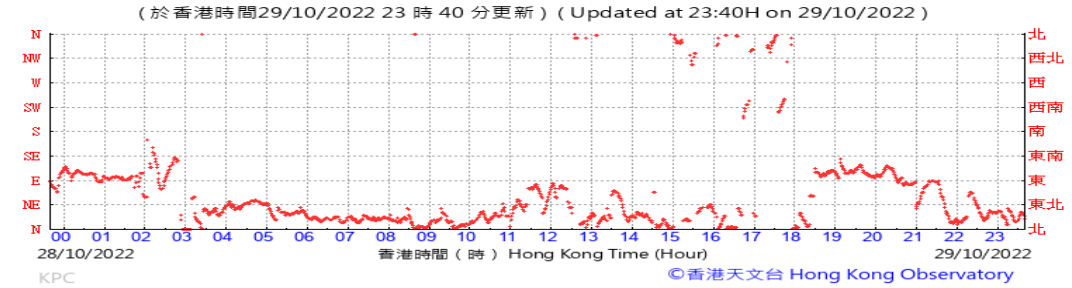
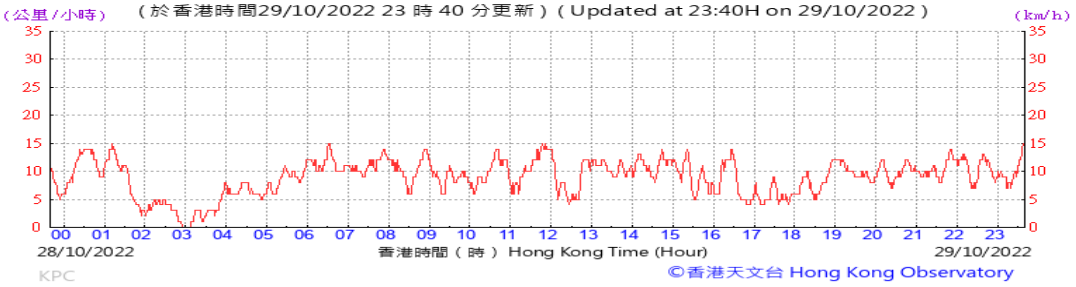


Wind Speed:



I. Waste Flow table

Table I-1: Monthly Waste Flow Table for Lyric Theatre Complex

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sorting Facilty	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2016													
Mar	2702.1	0.0	0.0	0.0	2702.1	0.0	0.0	4.5	0.1	0.0	0.0	0.0	30.6
Apr	8631.5	0.0	0.0	0.0	8631.5	0.0	0.0	16.0	0.0	0.0	0.0	0.0	19.2
May	12487.8	0.0	0.0	0.0	12487.8	0.0	0.0	34.0	0.0	0.0	0.0	0.7	60.5
Jun	8600.8	0.0	0.0	0.0	8600.8	0.0	0.0	31.4	0.2	0.0	0.0	0.5	13.5
Jul	12624.2	0.0	0.0	0.0	12624.2	0.0	0.0	19.6	0.0	0.0	0.0	2.0	9.9
Aug	14419.9	0.0	0.0	0.0	14419.9	0.0	0.0	43.9	0.0	0.0	0.0	0.0	11.1
Sep	13671.3	0.0	0.0	0.0	13671.3	0.0	0.0	59.8	0.0	0.0	0.0	1.6	12.4
Oct	13088.9	0.0	0.0	0.0	13088.9	0.0	0.0	36.9	0.2	1.5	0.0	0.0	15.2
Nov	12424.7	0.0	0.0	0.0	12424.7	0.0	0.0	74.7	0.0	0.0	0.0	1.4	10.2
Dec	12487.6	0.0	0.0	0.0	12487.6	0.0	0.0	13.9	0.0	0.0	0.0	1.3	9.0
Sub-total (2016)	111138.8	0.0	0.0	0.0	111138.8	0.0	0.0	334.5	0.4	1.5	0.0	7.6	191.6
2017													
Jan	9607.8	0.0	0.0	0.0	9607.8	0.0	0.0	29.5	0.0	0.0	0.0	0.0	7.3
Feb	9108.2	0.0	0.0	0.0	9108.2	0.0	0.0	50.2	0.2	0.0	0.0	0.7	9.8
Mar	11361.7	0.0	0.0	0.0	11361.7	0.0	0.0	16.1	0.0	0.0	0.0	1.4	8.5
Apr	2591.5	0.0	0.0	0.0	2591.5	0.0	0.0	35.7	0.0	0.0	0.0	0.0	4.7
May	2579.3	0.0	0.0	99.0	2480.3	0.0	0.0	20.9	0.1	0.0	0.0	0.5	10.0
Jun	476.0	0.0	0.0	341.0	129.7	5.3	0.0	0.0	0.0	0.0	0.0	0.0	7.6
Jul	3419.0	0.0	0.0	804.0	2615.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.8
Aug	3730.9	0.0	0.0	1377.5	2353.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Sep	2108.2	0.0	0.0	1133.5	974.7	0.0	0.0	34.6	0.2	0.0	0.0	0.0	10.8
Oct	9159.0	0.0	0.0	7868.0	1291.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	9.3
Nov	5095.4	0.0	0.0	4352.0	725.2	18.1	0.0	0.0	0.0	0.0	0.0	0.0	38.8
Dec	3856.2	0.0	0.0	3076.0	780.2	0.0	0.0	0.0	0.2	0.0	0.0	0.4	8.4
Sub-total (2017)	63093.1	0.0	0.0	19051.0	44018.7	23.4	0.0	187.1	0.7	0.0	0.0	3.8	137.3

Table I-1: Monthly Waste Flow Table for Lyric Theatre Complex

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sorting Facilty	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2018													
Jan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Mar	6120.2	0.0	0.0	5782.0	338.2	0.0	0.0	0.0	0.0	1.0	0.0	0.5	17.6
Apr	14460.3	0.0	0.0	12484.1	1976.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	7.6
May	59783.7	0.0	0.0	46989.0	12794.7	0.0	0.0	59.6	0.0	0.0	0.0	0.0	9.4
Jun	53117.5	0.0	0.0	37642.8	15474.7	0.0	0.0	51.5	0.2	0.0	0.0	0.0	12.8
Jul	89901.5	0.0	0.0	85317.1	4584.4	0.0	165.1	114.6	0.0	0.0	0.0	0.0	41.3
Aug	35137.3	0.0	0.0	33731.6	1405.7	0.0	214.3	148.1	0.0	0.0	0.0	0.0	48.5
Sep	4924.3	0.0	0.0	4641.2	196.1	87.0	174.6	40.0	0.0	0.0	0.0	0.0	179.2
Oct	19099.9	0.0	0.0	11301.0	7642.8	156.1	0.0	106.3	0.4	0.0	0.0	0.0	528.5
Nov	104168.0	0.0	0.0	79811.6	24351.0	5.3	0.0	54.5	0.0	0.6	0.0	0.0	31.5
Dec	62989.9	0.0	0.0	51284.4	11699.9	5.6	0.0	95.1	0.0	0.6	0.0	0.0	65.9
Sub-total (2018)	449702.6	0.0	0.0	368984.8	80463.7	254.0	553.9	669.7	0.5	2.4	0.0	0.5	943.7
2019													
Jan	74479.1	0.0	0.0	69249.5	5229.7	0.0	318.0	326.7	0.2	0.0	0.0	0.0	76.3
Feb	21969.9	0.0	0.0	17723.9	4246.0	0.0	16.5	55.2	0.0	0.0	0.0	0.0	26.7
Mar	19311.9	0.0	0.0	8569.9	10742.0	0.0	337.8	61.5	0.0	0.0	0.0	0.0	36.3
Apr	28559.9	0.0	0.0	21280.3	7279.6	0.0	0.0	32.6	0.0	0.8	0.0	0.0	24.9
May	45418.0	0.0	0.0	11200.6	34217.4	0.0	0.0	27.4	0.2	0.5	0.0	0.0	33.7
Jun	66633.4	0.0	0.0	23874.5	42748.0	10.9	59.2	11.9	0.0	0.9	0.0	0.0	35.3
Jul	36619.6	0.0	0.0	1632.7	34960.9	26.0	64.4	120.7	0.0	0.0	0.0	0.0	57.9
Aug	2526.8	0.0	0.0	0.0	2499.0	27.8	31.9	40.2	0.0	0.8	0.0	0.0	66.3
Sep	4117.6	0.0	0.0	0.0	4088.7	28.9	95.2	19.0	0.0	0.6	0.0	0.0	127.4
Oct	6974.2	0.0	0.0	0.0	6948.1	26.1	15.9	11.4	0.2	1.0	0.0	0.6	223.6
Nov	5334.4	0.0	0.0	0.0	5304.1	30.3	0.0	8.9	0.0	0.0	0.0	0.0	151.6
Dec	6236.8	0.0	0.0	0.0	6236.8	0.0	0.0	70.6	0.0	0.0	0.0	0.0	98.9
Sub-total (2019)	318181.6	0.0	0.0	153531.3	164500.1	150.1	938.9	785.8	0.6	4.6	0.0	0.6	959.0

Table I-1: Monthly Waste Flow Table for Lyric Theatre Complex

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sorting Facilty	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2020													
Jan	7089.9	0.0	0.0	0.0	7089.9	0.0	0.0	10.6	0.2	0.0	0.0	0.0	65.7
Feb	16822.3	0.0	0.0	0.0	16822.3	0.0	0.0	232.2	0.1	0.0	0.0	0.0	66.3
Mar	6559.0	0.0	0.0	0.0	6559.0	0.0	110.4	63.1	0.0	0.9	0.0	0.0	138.3
Apr	4997.9	0.0	0.0	1615.7	3382.2	0.0	159.2	1123.9	1.9	0.0	0.0	0.0	113.2
May	2236.0	0.0	0.0	452.3	1783.6	0.0	0.0	406.5	0.0	0.0	0.0	0.0	188.8
Jun	1134.3	0.0	0.0	0.0	1134.3	0.0	31.5	262.6	0.2	0.6	0.0	0.0	210.6
Jul	148.8	0.0	0.0	0.0	148.8	0.0	31.5	458.5	0.5	0.0	0.0	0.0	220.0
Aug	540.7	0.0	0.0	0.0	540.7	0.0	0.0	340.8	0.0	0.0	0.0	0.0	238.3
Sep	1432.3	0.0	0.0	0.0	1432.3	0.0	0.0	750.7	0.2	0.0	0.0	0.0	291.9
Oct	1381.5	0.0	0.0	0.0	1381.5	0.0	0.0	717.9	0.2	0.0	0.0	0.0	400.2
Nov	1444.1	0.0	0.0	0.0	1437.4	6.7	475.8	473.6	0.2	0.5	0.0	0.0	377.8
Dec	793.8	0.0	0.0	0.0	793.8	0.0	0.0	478.3	0.2	0.0	0.0	0.0	435.8
Sub-total (2020)	44580.6	0.0	0.0	2068.1	42505.8	6.7	808.3	5318.7	3.7	2.0	0.0	0.0	2746.8
2021													
Jan	881.4	0.0	0.0	0.0	881.4	0.0	0.0	835.1	0.4	0.0	0.0	0.0	497.0
Feb	544.7	0.0	0.0	0.0	544.7	0.0	0.0	100.5	0.3	0.0	0.0	0.0	504.7
Mar	406.1	0.0	0.0	0.0	406.1	0.0	0.0	455.8	0.3	0.0	0.0	0.0	881.7
Apr	633.0	0.0	0.0	0.0	633.0	0.0	0.0	429.9	0.7	0.0	0.0	0.0	613.0
May	1125.8	0.0	0.0	0.0	1125.8	0.0	0.0	355.1	0.2	0.1	0.0	0.0	355.2
Jun	877.3	0.0	0.0	0.0	877.3	0.0	0.0	98.4	0.2	0.0	0.0	0.4	420.3
Jul	8.9	0.0	0.0	0.0	0.0	8.9	0.0	43.9	2.0	0.0	0.0	0.0	278.2
Aug	1296.2	0.0	0.0	0.0	1296.2	0.0	0.0	161.5	0.0	0.0	0.0	0.0	459.1
Sep	1040.5	0.0	0.0	0.0	490.9	549.6	0.0	62.9	0.0	0.0	0.0	0.0	620.8
Oct	311.0	0.0	0.0	0.0	311.0	0.0	0.0	85.9	0.3	0.0	0.0	0.0	485.6
Nov	203.9	0.0	0.0	0.0	203.9	0.0	0.0	65.9	0.0	0.0	0.0	0.0	609.6
Dec	576.6	0.0	0.0	0.0	576.6	0.0	0.0	13.4	0.0	0.0	0.0	0.0	590.6
Sub-total (2021)	7905.3	0.0	0.0	0.0	7346.9	558.5	0.0	2708.2	4.4	0.1	0.0	0.4	6315.9

Table I-1: Monthly Waste Flow Table for Lyric Theatre Complex

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sorting Facilty	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2022													
Jan	579.3	0.0	0.0	0.0	579.3	0.0	0.0	23.5	0.4	0.0	0.0	0.0	565.5
Feb	58.9	0.0	0.0	0.0	58.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	172.2
Mar	412.8	0.0	0.0	0.0	412.8	0.0	0.0	12.4	0.3	0.0	0.0	0.0	339.8
Apr	390.2	0.0	0.0	0.0	390.2	0.0	0.0	24.8	0.0	0.0	0.0	0.0	390.9
May	357.3	0.0	0.0	0.0	350.1	7.2	0.0	44.3	0.3	0.1	0.0	0.0	401.9
Jun	200.4	0.0	0.0	0.0	200.4	0.0	0.0	21.1	0.0	0.0	0.0	1.1	447.8
Jul	166.8	0.0	0.0	0.0	166.8	0.0	0.0	6.3	0.3	0.0	0.0	0.7	343.9
Aug	150.9	0.0	0.0	0.0	150.9	0.0	0.0	9.6	0.4	0.2	0.0	0.0	410.6
Sep	437.6	0.0	0.0	0.0	437.6	0.0	0.0	11.5	0.3	0.0	0.0	0.0	348.3
Oct	708.0	0.0	0.0	0.0	708.0	0.0	0.0	13.8	0.0	0.0	0.0	0.0	353.0
Sub-total (2022)	3462.0	0.0	0.0	0.0	3454.8	7.2	0.0	167.3	2.0	0.3	0.0	1.8	3773.8
Total	**998063.9**	**0.0**	**0.0**	**543635.2**	**453428.7**	**999.9**	**2301.1**	**10171.1**	**12.3**	**10.8**	**0.0**	**14.7**	**15068.1**

Note:

- 317.17 tonnes, 390.87 tonnes and 0.0 tonne of inert C&D materials were disposed of as public fill to Tseung Kwan O Area 137 Public Fill, Tuen Mun Area 38 Public Fill and Chai Wan Public Fill Barging Point respectively in the reporting month.

J. Environmental Mitigation Measures – Implementation Status

Table J-1: Environmental Mitigation Measures Implementation Status (October 2022)

EM&A Ref.	Recommendation Measures	Implementation Stage L2
Air Quality Impact (Construction)		
2.1 & 10.3.1	**General Dust Control Measures** Frequent water spraying for active construction areas (12 times a day or once every one hour), including Heavy construction activities such as construction of buildings or roads, drilling, ground excavation, cut and fill operations (i.e., earth moving)	✓
2.1 & 10.3.1	**Best Practice For Dust Control** The relevant best practices for dust control as stipulated in the Air Pollution Control (construction Dust) Regulation should be adopted to further reduce the construction dust impacts from the Project. These best practices include: *Good Site Management* • Good site management is important to help reducing potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning. *Disturbed Parts of the Roads* • Each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or • Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. *Exposed Earth* • Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies. *Loading, Unloading or Transfer of Dusty Materials* • All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet. *Debris Handling* • Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. • Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.	Obs ✓ ✓ N/A No exposed earth in this project. ✓ ✓ ✓

EM&A Ref.	Recommendation Measures	Implementation Stage L2
	Transport of Dusty Materials	
	• Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards.	✓
	Wheel washing	
	• Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.	✓
	Use of vehicles	
	• The speed of the trucks within the site should be controlled to about 10km/hour in order to reduce adverse dust impacts and secure the safe movement around the site.	✓
	• Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.	✓
	• Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	✓
	Site hoarding	
	• Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit.	✓
2.1 & 10.3.1	**Best Practicable Means for Cement Works (Concrete Batching Plant)** The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93) should be followed and implemented to further reduce the construction dust impacts of the Project. These best practices include:	
	Exhaust from Dust Arrestment Plant	
	• Wherever possible the final discharge point from particulate matter arrestment plant, where is not necessary to achieve dispersion from residual pollutants, should be at low level to minimise the effect on the local community in the case of abnormal emissions and to facilitate maintenance and inspection	N/A No concrete batching plant in this project.
	Emission Limits	
	• All emissions to air, other than steam or water vapour, shall be colourless and free from persistent mist or smoke	N/A No concrete batching plant in this project.
	Engineering Design/Technical Requirements	
	• As a general guidance, the loading, unloading, handling and storage of fuel, raw materials, products, wastes or by-products should be carried out in a manner so as to prevent the release of visible dust and/or other noxious or offensive emissions	N/A No concrete batching plant in this project.

EM&A Ref.	Recommendation Measures	Implementation Stage L2
	Non-Road Mobile Machinery (NRMM): All NRMMs operating on-site which are subject to emission control of Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation are approved/exempted (as the case may be) and affixed with the requisite approval/exemption labels.	✓
Noise Impact (Construction)		
3.1 & 10.4.1	**Good Site Practice** Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during each phase of construction: • only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works; • machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum • plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs; • mobile plant should be sited as far away from NSRs as possible; and • material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.	✓ ✓ ✓ ✓ ✓
3.1 & 10.4.1	**Adoption of Quieter PME** The recommended quieter PME adopted in the assessment were taken from the EPD's QPME Inventory and "*Sound Power Levels of Other Commonly Used PME*" are presented in **Table 4.26** in the EIA report. It should be noted that the silenced PME selected for assessment can be found in Hong Kong.	✓
3.1 & 10.4.1	**Use of Movable Noise Barriers** Movable noise barriers can be very effective in screening noise from particular items of plant when constructing the Project. Noise barriers located along the active works area close to the noise generating component of a PME could produce at least 10 dB(A) screening for stationary plant and 5 dB(A) for mobile plant provided the direct line of sight between the PME and the NSRs is blocked.	✓
3.1 & 10.4.1	**Use of Noise Enclosure/ Acoustic Shed** The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and concrete pump. With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 15 dB(A) can be achieved according to the EIAO Guidance Note No. 9/2010.	✓
3.1 & 10.4.1	**Use of Noise Insulating Fabric** Noise insulating fabric can also be adopted for certain PME (e.g. drill rig, pilling machine etc). The fabric should be lapped such that there are no openings or gaps on the joints. According to the approved Tsim Sha Tsui Station Northern Subway EIA report (AEIAR-127/2008), a noise reduction of 10 dB(A) can be achieved for the PME lapped with the noise insulating fabric.	✓

EM&A Ref.	Recommendation Measures	Implementation Stage L2
3.1 & 10.4.1	**Scheduling of Construction Works outside School Examination Periods** During construction phase, the contractor should liaise with the educational institutions (including NSRs LCS and CRGPS) to obtain the examination schedule and avoid the noisy construction activities during school examination periods.	N/A No educational institutions nearby the site.
Water Quality Impact (Construction)		
4.1 & 10.5.1	**Construction site runoff and drainage** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended to protect water quality and sensitive uses of the coastal area, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts:	
	• At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the WKCDA's Contractor prior to the commencement of construction;	✓
	• Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the WKCDA's Contractor prior to the commencement of construction.	✓
	• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	✓
	• Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities.	✓
	• All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	✓
	• Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	✓
	• Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers.	✓

EM&A Ref.	Recommendation Measures	Implementation Stage L2
	• Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	✓
	• Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	N/A No bentonite slurries are used in this project.
	Barging facilities and activities	
	Recommendations for good site practices during operation of the proposed barging point include:	
	• All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;	N/A No barging facilities in this project.
	• Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation;	N/A No barging facilities in this project.
	• All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; and	N/A No barging facilities in this project.
	• Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site.	N/A No barging facilities in this project.
4.1 & 10.5.1	**Sewage effluent from construction workforce** Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	✓
4.1 & 10.5.1	**General construction activities**	
	• Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby storm water drain. Stockpiles of cement and other construction materials should be kept covered when not being used.	✓
	• Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.	Obs

EM&A Ref.	Recommendation Measures	Implementation Stage L2
Waste Management Implications (Construction)		
6.1 & 10.7.1	**Good Site Practices**	
	Recommendations for good site practices during the construction activities include:	
	• Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site	✓
	• Training of site personnel in proper waste management and chemical handling procedures	✓
	• Provision of sufficient waste disposal points and regular collection of waste	Rem
	• Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	✓
	• Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads	✓
	• Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&D materials is not anticipated	✓
6.1 & 10.7.1	**Waste Reduction Measures**	
	Recommendations to achieve waste reduction include:	
	• Sort inert C&D material to recover any recyclable portions such as metals	✓
	• Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of materials and their proper disposal	Obs
	• Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force	✓
	• Proper site practices to minimise the potential for damage or contamination of inert C&D materials	✓
	• Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of wastes	✓
6.1 & 10.7.1	**Inert and Non-inert C&D Materials**	
	In order to minimise impacts resulting from collection and transportation of inert C&D material for off-site disposal, the excavated materials should be reused on-site as fill material as far as practicable. In addition, inert C&D material generated from excavation works could be reused as fill materials in local projects that require public fill for reclamation.	✓
	• The surplus inert C&D material will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.	✓
	• Liaison with the CEDD Public Fill Committee (PFC) on the allocation of space for disposal of the inert C&D materials at PFRF is underway. No construction work is allowed to proceed until all issues on management of inert C&D materials have been resolved and all relevant arrangements have been endorsed by the relevant authorities including PFC and EPD.	✓
	• The C&D materials generated from general site clearance should be sorted on site to segregate any inert materials for reuse or disposal of at PFRFs whereas the non-inert materials will be disposed of at the designated landfill site.	✓

EM&A Ref.	Recommendation Measures	Implementation Stage L2
	• In order to monitor the disposal of inert and non-inert C&D materials at respectively PFRFs and the designated landfill site, and to control fly-tipping, it is recommended that the Contractor should follow the Technical Circular (Works) No. 6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials issued by Development Bureau. In addition, it is also recommended that the Contractor should prepare and implement a Waste Management Plan detailing their various waste arising and waste management practices in accordance with the relevant requirements of the Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site.	✓
6.1 & 10.7.1	**Chemical Waste** • If chemical wastes are produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Obs
	• Potential environmental impacts arising from the handling activities (including storage, collection, transportation and disposal of chemical waste) are expected to be minimal with the implementation of appropriate mitigation measures as recommended.	✓
6.1 & 10.7.1	**General Refuse** General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from inert C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	✓
Land Contamination (Construction)		
7.1 & 10.8.1	The potential for land contamination issues at the TST Fire Station due to its future relocation will be confirmed by site investigation after land acquisition. Where necessary, mitigation measures for minimising potential exposure to contaminated materials (if any) or remediation measures will be identified. If contaminated land is identified (e.g., during decommissioning of fuel oil storage tanks) after the commencement of works, mitigation measures are proposed in order to minimise the potentially adverse effects on the health and safety of construction workers and impacts arising from the disposal of potentially contaminated materials. The following measures are proposed for excavation and transportation of contaminated material: • To minimize the chance for construction workers to come into contact with any contaminated materials, bulk earth-moving excavation equipment should be employed;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.

EM&A Ref.	Recommendation Measures	Implementation Stage L2
	• Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when interacting directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Stockpiling of contaminated excavated materials on site should be avoided as far as possible;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• The use of contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Vehicles containing any contaminated excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Truck bodies and tailgates should be sealed to stop any discharge;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly tipping;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Speed control for trucks carrying contaminated materials should be exercised;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap. 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354) and obtain all necessary permits where required; and	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.

EM&A Ref.	Recommendation Measures	Implementation Stage L2
	• Maintain records of waste generation and disposal quantities and disposal arrangements.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
Ecological Impact (Construction)		
	No mitigation measure is required.	
Landscape and Visual Impact (Construction)		
Table 9.1 & 10.8 (CM1)	Trees should be retained in situ on site as far as possible. Should tree removal be unavoidable due to construction impacts, trees will be transplanted or felled with reference to the stated criteria in the Tree Removal Applications to be submitted to relevant government departments for approval in accordance to ETWB TCW No. 29/2004 and 3/2006.	N/A No trees under this Contract.
Table 9.1 & 10.8 (CM2)	Compensatory tree planting shall be incorporated to the proposed project and maximize the new tree, shrubs and other vegetation planting to compensate tree felled and vegetation removed. Also, implementation of compensatory planting should be of a ratio not less than 1:1 in terms of quality and quantity within the site.	N/A Compensatory tree planting is being reviewed.
Table 9.1 & 10.8 (CM3)	Buffer trees for screening purposes to soften the hard architectural and engineering structures and facilities.	N/A Roof garden is designed to be built, but it has not been completed yet.
Table 9.1 & 10.8 (CM4)	Softscape treatments such as vertical green wall panel /planting of climbing and/or weeping plants, etc, to maximize the green coverage and soften the hard architectural and engineering structures and facilities.	N/A Climbing or weeping plants are designed to be planted, but proposal is being reviewed for the planting location.
Table 9.1 & 10.8 (CM5)	Roof greening by means of intensive and extensive green roof to maximize the green coverage and improve aesthetic appeal and visual quality of the building/structure.	N/A Roof garden is designed to be built, but it has not been completed yet.
Table 9.1 & 10.8 (CM6)	Sensitive streetscape design should be incorporated along all new roads and streets.	N/A Greening along the seafront is proposed, but it has not been completed yet.
Table 9.1 & 10.8 (CM7)	Structure, ornamental planting shall be provided along amenity strips to enhance the landscape quality.	N/A Gardens are designed to be built, but it has not been completed yet.

EM&A Ref.	Recommendation Measures	Implementation Stage L2
Table 9.1 & 10.8 (CM8)	Landscape design shall be incorporated to architectural and engineering structures in order to provide aesthetically pleasing designs.	N/A Roof garden is designed to be built, but it has not been completed yet.
Table 9.1 (CM9)	Minimize the structure of marine facilities to be built on the seabed and foreshore in order to minimize the affected extent to the waterbody	N/A No marine facilities for this project.
Table 9.2 & 10.9 (MCP1)	Use of decorative screen hoarding/boards	✓
Table 9.2 & 10.9 (MCP2)	Early introduction of landscape treatments	N/A No landscape treatments during this stage.
Table 9.2 & 10.9 (MCP3)	Adoption of light colour for the temporary ventilation shafts for the basement during the transition period.	N/A No ventilation shafts for this project.
Table 9.2 & 10.9 (MCP4)	Control of night time lighting	✓
Table 9.2 & 10.9 (MCP5)	Use of greenery such as grass cover for the temporary open areas will help achieve the visual balance and soften the hard edges of the structures.	N/A No temporary open areas for this project.

N/A - Not Applicable
✓ - Implemented
Obs - Observed
Rem - Reminder

K. Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative statistics for complaints, notifications of summons and successful prosecutions for the Project account for period starting from the date of commencement of construction works to the end of the reporting month are summarised in the **Table K-1** below respectively.

Table K-1: Statistics for complaints, notifications of summons and successful prosecutions for Lyric Theatre Complex

Reporting Period	Cumulative Statistics		
	Complaints	**Notifications of summons**	**Successful prosecutions**
This reporting month	2	0	0
From 1 March 2016 to end of the reporting month (October 2022)	54	0	0

END OF PART-1

Part-2: EM&A for Foundation and ELS Works in Zones 2A, 2B & 2C

APEX Testing & Certification Ltd
上峰檢測認證有限公司
BEAM Plus ● LEED ● Environmental Consultant +852 3973 3585 info@apextestcert.com

Foundation and ELS Works in Zones 2A, 2B & 2C

APEX TESTING & CERTIFICATION LIMITED
Unit D6A, 10/F, TML Plaza, 3 Hoi Shing Road, Tsuen Wan, N.T.
Hong Kong
Tel: (852) 39733585 Fax: (852) 30079385
Email: info@apextestcert.com

The information supplied and contained within this report is, to the best of our knowledge, correct at time of printing

Contents

Executive summary

Apex Testing & Certification Limited (Apex) was commissioned to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the construction activities in Zone 2A, consisting of Foundation, Excavation and Lateral Support Works for Integrated Basement and Underground Road (Contract No.: GW/2020/05/073); and Zone 2B & 2C consisting of Piling Works for Integrated Basement and Underground Road (Contract No.: CC/2020/2B/088) at WKCD. The major construction works and EM&A programme for Zone 2A and Zone 2B & 2C commenced on 03 October 2020 and 30 September 2021 respectively.

The Project Proponent is the West Kowloon Cultural District Authority (WKCDA). The overall works for the WKCD fall under two separate categories of Designated Project (DP) of the Environmental Impact Assessment Ordinance (EIAO), namely an "engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100 000" (Item 1 of Schedule 3) and "an underpass more than 100m in length under the built areas" (Item A.9, Part I, Schedule 2). An Environmental Permit No. EP-453/2013/B (EP) was issued with respect to the "Underpass Road and Austin Road Flyover Serving the West Kowloon Cultural District" which specifically includes the abovementioned category of DP under Item A.9, Part I, Schedule 2 of the EIAO.

This Monthly EM&A Report presents the monitoring works at Zone 2A and Zone 2B & 2C from 01 to 31 October 2022.

Exceedance of Action and Limit Levels

There was no breach of Action or Limit levels for Air Quality (1-hour TSP and 24-hour TSP) in this reporting month.

Two Action Level exceedance due to two complaints with no Limit Level exceedance of Construction Noise was recorded in the reporting month.

Implementation of Mitigation Measures

Construction phase weekly site inspections were carried out on 06, 13, 21 and 27 October 2022 for Foundation, Excavation and Lateral Support Works in Zone 2A and on 05, 12, 19 and 26 October 2022 for Piling Works in Zone 2B & 2C to confirm the implementation measures undertaken by the Contractors in the reporting month. The outcomes are presented in Section 4 and the status of implementation of mitigation measures in the site is shown in **Appendix J**.

Landscape and visual impact inspections were conducted as part of the abovementioned weekly site inspections during the reporting month. No adverse comment on landscape and visual aspects was made during these inspections.

FEHD inspection was conducted at Zone 2B & 2C on 12 October 2022.

Record of Complaints

Two environmental complaints were recorded in the reporting month.

Record of Notifications of Summons and Successful Prosecutions

No notifications of summons and successful prosecutions were recorded in the reporting month.

Future Key Issues

The major site works for Zone 2A scheduled to be commissioned in the coming month include:

Zone 2A-1

- Site Works before Handover
  - Site Clearance

Zone 2A-2

- Site Works before Handover
  - Site Clearance

The major site works for Zone 2B & 2C scheduled to be commissioned in the coming month include:

KD05 (Section 1), KD06 (Section 2), KD07 (Section 3), KD08 (Section 4) and KD09 (Section 5)

- Bored Pile Works
  - RCD Drilling, Airlifting, Cage Installation & Concreting and Excavation

Potential environmental impacts due to the construction activities, including air, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

1 Introduction

1.1 Background

Apex Testing & Certification Limited (Apex) was commissioned to undertake the Environmental Team (ET) services (including environmental monitoring and audit (EM&A)) for the construction activities in Zone 2A, consisting of Foundation, Excavation and Lateral Support Works for Integrated Basement and Underground Road (Contract No.: GW/2020/05/073) ; and Zone 2B & 2C consisting of Piling Works for Integrated Basement and Underground Road (Contract No.: CC/2020/2B/088) at WKCD. The purpose of the development in Zone 2A and Zone 2B & 2C is to reserve for Integrated Basement (IB) and Underground Road (UR). The Zone 2A construction activities involve the foundation, excavation and lateral support (ELS) works, road works, drainage diversion works, and temporary car parking. The Zone 2B & 2C construction activities involve the piling works. The major construction works and EM&A programme for Zone 2A and Zone 2B & 2C commenced on 03 October 2020 and 30 September 2021 respectively.

The overall works for the WKCD fall under two separate categories of Designated Project (DP) of the Environmental Impact Assessment Ordinance (EIAO), namely an “engineering feasibility study of urban development projects with a study area covering more than 20 ha or involving a total population of more than 100 000” (Item 1 of Schedule 3) and “an underpass more than 100m in length under the built areas” (Item A.9, Part I, Schedule 2). An Environmental Permit No. EP-453/2013/B (EP) was issued with respect to the “Underpass Road and Austin Road Flyover Serving the West Kowloon Cultural District” which specifically includes the abovementioned category of DP under Item A.9, Part I, Schedule 2 of the EIAO. The captioned projects include part of the abovementioned underpass road located within the site boundary falls under this same category.

The Monthly EM&A Report is prepared in accordance with the Condition 3.4 of the Environmental Permit No. EP-453/2013/B. This Monthly EM&A Report presents the monitoring works at Zone 2A and Zone 2B & 2C from 01 to 31 October 2022. The purpose of this report is to summarise the findings in the EM&A of the project over the reporting period.

1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix A**.

1.3 Construction Works Status in the Reporting Period

During the reporting period, construction works at Zone 2A undertaken include:

Zone 2A-1

- BA14 Submission
  - BD Acknowledgement of BA14
- Hoarding Modification
  - Hoarding Modification

Zone 2A-2

- BA14 Submission

  - BD Acknowledgement of BA14

During the reporting period, construction works at Zone 2B & 2C undertaken include:

KD05 (Section 1)

- Predrilling
- Bored Pile Works
  - RCD Drilling, Airlifting, Cage Installation & Concreting and Excavation

KD06 (Section 2), KD07 (Section 3), KD08 (Section 4) and KD09 (Section 5)

- Bored Pile Works
  - RCD Drilling, Airlifting, Cage Installation & Concreting and Excavation

The Construction Works Programme of Zone 2A and Zone 2B & 2C is provided in **Appendix B**. A layout plan of the Project is provided in **Figure 1**. Please refer to **Table 4.3** and **Table 4.4** on the status of the environmental licenses.

1.4 Summary of EM&A Requirements and Alternative Monitoring Locations

1.4.1 EM&A Requirements

The EM&A programme requires environmental monitoring of air quality, noise, landscape and visual as specified in the approved EM&A Manual.

A summary of impact EM&A requirements is presented in **Table 1.1**.

Table 1.1: Summary of Impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies
Air Quality	24-Hours TSP	AM3-The Victoria Towers Tower 1	At least once every 6 days
	1-Hour TSP	AM3-The Victoria Towers Tower 1	At least 3 times every 6 days
	24-Hours TSP	AM4-Canton Road Government Primary School	At least once every 6 days
	1-Hour TSP	AM4-Canton Road Government Primary School	At least 3 times every 6 days
	24-Hours TSP	AM5-Topside Developments at West Kowloon Terminus Site	At least once every 6 days
	1-Hour TSP	AM5-Topside Developments at West Kowloon Terminus Site	At least 3 times every 6 days
Noise	Leq, 30 minutes	NM2-The Arch, Sun Tower	Weekly
	Leq, 30 minutes	NM3-The Victoria Towers Tower 1	Weekly
	Leq, 30 minutes	NM4-Canton Road Government Primary School	Weekly
	Leq, 30 minutes	NM5-Development next to Austin Station	Weekly
Landscape & Visual	Monitor implementation of proposed mitigation measures during the construction stage	As described in Table 9.1 and 9.2 of the EM&A Manual	Bi-Weekly

1.4.2 Alternative Monitoring Locations

The EM&A programme for the Project should require 5 noise monitoring station and 5 air quality monitoring stations located closest to the Project area. With regard to the monitoring activities at M+ Museum and the Lyric Complex, three monitoring stations had been considered, including AM1 (International Commerce Centre), AM2 (The Harbourside Tower 1) for air monitoring, and NM1 (The Harbourside Tower 1) for noise monitoring.

In the context of the construction activities in Zone 2A and Zone 2B & 2C, all other monitoring locations including AM3 (The Victoria Towers Tower 1), AM4 (Canton Road Government Primary School), and AM5 (Topside Developments at West Kowloon Terminus Site) for air monitoring; and NM2 (The Arch, Sun Tower), NM3 (The Victoria Towers Tower 1), NM4 (Canton Road Government Primary School) and NM5 (Development next to Austin Station) for noise monitoring, have been taken into account. However, access to all these originally designated monitoring stations was declined as described below point-by-point.

The Arch management office and owners' committee have formally declined the proposal of setting up noise monitoring instrument on its premises at the podium level of Sun Tower (NM2) on 24 July 2014. Thus, alternative noise monitoring location was identified at the ground floor in front of The Arch – Sun Tower (NM2A), which is at the same location as stated in the EM&A Manual for consistency. No management approval is required at the ground floor for conducting the noise monitoring. This alternative air monitoring location was approved by EPD on 29 September 2020.

The Victoria Towers management office formally declined the proposal of setting up air quality and noise monitoring instruments on its premises at the podium area of Tower 1 (AM3/NM3) on 16 June 2020. Alternative air monitoring location was identified at ground floor at the Northeast corner of West Kowloon Station's station box (AM3A), in the same direction to the area of major construction site activities in Zone 2A. This alternative air monitoring location was approved by EPD on 29 September 2020. An alternative noise monitoring location was identified at the ground floor in front of the Xiqu Centre (NM3A), which is set closer to the construction site boundary with more direct line sight to the major site activities and higher exposure to the construction noise with no disturbance to the premises' occupants during noise monitoring activities. No management approval is required at the ground floor for conducting the noise monitoring. This alternative air monitoring location was approved by EPD on 29 September 2020.

Canton Road Government Primary School formally declined the proposal of setting up air quality and noise monitoring instruments on its premise at the podium level (AM4/NM4) on 16 June 2020. Alternative air monitoring location was identified at ground floor at the Southeast corner of West Kowloon Station's station box (AM4A), in same direction to the area of major construction site activities in Zone 2A. This alternative air monitoring location was approved by EPD on 29 September 2020. An alternative noise monitoring location was identified at the ground floor next to Tsim Sha Tsui Fire Station (NM4A), which is set closer to the construction site boundary with more direct line sight to the major site activities and higher exposure to the construction noise with no disturbance to the premises' occupants during noise monitoring activities. No management approval is required at the ground floor for conducting the noise monitoring. This alternative air monitoring location was approved by EPD on 29 September 2020.

MTR also formally declined the access to the designated AM5 location (topside developments at West Kowloon Terminus Site) on 15 July 2020. Alternative air monitoring location was identified at ground floor at the North of West Kowloon Station's station box (AM5A), in same direction to

the area of major construction site activities in Zone 2A. This alternative air monitoring location was approved by EPD on 29 September 2020.

Grand Austin property management office formally declined our proposal of setting up noise monitoring instrument on its premises at the podium level (NM5) on 10 July 2020. Alternative noise monitoring location was identified at the Pedestrian road (ground floor) outside West Kowloon Station (NM5A), which is set closer to the construction site boundary with more direct line sight to the major site activities and higher exposure to the construction noise with no disturbance to the premises' occupants during noise monitoring activities. No management approval is required at the ground floor for conducting the noise monitoring. This alternative air monitoring location was approved by EPD on 29 September 2020.

The Environmental Quality Performance Limits for air quality and noise are shown in **Appendix C**.

The Event and Action Plan for air quality, construction noise, and landscape and visual are shown in **Appendix D**.

The EM&A programme followed the recommended mitigation measures in the EM&A Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix J**.

2 Impact Monitoring Methodology

2.1 Introduction

Air quality and noise monitoring methodology, including the monitoring locations, equipment used, parameters, frequency and duration etc., are described in this Section. The environmental monitoring schedules for the reporting period and the tentative monitoring Schedule for the coming month are provided in **Appendix E**.

The relevant EM&A monitoring requirements and details for landscape and audit impact, are also presented in this Section.

2.2 Air Quality

2.2.1 Monitoring Parameters, Frequency and Duration

Table 2.1 summarizes the monitoring parameters, frequency and duration of the TSP monitoring.

Table 2.1: Air Quality Monitoring Parameters, Frequency and Duration

Parameter	Frequency	Duration
24-hour TSP	At least once in every six-days	24 hours
1-hour TSP	At least 3 times every six-days	60 minutes

2.2.2 Monitoring Locations

Monitoring stations and locations are given in **Table 2.2** and shown in **Figure 1**.

Table 2.2: Air Quality Monitoring Station

Monitoring Station	Location Description
AM3A	Northeast corner of West Kowloon Station's station box (G/F)
AM4A	Southeast corner of West Kowloon Station's station box (G/F)
AM5A	North of West Kowloon Station's station box (G/F)

2.2.3 Monitoring Equipment

Continuous 24-hour TSP air quality monitoring was conducted using High Volume Sampler (HVS) (Model: TE-5170) located at the designated monitoring station. The HVS meets all the requirements stated in of the EM&A Manual. Portable direct reading dust meter was used to carry out the 1-hour TSP monitoring. **Table 2.3** summarizes the equipment used in the impact air quality monitoring. Copies of the calibration certificates for the HVS, calibration kit and portable dust meters are attached in **Appendix F**.

Table 2.3: TSP Monitoring Equipment

Equipment	Model
24-hour TSP monitoring	
High Volume Sampler	TE-5170 (Serial No.: 4340; 3998; 4344)

Equipment	Model
Calibrator	TE-5025A (Orifice I.D.: 3543)
1-hour TSP monitoring	
Portable direct reading dust meter	Sibata LD-3B (Serial No.: 235811, 336338, 567188)

Calibration of the HVS (five-point calibration) using Calibration Kit was carried out every two months. The HVS calibration orifice will be calibrated annually. Calibration certificate of the TE-5025A Calibration Kit and the HVS are provided in **Appendix F**.

The 1-hour TSP monitoring should be determined periodically (e.g. annually) by the HVS to check the validity and accuracy of the results measured by direct reading method.

2.2.4 Monitoring Methodology

24-hour TSP Monitoring

Installation

The HVS was installed at the site boundary. The following criteria were considered in the installation of the HVS.

- A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
- The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
- A minimum of 2 metres separation from walls, parapets and penthouse was required for rooftop sampler.
- A minimum of 2 metres separation from any supporting structure, measured horizontally was required.
- No furnace or incinerator flues or building vent were nearby.
- Airflow around the sampler was unrestricted.
- The sampler has been more than 20 metres from any drip line.
- Permission was obtained to set up the sampler and to obtain access to the monitoring station.
- A secured supply of electricity is needed to operate the sampler.

Preparation of Filter Papers

- Glass fibre filters were labelled and sufficient filters that were clean and without pinholes were selected.
- The filters used are specified to have a minimum collection efficiency of 99 percent for 0.3 µm (DOP) particles.
- All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C with relative humidity (RH) < 50% and was not variable by more than ±5 %. A convenient working RH was 40%. All preparation of filters was done by Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory.

Field Monitoring Procedures

- The power supply was checked to ensure the HVS works properly.
- The filter holder and the area surrounding the filter were cleaned.

- The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and was secured with the aluminium strip.
- The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- A new flow rate record sheet was set into the flow recorder.
- The flow rate of the HVS was checked and adjusted at around 1.3 m^3/min. The range specified in the EM&A Manual was between 0.6-1.7 m^3/min.
- The programmable timer was set for a sampling period of 24 hours, and the starting time, weather condition and the filter number were recorded.
- The initial elapsed time was recorded.
- At the end of sampling, the sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- It was then placed in a clean plastic envelope and sealed.
- All monitoring information was recorded on a standard data sheet.
- Filters were sent to a Hong Kong Laboratory Accreditation Scheme (HOKLAS) accredited laboratory for analysis.

Maintenance and Calibration

- The HVS and its accessories are maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVSs were calibrated upon installation and thereafter at bi-monthly intervals. The calibration kits were calibrated annually.
- Calibration records for HVS and calibration kit are shown in **Appendix F**.

1-hour TSP Monitoring

Field Monitoring

The measuring procedures of the 1-hour dust meter are in accordance with the Manufacturer's Instruction Manual as follows:

- Turn the power on.
- Close the air collecting opening cover.
- Push the "TIME SETTING" switch to [BG].
- Push "START/STOP" switch to perform background measurement for 6 seconds.
- Turn the knob at SENSI ADJ position to insert the light scattering plate.
- Leave the equipment for 1 minute upon "SPAN CHECK" is indicated in the display.
- Push "START/STOP" switch to perform automatic sensitivity adjustment. This measurement takes 1 minute.
- Pull out the knob and return it to MEASURE position.
- Setting time period of 1 hour for the 1-hour TSP measurement.
- Push "START/STOP" to start the 1-hour TSP measurement.
- Regular checking of the time period setting to ensure monitoring time of 1 hour.

Maintenance and Calibration

- The 1-hour dust meter would be checked at 3-month intervals and calibrated at 1-year intervals throughout all stages of the air quality monitoring.
- Calibration records for direct dust meters are shown in **Appendix F**.

Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix H**.

2.3 Noise

2.3.1 Monitoring Parameters, Frequency and Duration

Table 2.4 summarizes the monitoring parameters, frequency and duration of noise monitoring. The noise in A-weighted levels L_{eq}, L_{10} and L_{90} are recorded in a 30-minute interval between 0700 and 1900 hours.

Table 2.4: Noise Monitoring Parameters, Period and Frequency

Time Period	Parameters	Frequency
Daytime on normal weekdays (0700-1900 hours)	L_{eq}(30 min), L_{90}(30 min) & L_{10}(30 min)	Once every week

Note: *70 dB(A) for schools and 65 dB(A) during school examination periods.
If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

2.3.2 Monitoring Location

Noise monitoring stations and locations are given in **Table 2.5** and shown in **Figure 1**.

Table 2.5: Noise Monitoring Station

Monitoring Station	Location
NM2A	The Arch – Sun Tower (G/F)
NM3A	Xiqu Centre (G/F)
NM4A	Next to Tsim Sha Tsui Fire Station (G/F)
NM5A	Pedestrian road (G/F) outside West Kowloon Station

2.3.3 Monitoring Equipment

Integrating Sound Level Meter was used for noise monitoring. It was a Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{Aeq}) and percentile sound pressure level (L_x). They comply with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). **Table 2.6** summarizes the noise monitoring equipment model being used.

Table 2.6: Noise Monitoring Equipment

Equipment Model	
Integrating Sound Level Meter	**Calibrator**
AWA5661 (Serial No.: 377204, 301135)	Quest QC-10 (Serial No.: Q19010183)

2.3.4 Monitoring Methodology

Field Monitoring

- The microphone of the Sound Level Meter was set at least 1.2 m above the ground.
- Free Field measurement was made at NM5A monitoring location.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting: A
  - time weighting: Fast
  - time measurement: 30 minutes intervals (between 0700-1900 on normal weekdays)
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1 kHz. If the difference in the calibration level before and after measurement was more than 1 dB, the measurement would be considered invalid and has to be repeated after re-calibration or repair of the equipment.
- During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, any site observations and noise sources were recorded on a standard record sheet.
- A correction of +3dB(A) was made to the free field measurements.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator is cleaned with soft cloth at quarterly intervals.
- The sound level meter and calibrator are sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- Calibration records are shown in **Appendix F**.

Weather Condition

- Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix H**.

2.4 Landscape and Visual

2.4.1 Monitoring Program

Table 2.7 details the monitoring program (as proposed in the WKCD EIA report) for landscape and visual impact during the construction phase.

Table 2.7: Monitoring Program for Landscape and Visual Impact during Construction Phase

Stage	Monitoring Task	Frequency	Report	Approval
Construction	Monitor implementation of proposed mitigation measures during the construction stage.	Bi-weekly	ET to report on Contractor's compliance	Counter-signed by IEC

During the landscape and visual impact monitoring, any changes in relation to the landscape and visual amenity should be monitored with reference to the baseline conditions of the site. In addition, mitigation measures were proposed in the WKCD EIA report to minimise the landscape and visual impacts during the construction phase. The proposed mitigation measures as shown in Table 9.1 and Table 9.2 of the EM&A Manual should be checked for proper implementation.

3 Monitoring Results

3.1 Impact Monitoring

Air quality, noise and landscape and visual impact monitoring was undertaken in compliance with the EM&A Manual during the reporting month.

3.2 Air Quality Monitoring

3.2.1 1-hour TSP

Results of 1-hour TSP are summarised in **Table 3.1**. Graphical plots of the monitoring results are shown in **Appendix G**.

Table 3.1: Summary of 1-hour TSP monitoring results

Monitoring Station	Monitoring Date	Start Time	1-hour TSP (µg/m3)			Range (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)
			1st Result	2nd Result	3rd Result			
AM3A	06-Oct-22	08:01	42	47	45	42-66	280.4	500
	12-Oct-22	14:05	63	58	62			
	18-Oct-22	08:03	66	63	65			
	24-Oct-22	14:06	60	60	59			
	29-Oct-22	08:07	56	56	54			
AM4A	06-Oct-22	08:09	48	40	46	40-67	278.5	500
	12-Oct-22	14:13	64	59	63			
	18-Oct-22	08:11	62	63	67			
	24-Oct-22	14:14	61	58	58			
	29-Oct-22	08:15	47	50	49			
AM5A	06-Oct-22	08:24	43	41	44	41-70	275.4	500
	12-Oct-22	14:30	58	60	59			
	18-Oct-22	08:26	65	70	68			
	24-Oct-22	14:31	60	67	66			
	29-Oct-22	08:30	56	51	51			

3.2.2 24-hour TSP

Results of 24-hour TSP are summarised in **Table 3.2**. Graphical plots of the monitoring results are shown in **Appendix G**.

Table 3.2: Summary of 24-hour TSP monitoring results

Monitoring Station	Monitoring Date	Start Time	Monitoring Results (µg/m^3)	Range (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)
AM3A	06-Oct-22	10:00	44.2	44.2-67.5	152.4	260
	12-Oct-22	10:00	59.4			
	18-Oct-22	10:00	67.5			
	24-Oct-22	10:00	54.6			

Monitoring Station	Monitoring Date	Start Time	Monitoring Results (μg/m^3)	Range (μg/m^3)	Action Level (μg/m^3)	Limit Level (μg/m^3)
	29-Oct-22	10:00	53.3			
AM4A	06-Oct-22	10:00	40.6	40.6-62.4	152.6	260
	12-Oct-22	10:00	56.7			
	18-Oct-22	10:00	62.4			
	24-Oct-22	10:00	59.0			
	29-Oct-22	10:00	46.2			
AM5A	06-Oct-22	10:00	41.2	41.2-62.2	141.1	260
	12-Oct-22	10:00	57.2			
	18-Oct-22	10:00	62.2			
	24-Oct-22	10:00	57.6			
	29-Oct-22	10:00	50.2			

No exceedance of 1-hour and 24-hour TSP (Action or Limit Level) was recorded in the reporting period.

3.3 Noise Monitoring

The construction noise monitoring results are summarized in **Table 3.3**. Graphical plots of the monitoring data and the station set-up as façade and free-field measurements are shown in **Appendix G**.

Table 3.3: Summary of noise monitoring results during normal weekdays

Monitoring Stations	Monitoring Date	Start Time	End Time	L_{eq} (30 mins) dB(A)	Limit Level for L_{eq} (dB(A))
NM2A	06-Oct-22	08:31	09:01	62.1	75
	12-Oct-22	14:35	15:05	61.6	
	18-Oct-22	08:33	09:03	61.3	
	24-Oct-22	14:36	15:06	61.5	
	29-Oct-22	08:37	09:07	61.8	
NM3A	06-Oct-22	10:01	10:31	63.6	75
	12-Oct-22	16:08	16:38	62.6	
	18-Oct-22	10:03	10:33	62.4	
	24-Oct-22	16:09	16:39	62.1	
	29-Oct-22	10:07	10:37	62.5	
NM4A	06-Oct-22	10:36	11:06	63.0	70/65^#
	12-Oct-22	16:43	17:13	61.7	
	18-Oct-22	10:38	11:08	61.3	
	24-Oct-22	16:44	17:14	61.6	
	29-Oct-22	10:42	11:12	61.5	
NM5A*	06-Oct-22	09:21	09:51	65.8	75
	12-Oct-22	15:27	15:57	64.5	
	18-Oct-22	09:23	09:53	64.4	
	24-Oct-22	15:28	15:58	64.2	
	29-Oct-22	09:27	09:57	64.2	

Remarks:

* +3dB (A) correction was applied to free-field measurement.

^ 70 dB(A) for schools and 65 dB(A) during school examination periods.

School examination was conducted on 21 and 24 October 2022 in the reporting period.

Two Action Level exceedance due to two complaints with no Limit Level exceedance of Construction Noise was recorded in the reporting month

Construction works were extended to 1900-2300 hours on 05 to 08, 10 to 11, 13 to 15, 17, 19, 21, 25 to 29 and 31 October 2022; and to holidays 1000-1900 hours on 02, 09, 16, 23 and 30 October 2022. In accordance with the EM&A Manual, additional monitoring was carried out during the restricted hours on 02, 06, 09, 13, 16, 19, 23, 25, and 30 October 2022. The L_{eq} (5 mins) is in the range of 56.1-65.1 dB(A). Construction Noise Permits for the works carried out during restricted hours were obtained and listed in **Table 4.3** and **Table 4.4**.

3.4 Landscape and Visual Impact

Landscape and visual impact inspections were conducted as part of the weekly site inspections on 13 and 27 October 2022 for Zone 2A and 05 and 19 October 2022 for Zone 2B & 2C during the reporting month. As reviewed by the registered Landscape Architect, no adverse comment on landscape and visual aspects was made during these inspections.

The landscape and visual mitigation measures were implemented during the reporting period. The summary of implementation status of the environmental mitigation measures is provided in **Appendix J**.

4 Site Environmental Management

4.1 Site Inspection

4.1.1 Zone 2A

Construction phase weekly site inspections were carried out on 06, 13, 21 and 27 October 2022 at Zone 2A. The joint site inspection with IEC, ET, ER and Contractor for Zone 2A was held on 21 October 2022. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary.

The key observations from the site inspections and associated recommendations are summarized in **Table 4.1**.

Table 4.1: Summary of Site Inspections and Recommendations for Zone 2A

Inspection Date	Parameter	Observation / Recommendation	Contactor's Responses / Action(s) Undertaken	Close-out (Date)
13-Oct-22	Noise impact	The contractor was reminded that movable noise barriers must be properly set at the concrete braking area (prior to the work resuming) to minimize noise impact to the NSRs.	The contractor has set up the movable noise barrier during breaking work to minimize noise impact.	14-Oct-22
13-Oct-22	Waste Management	The contractor was reminded that waste stored on-site should be removed from site as soon as possible.	The contractor has removed the waste off site.	14-Oct-22
27-Oct-22	Water Quality	The contractor was reminded that gap at the seaside protective measure should be avoided.	The contractor has filled the gap at the seaside protective measure. A layer of sandbags has also provided for seaside protective measure.	29-Oct-22

4.1.2 Zone 2B & 2C

Construction phase weekly site inspections were carried out on 05, 12, 19 and 26 October 2022 at Zone 2B & 2C. The joint site inspection with IEC, ET, ER and Contractor for Zone 2B & 2C was held on 12 October 2022. All observations have been recorded in the site inspection checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary.

FEHD inspection was carried out on 12 October 2022 at Zone 2B & 2C site. The purpose of the FEHD visit was to inspect the potential mosquito breeding. No adverse comments have been received. FEHD officer advised contractor on some potential stagnant water area that needs to pay attention with and raised their concern on flies issue in construction site.

The key observations from the site inspections and associated recommendations are summarized in **Table 4.2**.

Table 4.2: Summary of Site Inspections and Recommendations for Zone 2B & 2C

Inspection Date	Parameter	Observation / Recommendation	Contactor's Responses / Action(s) Undertaken	Close-out (Date)
05-Oct-22	Noise impact	The contractor was reminded that noise barriers shall be set up properly, particularly for operating RCD platforms and power packs, to minimize noise impact to the NSRs.	The contractor has properly set up the noise barriers to minimize noise impact.	12-Oct-22
05-Oct-22	Noise impact	The contractor was reminded that noise enclosure or acoustic shed shall be adopted for the excavator with hydraulic breaker during breaking works.	The contractor has dismantled the hydraulic breaker from excavator and wrapped with noise barrier.	05-Oct-22
05-Oct-22	Water Quality	The contractor was reminded to strengthen and maintain the temporary drainage system to prevent any potential wastewater runoff.	The contractor has strengthened and maintained the runoff barriers.	07-Oct-22
05-Oct-22	Water Quality/Land Contamination	The contractor was reminded that fuel drums shall only be stored in designated areas which have pollution prevention facilities or drip tray with adequate capacity.	The contractor has removed the fuel drums to designated areas.	05-Oct-22
05-Oct-22	Noise impact	The contractor was reminded to close the door/flap of the air compressor/power pack/generator when they are in use.	The contractor has closed the door/flap of the air compressor/power pack/generator.	11-Oct-22
05-Oct-22	Waste Management	The contractor was reminded to remove general refuse to designated landfill facilities regularly to avoid accumulation.	The contractor has removed general refuse to designated landfill facilities.	11-Oct-22
05-Oct-22	Air Quality	The contractor was reminded that NRMM label shall be properly displayed on all regulated machineries which can be easily visible.	The contractor has provided the NRMM label for the regulated machineries.	10-Oct-22
12-Oct-22	Land Contamination	The contractor was reminded to tidy up the construction area or remove the wasted construction materials to designated area.	The contractor has tidied up the construction area and removed the wasted construction materials.	19-Oct-22
12-Oct-22	Air Quality	The contractor was reminded that dust suppression measures shall be strengthen at the access road to minimize dust impact.	The contractor has spayed water at the access road.	17-Oct-22
12-Oct-22	Noise impact	The contractor was reminded to close the door/flap of the air compressor/power pack/generator when they are in use.	The contractor has closed the door/flap of the air compressor/power pack/generator.	17-Oct-22
12-Oct-22	Water Quality/Land Contamination	The contractor was reminded that fuel drums shall only be stored in designated areas which have pollution prevention facilities or drip tray with adequate capacity.	The contractor has removed the fuel drums to designated areas.	19-Oct-22

Inspection Date	Parameter	Observation / Recommendation	Contactor's Responses / Action(s) Undertaken	Close-out (Date)
12-Oct-22	Noise impact	The contractor was reminded that noise barriers shall be set up properly, particularly for operating power packs, to minimize noise impact to the NSRs	The contractor has properly set up the noise barriers to minimize noise impact.	19-Oct-22
19-Oct-22	Land Contamination	The contractor was reminded to tidy up the construction area or remove the wasted construction materials to designated area.	The contractor has tidied up the construction area.	26-Oct-22
19-Oct-22	Noise impact	The contractor was reminded that noise barriers shall be set up properly, particularly for operating power packs, to minimize noise impact to the NSRs.	The contractor has properly set up the noise barriers to minimize noise impact.	26-Oct-22
19-Oct-22	Noise impact	The contractor was reminded to close the door/flap of the air compressor/power pack/generator when they are in use.	The contractor has closed the door/flap of the air compressor/power pack/generator.	23-Oct-22
19-Oct-22	Water Quality	The contractor was reminded to strengthen and maintain the temporary drainage system to prevent any potential wastewater runoff.	The contractor has strengthened and maintained the runoff barriers.	20-Oct-22
26-Oct-22	Water Quality/Land Contamination	The contractor was reminded that fuel drums shall only be stored in designated areas which have pollution prevention facilities or drip tray with adequate capacity.	The contractor has removed the fuel drums to designated areas.	02-Nov-22
26-Oct-22	Air Quality/ Water Quality	The contractor was reminded that idle stockpile of dusty materials shall be fully covered with tarpaulin or removed off site as frequently as practicable.	The contractor has removed the idle stockpile from the site.	02-Nov-22
26-Oct-22	Water Quality	The contractor was reminded to strengthen and maintain the temporary drainage system to ensure that can be operated efficiently.	The contractor has strengthened and maintained the temporary drainage system.	01-Nov-22
26-Oct-22	Noise impact	The contractor was reminded to close the door/flap of the air compressor/power pack/generator when they are in use.	The contractor has closed the door/flap of the air compressor/power pack/generator.	26-Oct-22
26-Oct-22	Water Quality	The contractor was reminded to clean up the silt to prevent any potential leakage overflow into the discharge point.	The contractor has cleaned up the silt and erected the runoff barriers.	30-Oct-22

4.2 Advice on the Solid and Liquid Waste Management Status

The Contractors have been registered as a chemical waste producer for the Project. Construction and demolition (C&D) material sorting will be carried out on site. A sufficient number of receptacles were available for general refuse collection.

4.2.1 Zone 2A

As advised by the Zone 2A Contractor, 0.0 tonne and 0.0 tonne of inert C&D material were disposed of as public fill to Tseung Kwan O Area 137 Public Fill and Tuen Mun Area 38 Public Fill respectively, while 9.68 tonnes of general refuse were disposed of at SENT landfill respectively. 0.0 tonne of metals, 0.0 tonne of paper/cardboard packaging, 0.0 tonne of plastics and 0.0 tonne of timber was collected by recycling contractors in the reporting month. 67.20 tonnes of inert C&D material were reused on site. 0.0 tonne of inert C&D material were reused in other projects and 0.0 tonne of inert C&D material was imported for reuse at site in the reporting month. 0.0 tonne of inert C&D material were disposed to sorting facility and 0.0 tonne of chemical waste was collected by licensed contractors in the reporting period.

4.2.2 Zone 2B & 2C

As advised by the Zone 2B & 2C Contractor, 20.40 tonnes, 9195.83 tonnes and 25170.91 tonnes of inert C&D material were disposed of as public fill to Chai Wan Public Fill Barging Point, Tseung Kwan O Area 137 Public Fill and Tuen Mun Area 38 Public Fill respectively, while 28.50 tonnes of general refuse were disposed of at SENT landfill. 86.63 tonne of metals, 0.0 tonne of paper/cardboard packaging, 0.0 tonne of plastics and 0.0 tonne of timber was collected by recycling contractors in the reporting month. 4340.02 tonnes of inert C&D material were reused on site. 2447.22 tonnes of inert C&D material were reused in other projects and 0.0 tonne of inert C&D material was imported for reuse at site in the reporting month. 0.0 tonne of inert C&D material was disposed to sorting facility and 0.0 tonne of chemical waste was collected by licensed contractors in the reporting period.

The cumulative waste generation records for Zone 2A and Zone 2B & 2C are shown in **Appendix I**.

4.3 Status of Environmental Licenses and Permits

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period are summarised in **Table 4.3**.

4.3.1 Zone 2A

Table 4.3: Status of Environmental Submissions, Licenses and Permits for Zone 2A

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Chemical Waste Producer Registration				
WPN5113-256-B2597-01	10-Sep-20	--	Valid	--
Billing Account Construction Waste Disposal				
7037500	09-Jun-20	--	Account Active	--
Construction Noise Permit				
GW-RE0432-22	11-May-22	10-Nov-22	Valid	Pumping Test
Wastewater Discharge License				
WT00037344-2021	01-Feb-21	28-Feb-26	Valid	--
Notification under Air Pollution Control (Construction Dust) Regulation				
456376	21-May-20	--	Notified	--

4.3.2 Zone 2B & 2C

The environmental permits, licenses, and/or notifications on environmental protection for this Project which were valid during the period are summarised in **Table 4.4**.

Table 4.4: Status of Environmental Submissions, Licenses and Permits for Zone 2B & 2C

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Chemical Waste Producer Registration				
WPN5113-256-V2302-01	17-Aug-21	--	Valid	--
Billing Account Construction Waste Disposal				
7041264	11-Aug-21	--	Account Active	--
Construction Noise Permit				
GW-RE0984-22	24-Sep-22	23-Nov-22	Valid	--
Wastewater Discharge License				
WT00039734-2021	25-Nov-21	30-Nov-26	Valid	--
Notification under Air Pollution Control (Construction Dust) Regulation				
470022	29-Jul-21	--	Notified	--

4.4 Recommended Mitigation Measures

The EM&A programme followed the recommended mitigation measures in the EM&A Manual. The EM&A requirements as well as the summary of implementation status of the environmental mitigation measures are provided in **Appendix J**. In particular, the following mitigation measures were brought to attention during the site inspections:

4.4.1 Zone 2A

Noise Impact

- Movable noise barriers should be properly set up at noisy work area (e.g. breaking work) to minimize noise impact to NSRs.

Waste Management

- Waste stored on-site should be removed from site as soon as possible.

Temporary Water Drainage System & Water Quality

- Gap at the seaside protective measure should be avoided to prevent surface runoff to the nearby waterbody during storm events.

4.4.2 Zone 2B & 2C

Air Quality

- NRMM Label should be provided for all regulated machinery on site.

Noise Impact

- Noise barriers should be properly set up to minimize noise impact to NSRs.

Waste Management

- Chemical wastes should be properly placed with drip trays/removed to storage area to prevent chemical spillage.
- Carry out waste sorting as far as practicable and remove all general waste to designated landfill facilities regularly.

Temporary Water Drainage System & Water Quality

- Idle stockpile of construction materials should be fully covered with tarpaulin when not being used or removed from the site during rainstorm.
- Temporary drainage system shall be maintained regularly to ensure efficient operation.

5 Compliance with Environmental Permit

The status of the required submission under the EP during the reporting period is summarized in **Table 5.1**.

Table 5.1: Status of Submissions under the Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report for September 2022	13 October 2022

6 Report in Non-compliance, Complaints, Notification of Summons and Successful Prosecutions

6.1 Record on Non-compliance of Action and Limit Levels

There was no breach of Action or Limit levels for Air Quality (1-hour TSP and 24-hour TSP) in this reporting month.

Two Action Level exceedance due to Two complaints with no Limit Level exceedance of Construction Noise was recorded in the reporting month.

6.2 Record on Environmental Complaints Received

Two environmental complaints were received in the reporting month.

On 07 October 2022, the EPD and Communications and Public Affairs Department/WKCDA have received a complaint from Mr. Leung, assistant of Mr. HUNG, the district councilor of Yau Tsim Mong District Council (YTMDC), regarding noise pollution at WKCD construction site. The complainant claimed that: "本年 3 月至 4 月期間，就本辦事處轉介九龍站住戶投訴有關西九文化區地盤每天早上持續發出高頻率的施工噪音滋擾問題，感謝閣下於本年 5 月份回函並採取了多項措施，有關施工噪音滋擾情況亦見有所改善。然而，近日再次接連收到有居民投訴，上述地盤的噪音滋擾又趨嚴重，每天早上 7 時已經開動大型機器，直至晚上 8 時地盤仍有很大的噪音發出(請見附件由居民拍攝的短片)，實在非常擾民。由於西九文化區地盤頗為鄰近九龍站民居，希望 貴局正視施工噪音嚴重影響附近居民作息和日常生活，敦促承辦商避免在平日早上 9 時前及晚上 7 時後及公眾假期進行高噪音工序，盡量減低對居民的滋擾。" (Residents from The Arch claim that noise generated from WKCD construction site starting from 7:00 am and until 8:00 pm caused disturbance to nearby resident. Mr. Leung has reminded WKCDA and the Contractors avoid noisy works before 9:00 am and after 7:00 pm on normal weekdays and on public holidays to minimise nuisance to the residents.) The complainant has also provided a video clip demonstrating the concerned noise during nighttime on 05 October 2022. Investigation at Zone 2A site revealed that no site activity was conducted before 8:00 am and after 7:00 pm (no nighttime work) on Zone 2A site in October 2022. Thereby, the complaint might not be attributable to the Zone 2A site (based on the described noise source and video clip provided by the complainant). Nonetheless, the Contractor is recommended to maintain close monitoring of noise control on site, and strengthen the implementation of noise mitigation measures to reduce impacts to the nearby residents. Investigation at Zone 2B & 2C site revealed that some noise might be related to the construction activities conducted at Zone 2B & 2C site. However, those construction activities were conducted within statutory working hours and under the approved construction noise permit (GW-RE0984-22) during restricted hours. Nonetheless, the Contractor is recommended to maintain close monitoring of noise control on site, and strengthen the implementation of noise mitigation measures to reduce impacts to the nearby residents.

On 29 October 2022, the EPD has received a complaint from Mr. Leung, assistant of Mr. HUNG, the district councilor of Yau Tsim Mong District Council (YTMDC), regarding noise pollution at WKCD construction site, and referred to WKCDA on 31 October 2022. The complainant claimed that: "本辦事處持續收到九龍站居民投訴西九文化區地盤施工造成噪音和塵埃滋擾，近日再有投

訴，指西九文化區地盤晚上 10 時多仍在施工，噪音影響居民正常作息 (請見附件短片) 。現特函促請 環保署派員巡查確保地盤施工符合環保條例規定，敦促承辦商加強地盤的隔音措施，避免在早上 9 時前及晚上 7 時後進行高噪音工序，盡量減低對居民的滋擾。”(The complainant claimed that WKCD construction site is still under construction after 10:00 pm, and the noise caused disturbance to nearby residents. The complainant also reminded the Contractors to strengthen the noise mitigation measures and avoid noisy works before 9:00 am and after 7:00 pm to minimise nuisance to the residents.) The complainant has also provided a video clip showing the concerned noise source during nighttime works. Investigation at Zone 2A site revealed that no site activity was conducted before 8:00 am and after 7:00 pm (no nighttime works) on WKCD Zone 2A site in October 2022. Thereby, the complaint may not be attributable to the Zone 2A site. Nonetheless, the Contractor is recommended to maintain close monitoring of noise control on site, and strengthen the implementation of noise mitigation measures to reduce impacts to the nearby residents. Investigation at Zone 2B & 2C site revealed that the concerned noise might be related to the construction activities carried out on 28 October 2022 at Zone 2B & 2C site. Therefore, the complaint might be attributable to the Zone 2B & 2C site. However, those construction activities were conducted under the approved construction noise permit (No. GW-RE0984-22) during the restricted hours. Nonetheless, the Contractor is recommended to maintain close monitoring of noise control on site, and strengthen the implementation of noise mitigation measures to reduce impacts to the nearby residents.

The cumulative statistics on complaints were provided in **Appendix K**.

6.3 Record on Notifications of Summons and Successful Prosecution

No notifications of summons or successful prosecutions were received this month. The cumulative statistics on notifications of summons and successful prosecutions were provided in **Appendix K**.

7 Future Key Issues

7.1 Construction Works for the Coming Month(s)

The major site works for Zone 2A scheduled to be commissioned in the coming month include:

Zone 2A-1

- Site Works before Handover
  - Site Clearance

Zone 2A-2

- Site Works before Handover
  - Site Clearance

The major site works for Zone 2B & 2C scheduled to be commissioned in the coming month include:

KD05 (Section 1), KD06 (Section 2), KD07 (Section 3), KD08 (Section 4) and KD09 (Section 5)

- Bored Pile Works
  - RCD Drilling, Airlifting, Cage Installation & Concreting and Excavation

7.2 Key Issues for the Coming Month

7.2.1 Zone 2A

Key issues to be considered in the coming month include:

- Generation of dust from construction works;
- Noise impact from construction works;
- Generation of site surface runoffs and wastewater from activities on-site;
- The temporary drainage system should be well managed and updated with the site condition, particularly on rainy days;
- Management of stockpiles and slopes, particularly on rainy days;
- Management of chemicals and avoidance of oil spillage on-site.
- Sorting, recycling, storage and disposal of general refuse and construction waste; and

7.2.2 Zone 2B & 2C

Key issues to be considered in the coming month include:

- Generation of dust from construction works;
- Noise impact from piling works;
- Generation of site surface runoffs and wastewater from activities on-site;
- Management of stockpiles and slopes, particularly on rainy days;
- Sorting, recycling, storage and disposal of general refuse and construction waste; and
- Management of chemicals and avoidance of oil spillage on-site.

7.3 Monitoring Schedule for the Coming Month

The environmental site inspection and environmental monitoring will be continued in the coming month. Impact monitoring for air quality and noise for Zone 2A and Zone 2B & 2C in accordance

with the approved EM&A Manual has commenced since 03 October 2020 and 30 September 2021 respectively. The tentative monitoring schedule for the coming month is shown in the **Appendix E**.

8 Conclusions and Recommendations

8.1 Conclusions

The EM&A programme as recommended in the EM&A Manual has been undertaken with the commencement of the construction activities at Zone 2A on 03 October 2020, and the major construction works of Zone 2B & 2C commenced on 30 September 2021.

Monitoring of air quality and noise with respect to the Projects is underway. In particular, the 1-hour TSP, 24-hour TSP, noise level (as L_{eq}, 30 minutes) under monitoring have been checked against established Action and Limit levels. There was no breach of Action or Limit levels for Air Quality (1-hour TSP and 24-hour TSP) in this reporting month. Two Action Level exceedance due to two complaints with no Limit Level exceedance of Construction Noise was recorded in the reporting month.

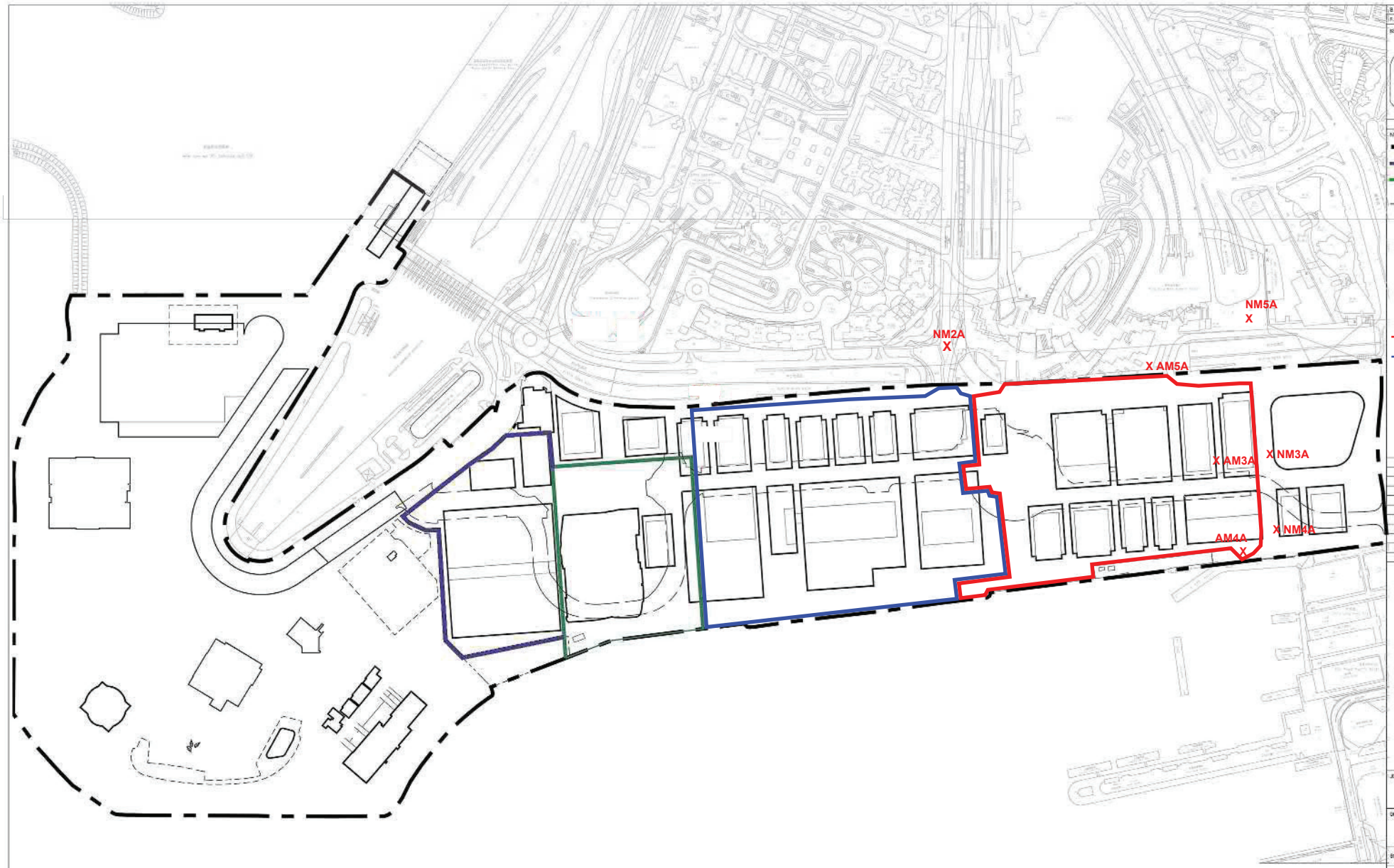
Two environmental complaints were recorded in the reporting month. No notifications of summons or successful prosecutions were received during the reporting month.

Weekly construction phase site inspections and bi-weekly landscape and visual impact inspections were conducted during the reporting month as required. It was observed that the Contractors had implemented all possible and feasible mitigation measures to mitigate the potential environmental impacts during construction phase works.

8.2 Recommendations

Potential environmental impacts due to the construction activities, including air quality, noise, water quality, waste, landscape and visual, will be monitored or reviewed. The recommended environmental mitigation measures shall be implemented on site and regular inspections as required will be carried out to ensure that the environmental conditions are acceptable.

Figure 1 Site Layout Plan and Monitoring Stations



B.D. REF:
H.S.D. REF:

KEY PLAN

KEY PLAN

NOTES:

WKCD BOUNDARY

M+ MUSEUM BOUNDARY

LYRIC THEATRE BOUNDARY

BOUNDARY OF UNDERPASS ROAD SERVING THE PLANNED WKCD

X CONSTRUCTION AIR/NOISE MONITORING STATION

REMARKS:
THE AIR MONITORING STATION AM2A HAS BEEN RELOCATED TO THE ALTERNATIVE MONITORING STATION AM2B AT 1ST FLOOR OF GAMMON'S SITE OFFICE ON 26 FEBRUARY 2019.

Zone 2A Boundary

Zone 2B & 2C Boundary

REV.	DATE	DESCRIPTION	INITIAL

JOB TITLE: **DEVELOPMENT AT WEST KOWLOON CULTURAL DISTRICT**

DRAWING TITLE: **SITE LAYOUT PLAN AND MONITORING STATIONS**

SCALE	1:100	PRINTED	A1
CHECKED		DATE	
APPROVED		DATE	
DRAWN	TY	DATE	05-05-2015

CONTRACT NO.: -

DRAWING NO.: **FIGURE 1**

REV.: XX

CAD REF NAME: XXXXX-AUT-PMS DWG-P60-L080-0080-XXX.dwg

AUTHORITY

westKowloon
西九文化區

A1 (841mm x 594mm) Sheet Size

Appendices

A. Project Organisation
B. Tentative Construction Programme
C. Action and Limit Levels for Construction Phase
D. Event and Action Plan for Air Quality, Noise, Landscape and Visual Impact
E. Monitoring Schedule
F. Calibration Certifications
G. Graphical Plots of the Monitoring Results
H. Meteorological Data Extracted from Hong Kong Observatory
I. Waste Flow table
J. Environmental Mitigation Measures – Implementation Status
K. Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

A. Project Organisation

Project Organization

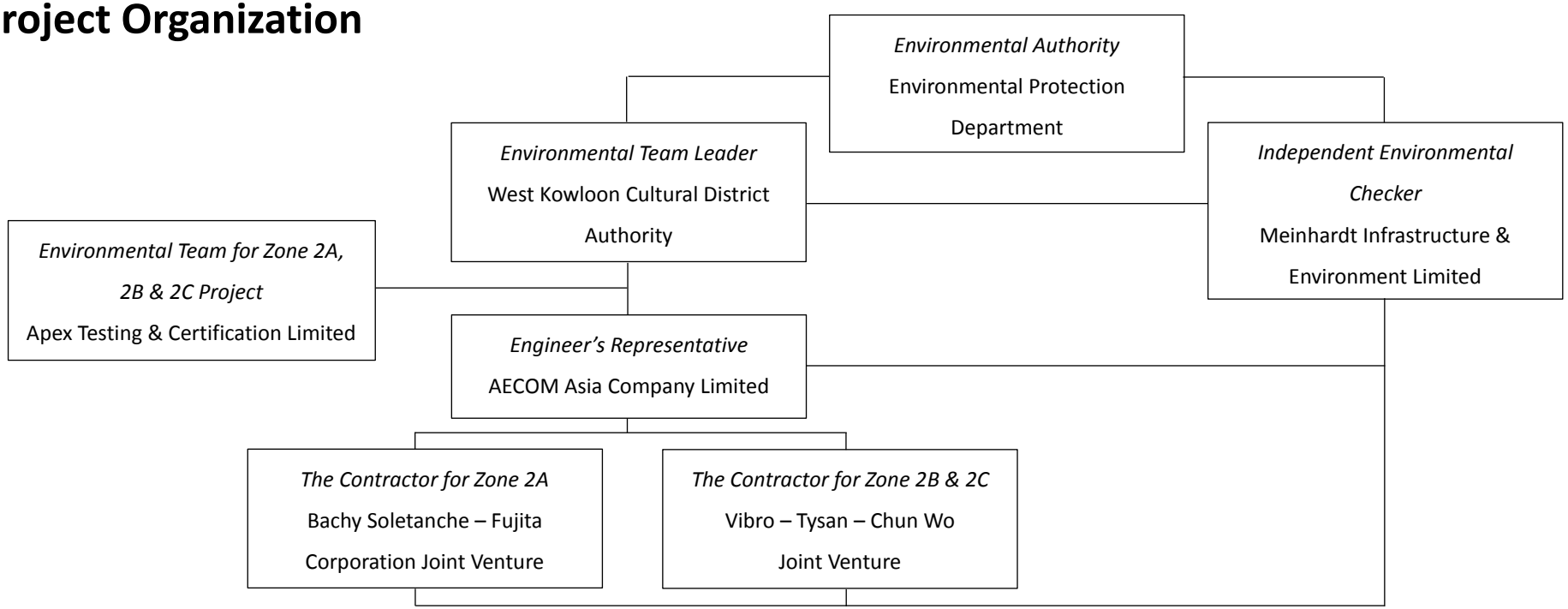


Table A-1: Contract Information

Company Name	Role	Name	Telephone	Email
West Kowloon Cultural District Authority	WKCDA Representative & Project ETL	Mr. C.K. WU	5506 9178	ck.wu@wkcda.hk
Meinhardt Infrastructure & Environment Limited	Independent Environmental Checker	Ms. Claudine LEE	2859 5409	caludinelee@meinhardt.com.hk
AECOM Asia Company Limited	Resident Engineer (Zone 2A)	Mr. Alex GBAGUIDI	3619 6287	alex.gbaguidi@aecom.com
AECOM Asia Company Limited	Resident Engineer (Zone 2B & 2C)	Ms. Carmen CHAN	6892 9271	carmen.chan@aecom.com
Bachy Soletanche – Fujita Corporation Joint Venture	Interface & Environmental Manager	Mr. Philip CHAN	9668 8403	philip.chan@soletanche-bachy.com
Vibro – Tysan – Chun Wo Joint Venture	Environmental Sustainability Manager	Mr. Tony YAM	2137 5586	tony_yam@vibro.com.hk
Apex Testing & Certification Limited	Contractor's Environmental Team Leader	Mr. Calvin LUI	9629 9718	calvinlui@apextestcert.com

B. Tentative Construction Programme

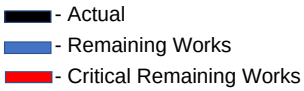
Zone 2A

Project Name: Foundation and ELS Works for Integrated Basement and Underground Road in Zone 2A of the West Kowloon Cultural District

3-Month Rolling Programme

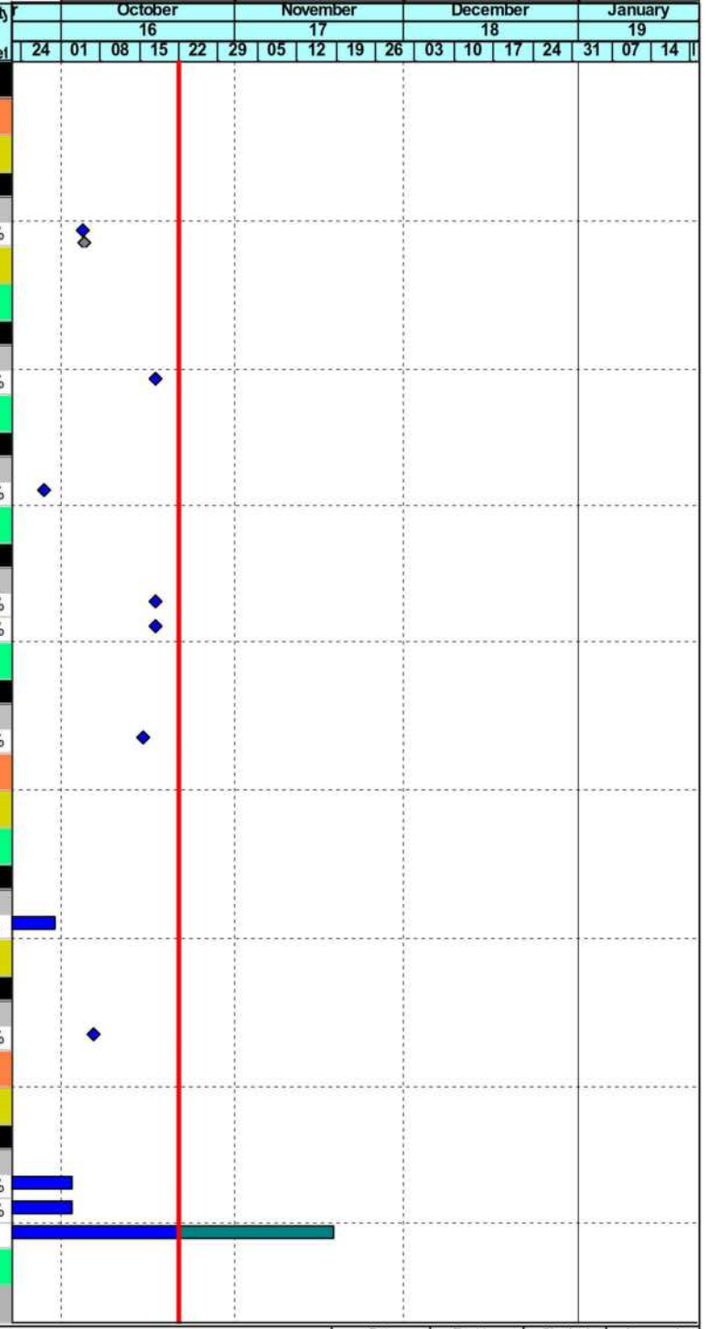
Activity Description	Duration (Cal. Day)	Start Date	Finish Date
Zone 2A-1 Foundation, ELS Works and Blinding to Formation (KD01)			
BA14 Submission			
BD Acknowledgement of BA14	29	20-Sep-22	18-Oct-22
Hoarding Modification			
Hoarding Modification	41	20-Sep-22	30-Oct-22
Site Works before Handover			
Site Clearance	23	1-Nov-22	23-Nov-22
Zone 2A-2 Foundation, ELS Works and Blinding to Formation (KD02)			
BA14 Submission			
BD Acknowledgement of BA14	29	27-Sep-22	25-Oct-22
Site Works before Handover			
Site Clearance	23	1-Nov-22	23-Nov-22

2022														2023			
October				November				December					January				
7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27
W126	W127	W128	W129	W130	W131	W132	W133	W134	W135	W136	W137	W138	W139	W140	W141	W142



Zone 2B & 2C

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
Piling for Integrated Basement and U/G Road in Zone 2B & 2C								
Contract Dates								
Optional Works subjected to CA's Instruction								
CO2A	Last CAI date for Optional Works Item No.2A (330 Days to 440 Days after Commencemei	05-Oct-22		0	05-Oct-22 A			100%
Access Dates of Site Portion								
60 days after Commencement								
ACB40	Access to Site Portion B40	20-Sep-21		0	18-Oct-22 A			100%
120 days after Commencement								
ACB18	Access to Site Portion B18	19-Nov-21		0	28-Sep-22 A			100%
150 days after Commencement								
ACB01	Access to Site Portion B01	19-Dec-21		0	18-Oct-22 A			100%
ACB34	Access to Site Portion B34	19-Dec-21		0	18-Oct-22 A			100%
270 days after Commencement								
ACB35	Access to Site Portion B35 (To be agreed with the Zone 2A contractor)	18-Apr-22		0	15-Oct-22 A			100%
Mobilization Stage								
Site Mobilization Works								
Pre-Construction Works before Piling Commencement								
MOBP.10.1300	Trial Pit for Drillholes & Removal of Existing Substructures / Ground Slab [520 nos]	19-Aug-21	30-Apr-22	407	19-Aug-21 A	30-Sep-22 A		98%
End of Mobolization								
MOBP.99.1080	End of Mobilization Stage		18-May-22	0		07-Oct-22 A		100%
Construction Stage								
Impact Assessment for Works Along Zone 2A ELS								
IAR.N.1000	IAR-N Submission and Approval of Impact Assessment Report (North Portion)			13	20-Sep-22 A	03-Oct-22 A		100%
IAR.N.2350	IAR-N Submission and Approval of Method Statment for Drainage Diversion (North Portior			20	13-Sep-22 A	03-Oct-22 A		100%
IAR.S.1000	IAR-S Submission and Approval of Impact Assessment Report (South Portion)			81	30-Aug-22 A	18-Nov-22	416	0%
Drainage Diversion Works (North Portion)								
SD42 - 1200mm Dia. Drainage Pipe - SD103B								



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Data Date: 22-Oct-22
Print Date: 21-Oct-22_17:13

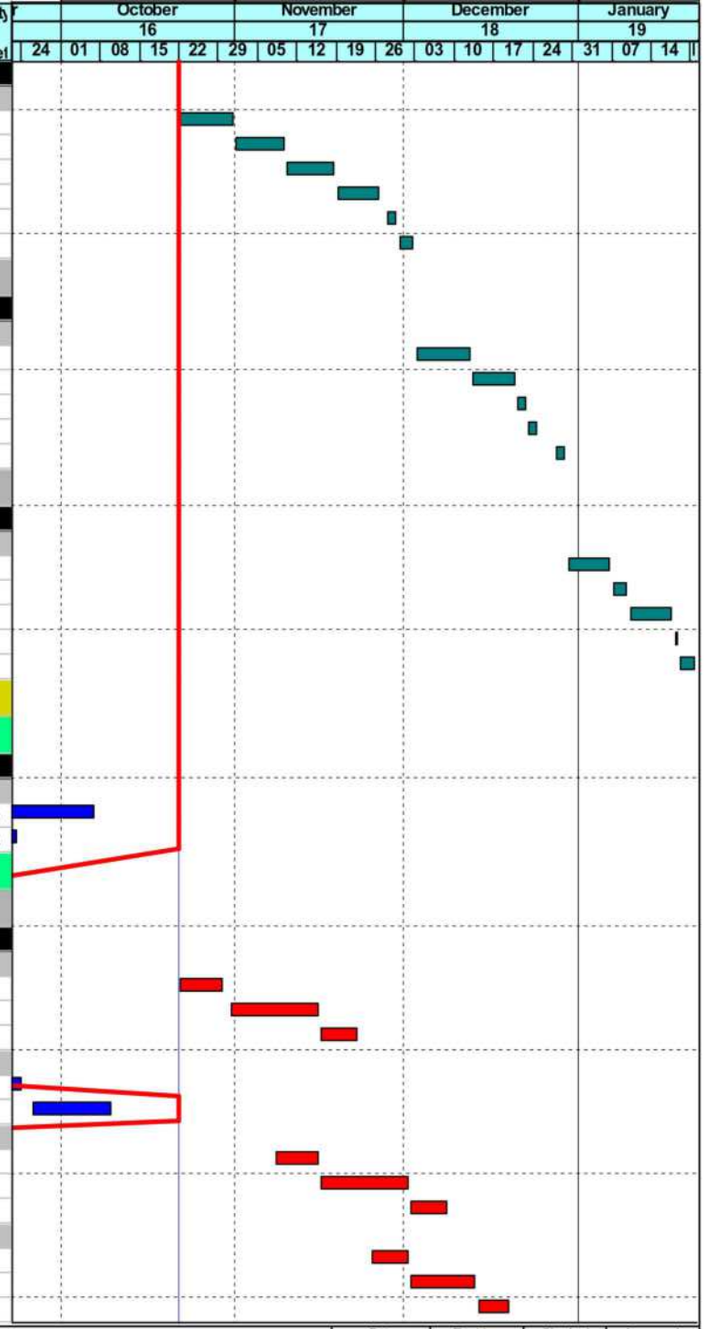
Planned Bar
Critical Bar
Baseline
Milestone
Actual MS
Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

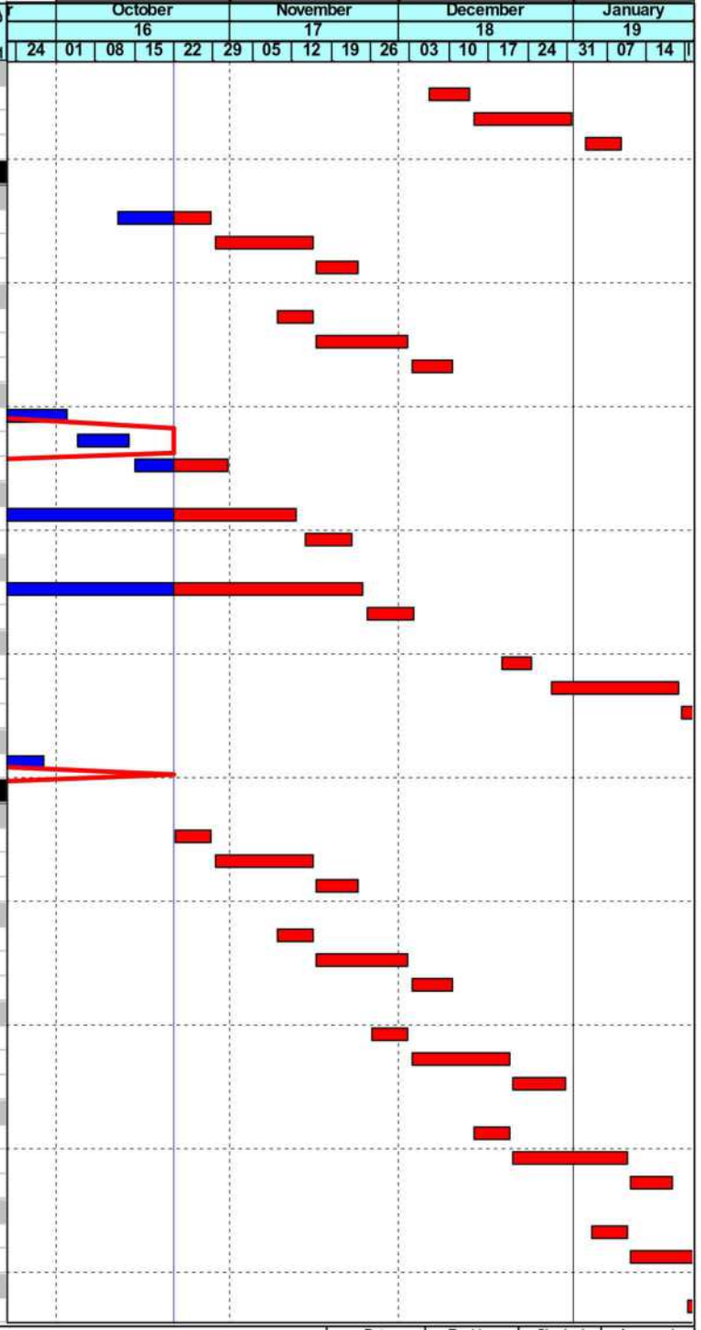
VIBRO

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
IAR.N.2000	IAR-N ELS Works for Drainage Works			8	22-Oct-22	31-Oct-22	108	0%
IAR.N.2020	IAR-N Construction of Manhole SD42			8	01-Nov-22	09-Nov-22	108	0%
IAR.N.2040	IAR-N Construction of Manhole SD103B			8	10-Nov-22	18-Nov-22	108	0%
IAR.N.2060	IAR-N Laying 1200mm Dia. Drainage Pipe (SD42 - SD103B)			7	19-Nov-22	26-Nov-22	108	0%
IAR.N.2080	IAR-N Testing the Drainage Pipe (SD42 - SD103B)			2	28-Nov-22	29-Nov-22	108	0%
IAR.N.2100	IAR-N Backfilling & Removal of Sheet Piling			3	30-Nov-22	02-Dec-22	108	0%
SD103B - 1050mm Dia. Drainage Pipe - SD103A								
IAR.N.2120	IAR-N ELS Works for Drainage Works			8	03-Dec-22	12-Dec-22	108	0%
IAR.N.2140	IAR-N Construction of Manhole SD103A			7	13-Dec-22	20-Dec-22	108	0%
IAR.N.2160	IAR-N Laying 1050mm Dia. Drainage Pipe (SD42 - SD103B)			2	21-Dec-22	22-Dec-22	108	0%
IAR.N.2180	IAR-N Testing the Drainage Pipe (SD103B - SD103A)			2	23-Dec-22	24-Dec-22	108	0%
IAR.N.2200	IAR-N Backfilling & Removal of Sheet Piling			2	28-Dec-22	29-Dec-22	108	0%
SD103A - 450mm Dia. Drainage Pipe - MH103								
IAR.N.2220	IAR-N ELS Works for Drainage Works			6	30-Dec-22	06-Jan-23	108	0%
IAR.N.2240	IAR-N Removal of Existing Manhole MH103			2	07-Jan-23	09-Jan-23	108	0%
IAR.N.2260	IAR-N Construction of New Manhole MH103			7	10-Jan-23	17-Jan-23	108	0%
IAR.N.2280	IAR-N Laying 450mm Dia. Drainage Pipe (SD42 - SD103B)			1	18-Jan-23	18-Jan-23	108	0%
IAR.N.2300	IAR-N Testing the Drainage Pipe (SD103A - MH103)			3	19-Jan-23	21-Jan-23	108	0%
Pile Construction								
Predrilling								
PD.1080	Predrilling for BP in KD05 [76 nos.]	30-Sep-21	30-Mar-22	300	30-Sep-21 A	07-Oct-22 A		90%
PD.1160	Predrilling for BP in KD09 [149 nos.] incl. 4 additional nos.	30-Sep-21	30-Mar-22	291	30-Sep-21 A	23-Sep-22 A		97%
KD05 (Section 1)								
Bored Piles								
CD07								
09								
CBA-BP02.10	BP - Excavation	11-May-22	18-May-22	7	22-Oct-22	29-Oct-22	-82	0%
CBA-BP02.20	BP - RCD Drilling	19-May-22	04-Jun-22	14	31-Oct-22	15-Nov-22	-82	0%
CBA-BP02.30	BP - Airlift, Cage Install and Concrete	06-Jun-22	11-Jun-22	6	16-Nov-22	22-Nov-22	-44	0%
10								
CBA-BP05.20	BP - RCD Drilling	06-Jun-22	16-Jun-22	2	22-Sep-22 A	24-Sep-22 A		0%
CBA-BP05.30	BP - Airlift, Cage Install and Concrete	17-Jun-22	22-Jun-22	10	26-Sep-22 A	10-Oct-22 A		0%
13								
CBA-BP01.10	BP - Excavation	25-Mar-22	01-Apr-22	7	08-Nov-22	15-Nov-22	-82	0%
CBA-BP01.20	BP - RCD Drilling	02-Apr-22	22-Apr-22	14	16-Nov-22	01-Dec-22	-82	0%
CBA-BP01.30	BP - Airlift, Cage Install and Concrete	23-Apr-22	29-Apr-22	6	02-Dec-22	08-Dec-22	-58	0%
15								
CBA-BP06.10	BP - Excavation	04-May-22	11-May-22	6	25-Nov-22	01-Dec-22	-82	0%
CBA-BP06.20	BP - RCD Drilling	12-May-22	23-May-22	10	02-Dec-22	13-Dec-22	-82	0%
CBA-BP06.30	BP - Airlift, Cage Install and Concrete	24-May-22	28-May-22	5	14-Dec-22	19-Dec-22	-67	0%



Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
16								
CBA-BP03.10	BP - Excavation	16-May-22	23-May-22	7	06-Dec-22	13-Dec-22	-82	0%
CBA-BP03.20	BP - RCD Drilling	24-May-22	09-Jun-22	14	14-Dec-22	31-Dec-22	-82	0%
CBA-BP03.30	BP - Airlift, Cage Install and Concrete	10-Jun-22	16-Jun-22	6	03-Jan-23	09-Jan-23	-82	0%
CD05								
03								
P17-BP05.10	BP - Excavation	06-Jan-22	12-Jan-22	15	12-Oct-22 A	28-Oct-22	-99	0%
P17-BP05.20	BP - RCD Drilling	13-Jan-22	29-Jan-22	15	29-Oct-22	15-Nov-22	-99	0%
P17-BP05.30	BP - Airlift, Cage Install and Concrete	31-Jan-22	10-Feb-22	7	16-Nov-22	23-Nov-22	-45	0%
08								
P17-BP01.10	BP - Excavation	30-Apr-22	07-May-22	6	09-Nov-22	15-Nov-22	-99	0%
P17-BP01.20	BP - RCD Drilling	10-May-22	26-May-22	15	16-Nov-22	02-Dec-22	-99	0%
P17-BP01.30	BP - Airlift, Cage Install and Concrete	27-May-22	04-Jun-22	7	03-Dec-22	10-Dec-22	-60	0%
09								
P17-BP09.10	BP - Excavation	20-May-22	26-May-22	8	22-Sep-22 A	03-Oct-22 A		0%
P17-BP09.20	BP - RCD Drilling	27-May-22	18-Jun-22	8	05-Oct-22 A	14-Oct-22 A		0%
P17-BP09.30	BP - Airlift, Cage Install and Concrete	20-Jun-22	28-Jun-22	14	15-Oct-22 A	31-Oct-22	-25	0%
10								
P22&P19-BP16..	BP - RCD Drilling	20-Jun-22	12-Jul-22	56	06-Sep-22 A	12-Nov-22	-82	0%
P22&P19-BP16..	BP - Airlift, Cage Install and Concrete	13-Jul-22	21-Jul-22	8	14-Nov-22	22-Nov-22	-44	0%
11								
P22&P19-BP26..	BP - RCD Drilling	13-Jan-22	18-Feb-22	110	16-Jul-22 A	24-Nov-22	-54	0%
P22&P19-BP26..	BP - Airlift, Cage Install and Concrete	19-Feb-22	28-Feb-22	8	25-Nov-22	03-Dec-22	-54	0%
13								
P22&P19-BP25.	BP - Excavation	07-Mar-22	12-Mar-22	6	19-Dec-22	24-Dec-22	-99	0%
P22&P19-BP25..	BP - RCD Drilling	14-Mar-22	04-Apr-22	19	28-Dec-22	19-Jan-23	-99	0%
P22&P19-BP25..	BP - Airlift, Cage Install and Concrete	06-Apr-22	14-Apr-22	8	20-Jan-23	01-Feb-23	-99	0%
15								
P22&P19-BP17..	BP - Airlift, Cage Install and Concrete	26-May-22	04-Jun-22	11	16-Sep-22 A	29-Sep-22 A		0%
CD04								
01								
P17-BP03.10	BP IAR-N - Excavation	24-Nov-21	30-Nov-21	6	22-Oct-22	28-Oct-22	-161	0%
P17-BP03.20	BP IAR-N - RCD Drilling	01-Dec-21	17-Dec-21	15	29-Oct-22	15-Nov-22	-161	0%
P17-BP03.30	BP IAR-N - Airlift, Cage Install and Concrete	18-Dec-21	28-Dec-21	7	16-Nov-22	23-Nov-22	-45	0%
02								
P17-BP12.10	BP IAR-N - Excavation	20-Dec-21	28-Dec-21	6	09-Nov-22	15-Nov-22	-161	0%
P17-BP12.20	BP IAR-N - RCD Drilling	29-Dec-21	15-Jan-22	15	16-Nov-22	02-Dec-22	-161	0%
P17-BP12.30	BP IAR-N - Airlift, Cage Install and Concrete	17-Jan-22	24-Jan-22	7	03-Dec-22	10-Dec-22	-60	0%
05								
P17-BP16.10	BP - Excavation	22-Feb-22	28-Feb-22	6	26-Nov-22	02-Dec-22	-161	0%
P17-BP16.20	BP - RCD Drilling	01-Mar-22	17-Mar-22	15	03-Dec-22	20-Dec-22	-161	0%
P17-BP16.30	BP - Airlift, Cage Install and Concrete	18-Mar-22	25-Mar-22	7	21-Dec-22	30-Dec-22	-75	0%
06								
P17-BP02.10	BP - Excavation	11-Mar-22	17-Mar-22	6	14-Dec-22	20-Dec-22	-161	0%
P17-BP02.20	BP - RCD Drilling	18-Mar-22	04-Apr-22	15	21-Dec-22	10-Jan-23	-161	0%
P17-BP02.30	BP - Airlift, Cage Install and Concrete	06-Apr-22	13-Apr-22	7	11-Jan-23	18-Jan-23	-90	0%
07								
P17-BP08.10	BP IAR-N - Excavation	29-Mar-22	04-Apr-22	6	04-Jan-23	10-Jan-23	-161	0%
P17-BP08.20	BP IAR-N - RCD Drilling	06-Apr-22	26-Apr-22	15	11-Jan-23	31-Jan-23	-161	0%
08								
P17-BP13.10	BP IAR-N (Optional Item no.3) - Excavation	28-Apr-22	05-May-22	6	21-Jan-23	31-Jan-23	-161	0%

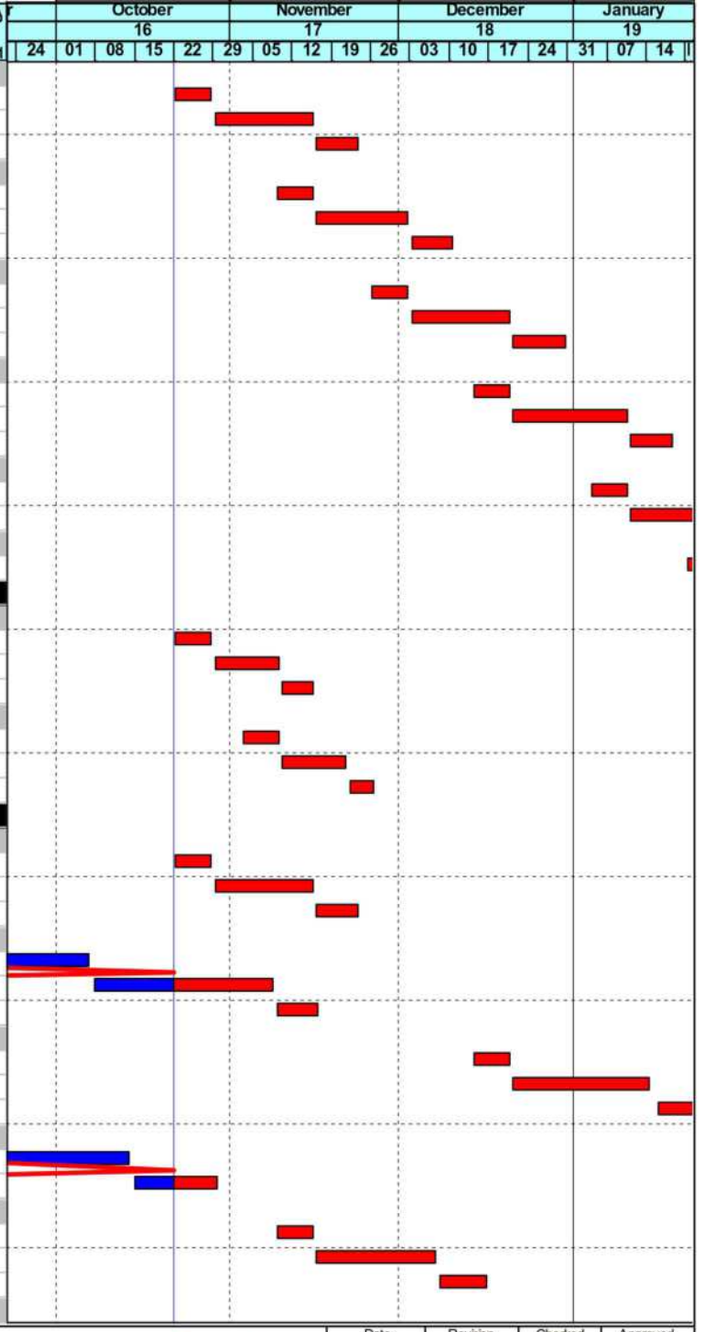


Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
12								
P17-BP22.10	BP IAR-N (Optional Item no.3) - Excavation	03-May-22	10-May-22	6	22-Oct-22	28-Oct-22	-135	0%
P17-BP22.20	BP IAR-N (Optional Item no.3) - RCD Drilling	11-May-22	27-May-22	15	29-Oct-22	15-Nov-22	-135	0%
P17-BP22.30	BP IAR-N (Optional Item no.3) - Airlift, Cage Install and Concrete	28-May-22	06-Jun-22	7	16-Nov-22	23-Nov-22	-45	0%
13								
P17-BP18.10	BP IAR-N (Optional Item no.3) - Excavation	21-May-22	27-May-22	6	09-Nov-22	15-Nov-22	-135	0%
P17-BP18.20	BP IAR-N (Optional Item no.3) - RCD Drilling	28-May-22	15-Jun-22	15	16-Nov-22	02-Dec-22	-135	0%
P17-BP18.30	BP IAR-N (Optional Item no.3) - Airlift, Cage Install and Concrete	16-Jun-22	23-Jun-22	7	03-Dec-22	10-Dec-22	-60	0%
14								
P17-BP17.10	BP IAR-N - Excavation	09-Jun-22	15-Jun-22	6	26-Nov-22	02-Dec-22	-135	0%
P17-BP17.20	BP IAR-N - RCD Drilling	16-Jun-22	04-Jul-22	15	03-Dec-22	20-Dec-22	-135	0%
P17-BP17.30	BP IAR-N - Airlift, Cage Install and Concrete	05-Jul-22	12-Jul-22	7	21-Dec-22	30-Dec-22	-75	0%
16								
P17-BP07.10	BP - Excavation	15-Jul-22	21-Jul-22	6	14-Dec-22	20-Dec-22	-135	0%
P17-BP07.20	BP - RCD Drilling	22-Jul-22	08-Aug-22	15	21-Dec-22	10-Jan-23	-135	0%
P17-BP07.30	BP - Airlift, Cage Install and Concrete	09-Aug-22	16-Aug-22	7	11-Jan-23	18-Jan-23	-90	0%
17								
P17-BP04.10	BP IAR-N (Optional Item no.3) - Excavation	02-Aug-22	08-Aug-22	6	04-Jan-23	10-Jan-23	-135	0%
P17-BP04.20	BP IAR-N (Optional Item no.3) - RCD Drilling	09-Aug-22	25-Aug-22	15	11-Jan-23	31-Jan-23	-135	0%
18								
P17-BP21.10	BP IAR-N - Excavation	19-Aug-22	25-Aug-22	6	21-Jan-23	31-Jan-23	-135	0%
TD08								
10								
CBA-BPC36Jb.1(	BP IAR-N (Optional Item no.3) - Excavation	28-Apr-22	05-May-22	6	22-Oct-22	28-Oct-22	-48	0%
CBA-BPC36Jb.2(	BP IAR-N (Optional Item no.3) - RCD Drilling	06-May-22	18-May-22	10	29-Oct-22	09-Nov-22	-48	0%
CBA-BPC36Jb.3(	BP IAR-N (Optional Item no.3) - Airlift, Cage Install and Concrete	19-May-22	24-May-22	5	10-Nov-22	15-Nov-22	-38	0%
12								
CBA-BPC36Ka.1	BP IAR-N (Optional Item no.3) - Excavation	24-May-22	30-May-22	6	03-Nov-22	09-Nov-22	-48	0%
CBA-BPC36Ka.2	BP IAR-N (Optional Item no.3) - RCD Drilling	31-May-22	11-Jun-22	10	10-Nov-22	21-Nov-22	-48	0%
CBA-BPC36Ka.3	BP IAR-N (Optional Item no.3) - Airlift, Cage Install and Concrete	13-Jun-22	17-Jun-22	5	22-Nov-22	26-Nov-22	-48	0%
TD07								
01								
P18-BP10.10	BP IAR-S - Excavation	19-Nov-21	25-Nov-21	6	22-Oct-22	28-Oct-22	-158	0%
P18-BP10.20	BP IAR-S - RCD Drilling	26-Nov-21	13-Dec-21	15	29-Oct-22	15-Nov-22	-158	0%
P18-BP10.30	BP IAR-S - Airlift, Cage Install and Concrete	14-Dec-21	21-Dec-21	7	16-Nov-22	23-Nov-22	-45	0%
05								
P18-BP02.10	BP - Excavation	17-Feb-22	23-Feb-22	13	20-Sep-22 A	07-Oct-22 A		0%
P18-BP02.20	BP - RCD Drilling	24-Feb-22	12-Mar-22	27	08-Oct-22 A	08-Nov-22	-122	0%
P18-BP02.30	BP - Airlift, Cage Install and Concrete	14-Mar-22	21-Mar-22	7	09-Nov-22	16-Nov-22	-39	0%
06								
P18-BP05.10	BP - Excavation	07-Mar-22	12-Mar-22	6	14-Dec-22	20-Dec-22	-158	0%
P18-BP05.20	BP - RCD Drilling	14-Mar-22	04-Apr-22	19	21-Dec-22	14-Jan-23	-158	0%
P18-BP05.30	BP - Airlift, Cage Install and Concrete	06-Apr-22	14-Apr-22	8	16-Jan-23	26-Jan-23	-95	0%
07								
P18-BP06.20	BP IAR-S - RCD Drilling	06-Apr-22	26-Apr-22	19	20-Sep-22 A	14-Oct-22 A		0%
P18-BP06.30	BP IAR-S - Airlift, Cage Install and Concrete	27-Apr-22	05-May-22	13	15-Oct-22 A	29-Oct-22	-24	0%
16								
P18-BP01.10	BP - Excavation	18-May-22	24-May-22	6	09-Nov-22	15-Nov-22	-98	0%
P18-BP01.20	BP - RCD Drilling	25-May-22	16-Jun-22	19	16-Nov-22	07-Dec-22	-98	0%
P18-BP01.30	BP - Airlift, Cage Install and Concrete	17-Jun-22	25-Jun-22	8	08-Dec-22	16-Dec-22	-65	0%
17								



Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
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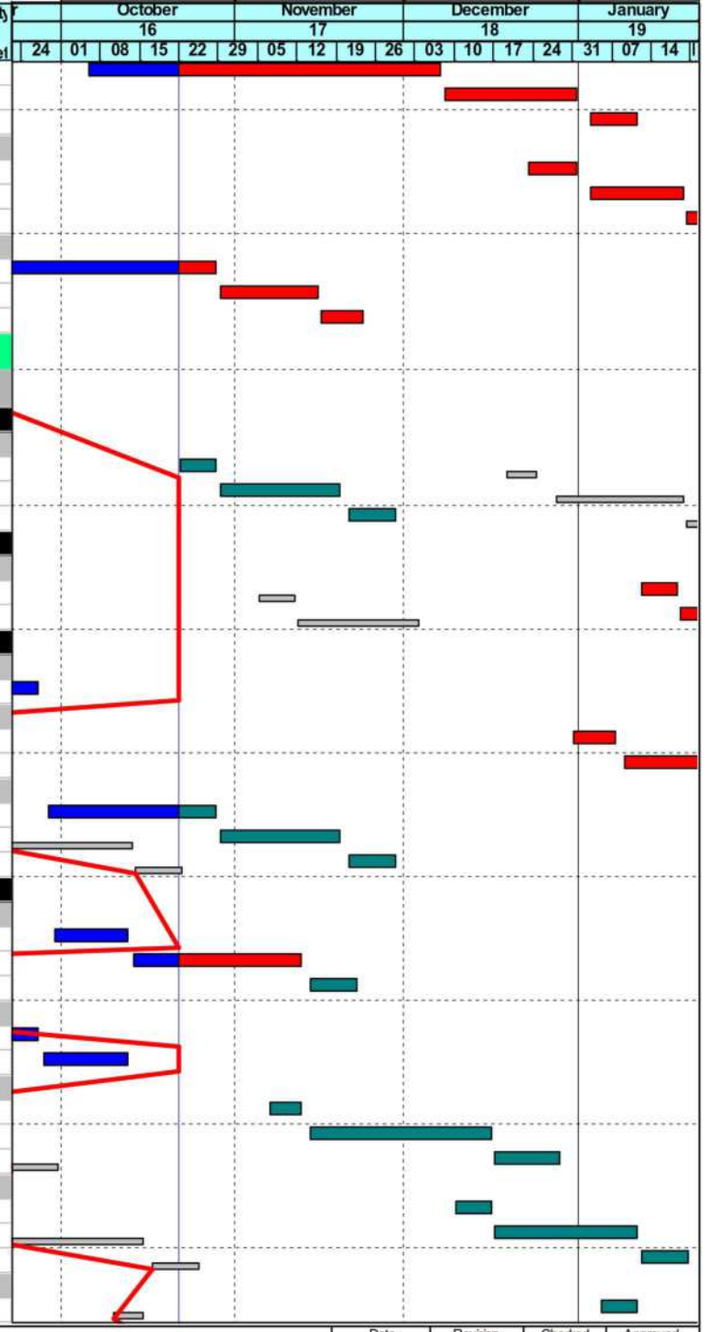
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P18-BP08.10	BP - Excavation	10-Jun-22	16-Jun-22	54	06-Oct-22 A	07-Dec-22	-98	0%
P18-BP08.20	BP - RCD Drilling	17-Jun-22	09-Jul-22	19	08-Dec-22	31-Dec-22	-98	0%
P18-BP08.30	BP - Airlift, Cage Install and Concrete	11-Jul-22	19-Jul-22	8	03-Jan-23	11-Jan-23	-84	0%
18								
P18-BP04.10	BP IAR-S (Optional Item no.3) - Excavation	04-Jul-22	09-Jul-22	6	23-Dec-22	31-Dec-22	-98	0%
P18-BP04.20	BP IAR-S (Optional Item no.3) - RCD Drilling	11-Jul-22	27-Jul-22	15	03-Jan-23	19-Jan-23	-98	0%
P18-BP04.30	BP IAR-S (Optional Item no.3) - Airlift, Cage Install and Concrete	28-Jul-22	04-Aug-22	7	20-Jan-23	31-Jan-23	-98	0%
19								
P18-BP11.10	BP IAR-S (Optional Item no.3) - Excavation	21-Jul-22	27-Jul-22	32	20-Sep-22 A	28-Oct-22	-45	0%
P18-BP11.20	BP IAR-S (Optional Item no.3) - RCD Drilling	28-Jul-22	13-Aug-22	15	29-Oct-22	15-Nov-22	-45	0%
P18-BP11.30	BP IAR-S (Optional Item no.3) - Airlift, Cage Install and Concrete	15-Aug-22	22-Aug-22	7	16-Nov-22	23-Nov-22	-45	0%
KD06 (Section 2)								
Bored Piles								
VD01								
20								
P23-BP24.10	BP - Excavation	19-Dec-22	24-Dec-22	6	22-Oct-22	28-Oct-22	78	0%
P23-BP24.20	BP - RCD Drilling	28-Dec-22	19-Jan-23	19	29-Oct-22	19-Nov-22	78	0%
P23-BP24.30	BP - Airlift, Cage Install and Concrete	20-Jan-23	01-Feb-23	8	21-Nov-22	29-Nov-22	78	0%
VD02								
18								
P24&P27-BP15.	BP - Excavation	05-Nov-22	11-Nov-22	6	12-Jan-23	18-Jan-23	-18	0%
P24&P27-BP15.	BP - RCD Drilling	12-Nov-22	03-Dec-22	19	19-Jan-23	13-Feb-23	-18	0%
VD07								
02								
P24&P27-BP27.	BP - Airlift, Cage Install and Concrete	25-Mar-22	02-Apr-22	7	19-Sep-22 A	27-Sep-22 A		0%
06								
P24&P27-BP21.	BP - Excavation	24-Jun-22	30-Jun-22	6	31-Dec-22	07-Jan-23	-79	0%
P24&P27-BP21.	BP - RCD Drilling	02-Jul-22	23-Jul-22	19	09-Jan-23	02-Feb-23	-79	0%
09								
P24&P27-BP38.	BP - Excavation	13-Sep-22	19-Sep-22	24	29-Sep-22 A	28-Oct-22	27	0%
P24&P27-BP38.	BP - RCD Drilling	20-Sep-22	13-Oct-22	19	29-Oct-22	19-Nov-22	27	0%
P24&P27-BP38.	BP - Airlift, Cage Install and Concrete	14-Oct-22	22-Oct-22	8	21-Nov-22	29-Nov-22	78	0%
VD08								
01								
P23-BP07.10	BP - Excavation	15-Jun-22	21-Jun-22	9	30-Sep-22 A	13-Oct-22 A		0%
P23-BP07.20	BP - RCD Drilling	22-Jun-22	14-Jul-22	26	14-Oct-22 A	12-Nov-22	-31	0%
P23-BP07.30	BP - Airlift, Cage Install and Concrete	15-Jul-22	23-Jul-22	8	14-Nov-22	22-Nov-22	84	0%
02								
P24&P27-BP06.	BP - RCD Drilling	15-Jul-22	17-Aug-22	5	21-Sep-22 A	27-Sep-22 A		0%
P24&P27-BP06.	BP - Airlift, Cage Install and Concrete	18-Aug-22	26-Aug-22	11	28-Sep-22 A	13-Oct-22 A		0%
03								
P24&P27-BP04.	BP - Excavation	11-Aug-22	17-Aug-22	6	07-Nov-22	12-Nov-22	17	0%
P24&P27-BP04.	BP - RCD Drilling	18-Aug-22	21-Sep-22	29	14-Nov-22	16-Dec-22	17	0%
P24&P27-BP04.	BP - Airlift, Cage Install and Concrete	22-Sep-22	30-Sep-22	8	17-Dec-22	28-Dec-22	55	0%
04								
P24&P27-BP16.	BP - Excavation	15-Sep-22	21-Sep-22	6	10-Dec-22	16-Dec-22	17	0%
P24&P27-BP16.	BP - RCD Drilling	22-Sep-22	15-Oct-22	19	17-Dec-22	11-Jan-23	17	0%
P24&P27-BP16.	BP - Airlift, Cage Install and Concrete	17-Oct-22	25-Oct-22	8	12-Jan-23	20-Jan-23	36	0%
05								
P24&P27-BP23.	BP - Excavation	10-Oct-22	15-Oct-22	6	05-Jan-23	11-Jan-23	17	0%



Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
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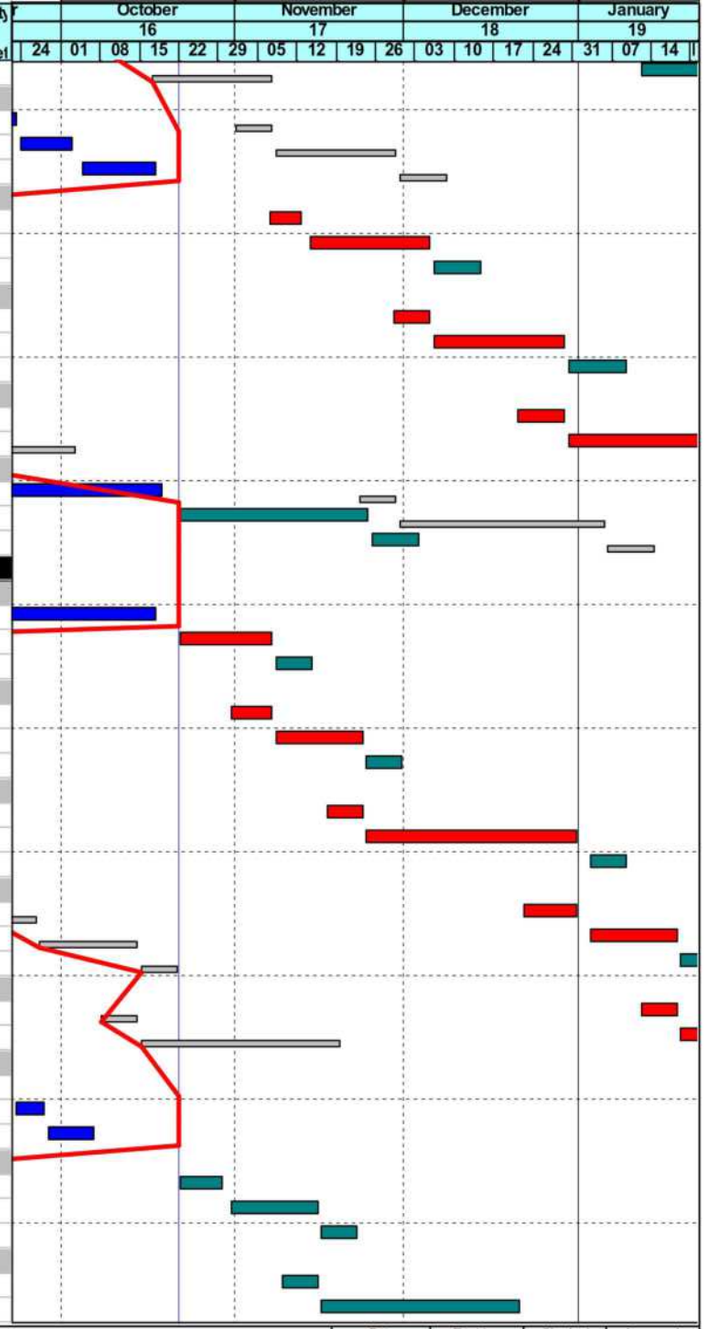
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P24&P27-BP23.	BP - RCD Drilling	17-Oct-22	07-Nov-22	19	12-Jan-23	06-Feb-23	17	0%
06								
P23-BP02.10	BP - Excavation	01-Nov-22	07-Nov-22	14	06-Sep-22 A	23-Sep-22 A		0%
P23-BP02.20	BP - RCD Drilling	08-Nov-22	29-Nov-22	6	24-Sep-22 A	03-Oct-22 A		0%
P23-BP02.30	BP - Airlift, Cage Install and Concrete	30-Nov-22	08-Dec-22	11	05-Oct-22 A	18-Oct-22 A		0%
08								
P24&P27-BP36.	BP - Excavation	08-Jul-22	14-Jul-22	6	07-Nov-22	12-Nov-22	-31	0%
P24&P27-BP36.	BP - RCD Drilling	15-Jul-22	05-Aug-22	19	14-Nov-22	05-Dec-22	-31	0%
P24&P27-BP36.	BP - Airlift, Cage Install and Concrete	06-Aug-22	15-Aug-22	8	06-Dec-22	14-Dec-22	65	0%
09								
P24&P27-BP29.	BP - Excavation	30-Jul-22	05-Aug-22	6	29-Nov-22	05-Dec-22	-31	0%
P24&P27-BP29.	BP - RCD Drilling	06-Aug-22	27-Aug-22	19	06-Dec-22	29-Dec-22	-31	0%
P24&P27-BP29.	BP - Airlift, Cage Install and Concrete	29-Aug-22	06-Sep-22	8	30-Dec-22	09-Jan-23	46	0%
10								
P24&P27-BP05.	BP - Excavation	22-Aug-22	27-Aug-22	6	21-Dec-22	29-Dec-22	-31	0%
P24&P27-BP05.	BP - RCD Drilling	29-Aug-22	03-Oct-22	29	30-Dec-22	06-Feb-23	-31	0%
13								
P24&P27-BP11.	BP - Excavation	23-Nov-22	29-Nov-22	24	19-Sep-22 A	19-Oct-22 A		0%
P24&P27-BP11.	BP - RCD Drilling	30-Nov-22	05-Jan-23	29	22-Oct-22	24-Nov-22	74	0%
P24&P27-BP11.	BP - Airlift, Cage Install and Concrete	06-Jan-23	14-Jan-23	8	25-Nov-22	03-Dec-22	74	0%
VD10								
01								
CBA-BPC47K.10	BP - Excavation	02-Jun-22	10-Jun-22	82	11-Jul-22 A	18-Oct-22 A		0%
CBA-BPC47K.20	BP - RCD Drilling	11-Jun-22	27-Jun-22	14	22-Oct-22	07-Nov-22	-44	0%
CBA-BPC47K.30	BP - Airlift, Cage Install and Concrete	28-Jun-22	05-Jul-22	6	08-Nov-22	14-Nov-22	91	0%
02								
CBA-BPC49K.10	BP - Excavation	20-Jun-22	27-Jun-22	7	31-Oct-22	07-Nov-22	-44	0%
CBA-BPC49K.20	BP - RCD Drilling	28-Jun-22	14-Jul-22	14	08-Nov-22	23-Nov-22	-44	0%
CBA-BPC49K.30	BP - Airlift, Cage Install and Concrete	15-Jul-22	21-Jul-22	6	24-Nov-22	30-Nov-22	77	0%
03								
CBA-BPC50Ka.1	BP - Excavation	08-Jul-22	14-Jul-22	6	17-Nov-22	23-Nov-22	-44	0%
CBA-BPC50Ka.2	BP - RCD Drilling	15-Jul-22	19-Aug-22	31	24-Nov-22	31-Dec-22	-44	0%
CBA-BPC50Ka.3	BP - Airlift, Cage Install and Concrete	20-Aug-22	26-Aug-22	6	03-Jan-23	09-Jan-23	46	0%
05								
CBA-BPC48K.10	BP - Excavation	19-Sep-22	26-Sep-22	7	22-Dec-22	31-Dec-22	-44	0%
CBA-BPC48K.20	BP - RCD Drilling	27-Sep-22	14-Oct-22	14	03-Jan-23	18-Jan-23	-44	0%
CBA-BPC48K.30	BP - Airlift, Cage Install and Concrete	15-Oct-22	21-Oct-22	6	19-Jan-23	27-Jan-23	32	0%
06								
CBA-BPC50K.10	BP - Excavation	08-Oct-22	14-Oct-22	6	12-Jan-23	18-Jan-23	-44	0%
CBA-BPC50K.20	BP - RCD Drilling	15-Oct-22	19-Nov-22	31	19-Jan-23	27-Feb-23	-44	0%
10								
CBA-BPC50Ja.1	BP - Excavation	27-May-22	02-Jun-22	31	16-Aug-22 A	22-Sep-22 A		0%
CBA-BPC50Ja.2	BP - RCD Drilling	04-Jun-22	11-Jul-22	4	23-Sep-22 A	28-Sep-22 A		0%
CBA-BPC50Ja.3	BP - Airlift, Cage Install and Concrete	12-Jul-22	18-Jul-22	5	29-Sep-22 A	07-Oct-22 A		0%
11								
CBA-BPC48J.10	BP - Excavation	04-Jul-22	11-Jul-22	7	22-Oct-22	29-Oct-22	22	0%
CBA-BPC48J.20	BP - RCD Drilling	12-Jul-22	27-Jul-22	14	31-Oct-22	15-Nov-22	22	0%
CBA-BPC48J.30	BP - Airlift, Cage Install and Concrete	28-Jul-22	03-Aug-22	6	16-Nov-22	22-Nov-22	84	0%
12								
CBA-BPC50Jb.1	BP - Excavation	21-Jul-22	27-Jul-22	6	09-Nov-22	15-Nov-22	22	0%
CBA-BPC50Jb.2	BP - RCD Drilling	28-Jul-22	01-Sep-22	31	16-Nov-22	21-Dec-22	22	0%



Planned Bar
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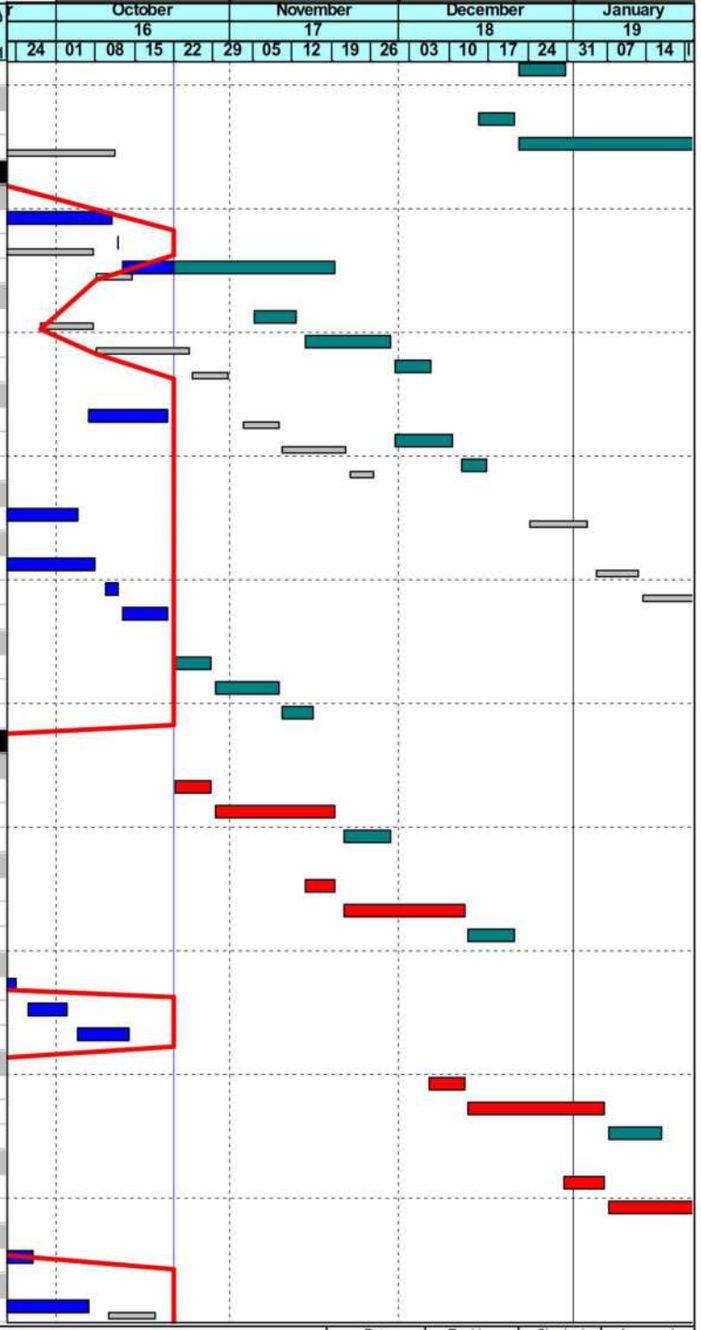
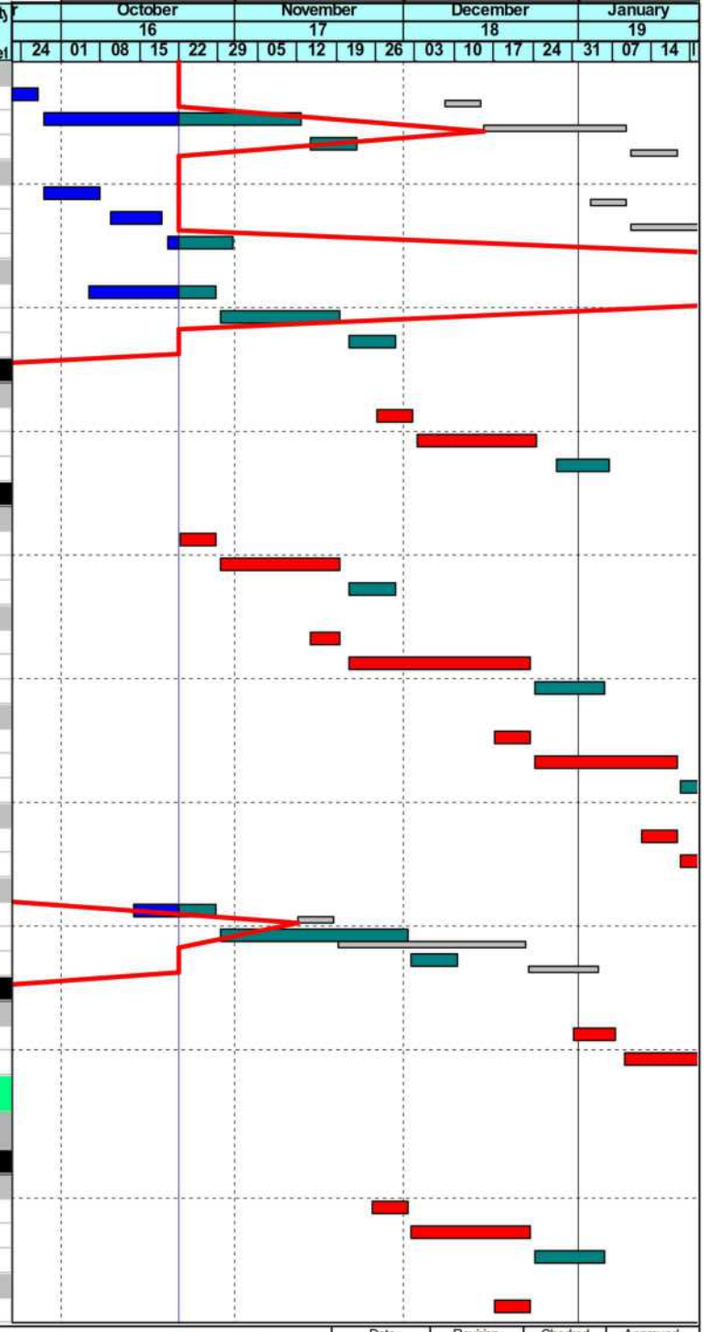
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
CBA-BPC50Jb.3(	BP - Airlift, Cage Install and Concrete	02-Sep-22	08-Sep-22	6	22-Dec-22	30-Dec-22	53	0%
13								
CBA-BPC51Jb.1(	BP - Excavation	26-Aug-22	01-Sep-22	6	15-Dec-22	21-Dec-22	22	0%
CBA-BPC51Jb.2(	BP - RCD Drilling	02-Sep-22	11-Oct-22	31	22-Dec-22	02-Feb-23	22	0%
CD08								
03								
CBA-BPC46Jb.1(	BP - Excavation	10-Sep-22	19-Sep-22	14	22-Sep-22 A	11-Oct-22 A		0%
CBA-BPC46Jb.2(	BP - RCD Drilling	20-Sep-22	07-Oct-22	0	12-Oct-22 A	12-Oct-22 A		0%
CBA-BPC46Jb.3(	BP - Airlift, Cage Install and Concrete	08-Oct-22	14-Oct-22	33	13-Oct-22 A	19-Nov-22	86	0%
04								
CBA-BP11.10	BP - Excavation	28-Sep-22	07-Oct-22	7	05-Nov-22	12-Nov-22	63	0%
CBA-BP11.20	BP - RCD Drilling	08-Oct-22	24-Oct-22	14	14-Nov-22	29-Nov-22	63	0%
CBA-BP11.30	BP - Airlift, Cage Install and Concrete	25-Oct-22	31-Oct-22	6	30-Nov-22	06-Dec-22	72	0%
06								
CBA-BP07.10	BP - Excavation	03-Nov-22	09-Nov-22	12	07-Oct-22 A	21-Oct-22 A		0%
CBA-BP07.20	BP - RCD Drilling	10-Nov-22	21-Nov-22	10	30-Nov-22	10-Dec-22	63	0%
CBA-BP07.30	BP - Airlift, Cage Install and Concrete	22-Nov-22	26-Nov-22	5	12-Dec-22	16-Dec-22	63	0%
08								
CBA-BPC46Ka.3	BP - Airlift, Cage Install and Concrete	24-Dec-22	03-Jan-23	14	16-Sep-22 A	05-Oct-22 A		0%
10								
CBA-BP12.10	BP - Excavation	05-Jan-23	12-Jan-23	17	16-Sep-22 A	08-Oct-22 A		0%
CBA-BP12.20	BP - RCD Drilling	13-Jan-23	01-Feb-23	2	10-Oct-22 A	12-Oct-22 A		0%
CBA-BP12.30	BP - Airlift, Cage Install and Concrete	02-Feb-23	08-Feb-23	7	13-Oct-22 A	21-Oct-22 A		0%
12								
CBA-BP08.10	BP - Excavation	11-Feb-23	17-Feb-23	6	22-Oct-22	28-Oct-22	90	0%
CBA-BP08.20	BP - RCD Drilling	18-Feb-23	01-Mar-23	10	29-Oct-22	09-Nov-22	90	0%
CBA-BP08.30	BP - Airlift, Cage Install and Concrete	02-Mar-23	07-Mar-23	5	10-Nov-22	15-Nov-22	90	0%
CD06								
03								
P22&P19-BP23.	BP - Excavation	10-Feb-22	16-Feb-22	6	22-Oct-22	28-Oct-22	-17	0%
P22&P19-BP23.:	BP - RCD Drilling	17-Feb-22	10-Mar-22	19	29-Oct-22	19-Nov-22	-17	0%
P22&P19-BP23.:	BP - Airlift, Cage Install and Concrete	11-Mar-22	19-Mar-22	8	21-Nov-22	29-Nov-22	78	0%
04								
P22&P19-BP28.	BP - Excavation	04-Mar-22	10-Mar-22	6	14-Nov-22	19-Nov-22	-17	0%
P22&P19-BP28.:	BP - RCD Drilling	11-Mar-22	01-Apr-22	19	21-Nov-22	12-Dec-22	-17	0%
P22&P19-BP28.:	BP - Airlift, Cage Install and Concrete	02-Apr-22	12-Apr-22	8	13-Dec-22	21-Dec-22	59	0%
07								
P24&P27-BP12.	BP - Excavation	17-May-22	23-May-22	13	08-Sep-22 A	24-Sep-22 A		0%
P24&P27-BP12.:	BP - RCD Drilling	24-May-22	15-Jun-22	5	26-Sep-22 A	03-Oct-22 A		0%
P24&P27-BP12.:	BP - Airlift, Cage Install and Concrete	16-Jun-22	24-Jun-22	8	05-Oct-22 A	14-Oct-22 A		0%
08								
P22&P19-BP12.	BP - Excavation	09-Jun-22	15-Jun-22	6	06-Dec-22	12-Dec-22	-17	0%
P22&P19-BP12.:	BP - RCD Drilling	16-Jun-22	08-Jul-22	19	13-Dec-22	06-Jan-23	-17	0%
P22&P19-BP12.:	BP - Airlift, Cage Install and Concrete	09-Jul-22	18-Jul-22	8	07-Jan-23	16-Jan-23	40	0%
09								
P22&P19-BP19.	BP - Excavation	02-Jul-22	08-Jul-22	6	30-Dec-22	06-Jan-23	-17	0%
P22&P19-BP19.:	BP - RCD Drilling	09-Jul-22	30-Jul-22	19	07-Jan-23	01-Feb-23	-17	0%
10								
P24&P27-BP37.:	BP - Airlift, Cage Install and Concrete	23-Aug-22	31-Aug-22	21	01-Sep-22 A	27-Sep-22 A		0%
12								
P22&P19-BP02.:	BP - Airlift, Cage Install and Concrete	10-Oct-22	18-Oct-22	11	22-Sep-22 A	07-Oct-22 A		0%



Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
16								
P22&P19-BP13.	BP - Excavation	08-Dec-22	14-Dec-22	9	16-Sep-22 A	27-Sep-22 A		0%
P22&P19-BP13.	BP - RCD Drilling	15-Dec-22	09-Jan-23	38	28-Sep-22 A	12-Nov-22	84	0%
P22&P19-BP13.	BP - Airlift, Cage Install and Concrete	10-Jan-23	18-Jan-23	8	14-Nov-22	22-Nov-22	84	0%
17								
P24&P27-BP24.	BP - Excavation	03-Jan-23	09-Jan-23	7	28-Sep-22 A	08-Oct-22 A		0%
P24&P27-BP24.	BP - RCD Drilling	10-Jan-23	03-Feb-23	8	10-Oct-22 A	19-Oct-22 A		0%
P24&P27-BP24.	BP - Airlift, Cage Install and Concrete	04-Feb-23	13-Feb-23	10	20-Oct-22 A	31-Oct-22	103	0%
18								
P22&P19-BP08.	BP - Excavation	27-Jan-23	03-Feb-23	20	06-Oct-22 A	28-Oct-22	78	0%
P22&P19-BP08.	BP - RCD Drilling	04-Feb-23	25-Feb-23	19	29-Oct-22	19-Nov-22	78	0%
P22&P19-BP08.	BP - Airlift, Cage Install and Concrete	27-Feb-23	07-Mar-23	8	21-Nov-22	29-Nov-22	78	0%
CD05								
12								
P22&P19-BP24.	BP - Excavation	12-Feb-22	18-Feb-22	6	26-Nov-22	02-Dec-22	-99	0%
P22&P19-BP24.	BP - RCD Drilling	19-Feb-22	12-Mar-22	19	03-Dec-22	24-Dec-22	-99	0%
P22&P19-BP24.	BP - Airlift, Cage Install and Concrete	14-Mar-22	22-Mar-22	8	28-Dec-22	06-Jan-23	48	0%
CD03								
03								
P23-BP25.10	BP - Excavation	11-Jan-22	17-Jan-22	6	22-Oct-22	28-Oct-22	-56	0%
P23-BP25.20	BP - RCD Drilling	18-Jan-22	11-Feb-22	19	29-Oct-22	19-Nov-22	-56	0%
P23-BP25.30	BP - Airlift, Cage Install and Concrete	12-Feb-22	21-Feb-22	8	21-Nov-22	29-Nov-22	78	0%
04								
P23-BP15.10	BP - Excavation	05-Feb-22	11-Feb-22	6	14-Nov-22	19-Nov-22	-56	0%
P23-BP15.20	BP - RCD Drilling	12-Feb-22	17-Mar-22	29	21-Nov-22	23-Dec-22	-56	0%
P23-BP15.30	BP - Airlift, Cage Install and Concrete	18-Mar-22	26-Mar-22	8	24-Dec-22	05-Jan-23	49	0%
09								
P23-BP14.10	BP - Excavation	16-Jun-22	22-Jun-22	6	17-Dec-22	23-Dec-22	-56	0%
P23-BP14.20	BP - RCD Drilling	23-Jun-22	15-Jul-22	19	24-Dec-22	18-Jan-23	-56	0%
P23-BP14.30	BP - Airlift, Cage Install and Concrete	16-Jul-22	25-Jul-22	8	19-Jan-23	31-Jan-23	30	0%
10								
P23-BP26.10	BP - Excavation	09-Jul-22	15-Jul-22	6	12-Jan-23	18-Jan-23	-56	0%
P23-BP26.20	BP - RCD Drilling	16-Jul-22	18-Aug-22	29	19-Jan-23	24-Feb-23	-56	0%
15								
P23-BP03.10	BP - Excavation	12-Nov-22	18-Nov-22	13	14-Oct-22 A	28-Oct-22	68	0%
P23-BP03.20	BP - RCD Drilling	19-Nov-22	22-Dec-22	29	29-Oct-22	01-Dec-22	68	0%
P23-BP03.30	BP - Airlift, Cage Install and Concrete	23-Dec-22	04-Jan-23	8	02-Dec-22	10-Dec-22	68	0%
CD02								
06								
P23-BP27.10	BP - Excavation	23-Apr-22	29-Apr-22	6	31-Dec-22	07-Jan-23	-95	0%
P23-BP27.20	BP - RCD Drilling	30-Apr-22	24-May-22	19	09-Jan-23	02-Feb-23	-95	0%
KD07 (Section 3)								
Bored Piles								
VD01								
05								
P26-BP11.10	BP - Excavation	19-May-22	25-May-22	6	25-Nov-22	01-Dec-22	-73	0%
P26-BP11.20	BP - RCD Drilling	26-May-22	17-Jun-22	19	02-Dec-22	23-Dec-22	-73	0%
P26-BP11.30	BP - Airlift, Cage Install and Concrete	18-Jun-22	27-Jun-22	8	24-Dec-22	05-Jan-23	141	0%
08								
P26-BP06.10	BP - Excavation	22-Jul-22	28-Jul-22	6	17-Dec-22	23-Dec-22	-73	0%

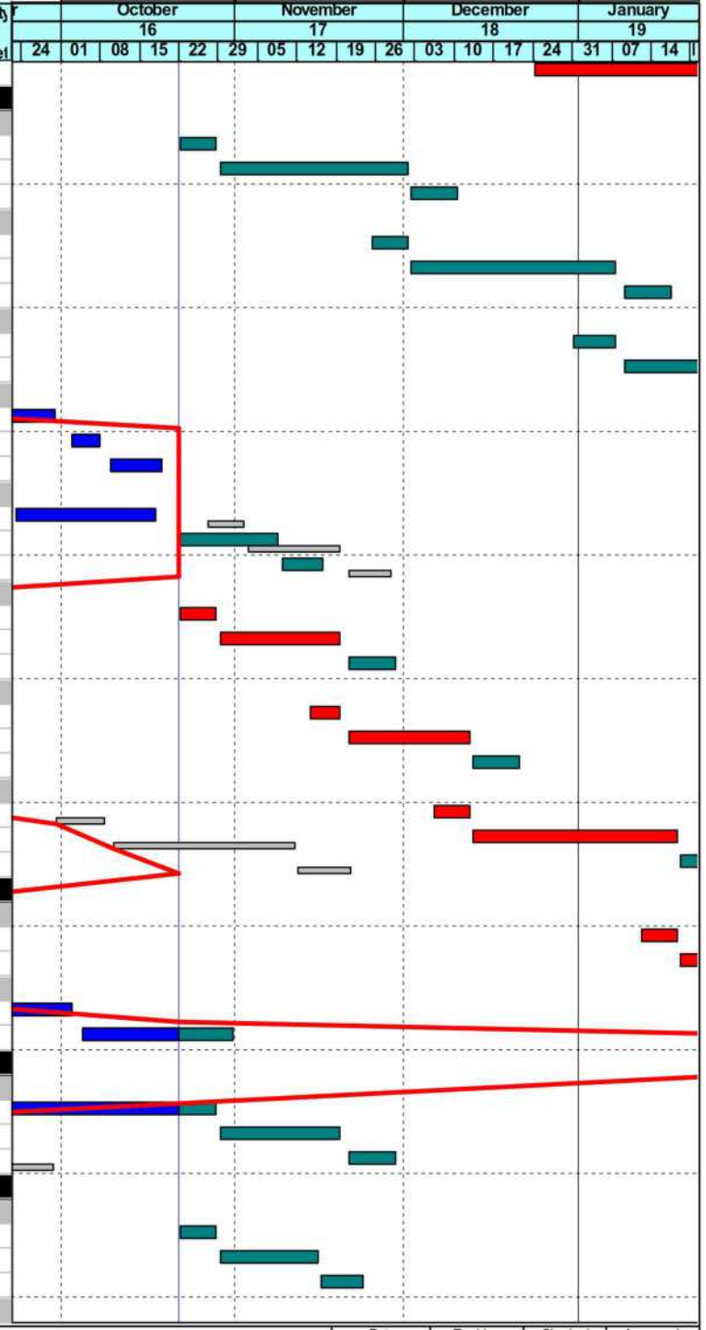


Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P26-BP06.20	BP - RCD Drilling	29-Jul-22	31-Aug-22	29	24-Dec-22	02-Feb-23	-73	0%
VD02								
02								
P24&P27-BP08.	BP - Excavation	12-Feb-22	18-Feb-22	6	22-Oct-22	28-Oct-22	29	0%
P24&P27-BP08.	BP - RCD Drilling	19-Feb-22	24-Mar-22	29	29-Oct-22	01-Dec-22	29	0%
P24&P27-BP08.	BP - Airlift, Cage Install and Concrete	25-Mar-22	02-Apr-22	8	02-Dec-22	10-Dec-22	160	0%
04								
P26-BP03.10	BP - Excavation	06-Apr-22	12-Apr-22	6	25-Nov-22	01-Dec-22	29	0%
P26-BP03.20	BP - RCD Drilling	13-Apr-22	21-May-22	29	02-Dec-22	07-Jan-23	29	0%
P26-BP03.30	BP - Airlift, Cage Install and Concrete	23-May-22	31-May-22	8	09-Jan-23	17-Jan-23	131	0%
05								
P26-BP01.10	BP - Excavation	16-May-22	21-May-22	6	31-Dec-22	07-Jan-23	29	0%
P26-BP01.20	BP - RCD Drilling	23-May-22	14-Jul-22	44	09-Jan-23	03-Mar-23	29	0%
07								
P24&P27-BP18.	BP - Excavation	11-Aug-22	17-Aug-22	17	09-Sep-22 A	30-Sep-22 A		0%
P24&P27-BP18.	BP - RCD Drilling	18-Aug-22	08-Sep-22	4	03-Oct-22 A	08-Oct-22 A		0%
P24&P27-BP18.	BP - Airlift, Cage Install and Concrete	09-Sep-22	19-Sep-22	8	10-Oct-22 A	19-Oct-22 A		0%
10								
P28&P29-BP16.	BP - Excavation	27-Oct-22	02-Nov-22	19	23-Sep-22 A	18-Oct-22 A		0%
P28&P29-BP16.	BP - RCD Drilling	03-Nov-22	19-Nov-22	15	22-Oct-22	08-Nov-22	151	0%
P28&P29-BP16.	BP - Airlift, Cage Install and Concrete	21-Nov-22	28-Nov-22	7	09-Nov-22	16-Nov-22	181	0%
13								
P28&P29-BP05.	BP - Excavation	08-Jun-22	14-Jun-22	6	22-Oct-22	28-Oct-22	-18	0%
P28&P29-BP05.	BP - RCD Drilling	15-Jun-22	07-Jul-22	19	29-Oct-22	19-Nov-22	-18	0%
P28&P29-BP05.	BP - Airlift, Cage Install and Concrete	08-Jul-22	16-Jul-22	8	21-Nov-22	29-Nov-22	170	0%
14								
P28&P29-BP09.	BP - Excavation	30-Jun-22	07-Jul-22	6	14-Nov-22	19-Nov-22	-18	0%
P28&P29-BP09.	BP - RCD Drilling	08-Jul-22	29-Jul-22	19	21-Nov-22	12-Dec-22	-18	0%
P28&P29-BP09.	BP - Airlift, Cage Install and Concrete	30-Jul-22	08-Aug-22	8	13-Dec-22	21-Dec-22	151	0%
17								
P24&P27-BP13.	BP - Excavation	30-Sep-22	08-Oct-22	6	06-Dec-22	12-Dec-22	-18	0%
P24&P27-BP13.	BP - RCD Drilling	10-Oct-22	11-Nov-22	29	13-Dec-22	18-Jan-23	-18	0%
P24&P27-BP13.	BP - Airlift, Cage Install and Concrete	12-Nov-22	21-Nov-22	8	19-Jan-23	31-Jan-23	122	0%
VD03								
06								
P30-BP75.10	BP - Excavation	23-Jun-22	29-Jun-22	6	12-Jan-23	18-Jan-23	-78	0%
P30-BP75.20	BP - RCD Drilling	30-Jun-22	03-Aug-22	29	19-Jan-23	24-Feb-23	-78	0%
13								
P30-BP69.20	BP - RCD Drilling	29-Mar-23	06-May-23	14	15-Sep-22 A	03-Oct-22 A		0%
P30-BP69.30	BP - Airlift, Cage Install and Concrete	08-May-23	16-May-23	23	05-Oct-22 A	31-Oct-22	195	0%
VD04								
12								
P30-BP74.10	BP - Excavation	22-Aug-22	27-Aug-22	106	23-Jun-22 A	28-Oct-22	29	0%
P30-BP74.20	BP - RCD Drilling	29-Aug-22	20-Sep-22	19	29-Oct-22	19-Nov-22	29	0%
P30-BP74.30	BP - Airlift, Cage Install and Concrete	21-Sep-22	29-Sep-22	8	21-Nov-22	29-Nov-22	170	0%
VD06								
05								
P28&P29-BP15.	BP - Excavation	02-Apr-22	09-Apr-22	6	22-Oct-22	28-Oct-22	100	0%
P28&P29-BP15.	BP - RCD Drilling	11-Apr-22	30-Apr-22	15	29-Oct-22	15-Nov-22	100	0%
P28&P29-BP15.	BP - Airlift, Cage Install and Concrete	03-May-22	11-May-22	7	16-Nov-22	23-Nov-22	175	0%
09								

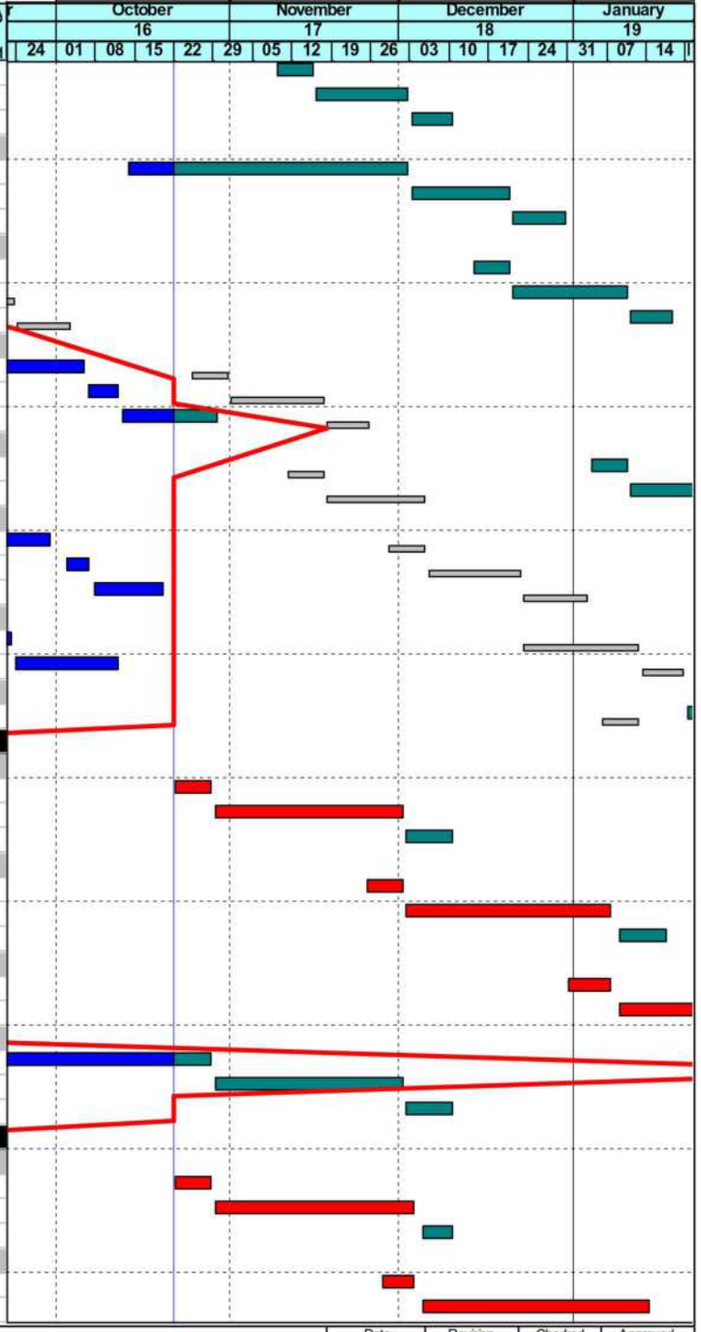


Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P28&P29-BP14.	BP - Excavation	20-Jun-22	25-Jun-22	6	09-Nov-22	15-Nov-22	100	0%
P28&P29-BP14.:	BP - RCD Drilling	27-Jun-22	14-Jul-22	15	16-Nov-22	02-Dec-22	100	0%
P28&P29-BP14.:	BP - Airlift, Cage Install and Concrete	15-Jul-22	22-Jul-22	7	03-Dec-22	10-Dec-22	160	0%
12								
P28&P29-BP24.	BP - Excavation	12-Aug-22	18-Aug-22	43	14-Oct-22 A	02-Dec-22	100	0%
P28&P29-BP24.:	BP - RCD Drilling	19-Aug-22	05-Sep-22	15	03-Dec-22	20-Dec-22	100	0%
P28&P29-BP24.:	BP - Airlift, Cage Install and Concrete	06-Sep-22	14-Sep-22	7	21-Dec-22	30-Dec-22	145	0%
13								
P28&P29-BP22.	BP - Excavation	30-Aug-22	05-Sep-22	6	14-Dec-22	20-Dec-22	100	0%
P28&P29-BP22.:	BP - RCD Drilling	06-Sep-22	23-Sep-22	15	21-Dec-22	10-Jan-23	100	0%
P28&P29-BP22.:	BP - Airlift, Cage Install and Concrete	24-Sep-22	03-Oct-22	7	11-Jan-23	18-Jan-23	130	0%
16								
P28&P29-BP18.	BP - Excavation	25-Oct-22	31-Oct-22	11	21-Sep-22 A	06-Oct-22 A		0%
P28&P29-BP18.:	BP - RCD Drilling	01-Nov-22	17-Nov-22	4	07-Oct-22 A	12-Oct-22 A		0%
P28&P29-BP18.:	BP - Airlift, Cage Install and Concrete	18-Nov-22	25-Nov-22	15	13-Oct-22 A	29-Oct-22	196	0%
17								
P28&P29-BP25.	BP - Excavation	11-Nov-22	17-Nov-22	6	04-Jan-23	10-Jan-23	100	0%
P28&P29-BP25.:	BP - RCD Drilling	18-Nov-22	05-Dec-22	15	11-Jan-23	31-Jan-23	100	0%
18								
P28&P29-BP20.	BP - Excavation	29-Nov-22	05-Dec-22	16	10-Sep-22 A	30-Sep-22 A		0%
P28&P29-BP20.:	BP - RCD Drilling	06-Dec-22	22-Dec-22	3	03-Oct-22 A	07-Oct-22 A		0%
P28&P29-BP20.:	BP - Airlift, Cage Install and Concrete	23-Dec-22	03-Jan-23	10	08-Oct-22 A	20-Oct-22 A		0%
19								
P28&P29-BP06.:	BP - RCD Drilling	23-Dec-22	12-Jan-23	5	17-Sep-22 A	23-Sep-22 A		0%
P28&P29-BP06.:	BP - Airlift, Cage Install and Concrete	13-Jan-23	20-Jan-23	13	24-Sep-22 A	12-Oct-22 A		0%
20								
P28&P29-BP19.	BP - Excavation	06-Jan-23	12-Jan-23	6	21-Jan-23	31-Jan-23	100	0%
VD07								
01								
P24&P27-BP25.	BP - Excavation	18-Jan-22	24-Jan-22	6	22-Oct-22	28-Oct-22	-79	0%
P24&P27-BP25.:	BP - RCD Drilling	25-Jan-22	02-Mar-22	29	29-Oct-22	01-Dec-22	-79	0%
P24&P27-BP25.:	BP - Airlift, Cage Install and Concrete	03-Mar-22	11-Mar-22	8	02-Dec-22	10-Dec-22	160	0%
04								
P24&P27-BP19.	BP - Excavation	11-Apr-22	20-Apr-22	6	25-Nov-22	01-Dec-22	-79	0%
P24&P27-BP19.:	BP - RCD Drilling	21-Apr-22	26-May-22	29	02-Dec-22	07-Jan-23	-79	0%
P24&P27-BP19.:	BP - Airlift, Cage Install and Concrete	27-May-22	06-Jun-22	8	09-Jan-23	17-Jan-23	131	0%
05								
P24&P27-BP31.	BP - Excavation	20-May-22	26-May-22	6	31-Dec-22	07-Jan-23	-79	0%
P24&P27-BP31.:	BP - RCD Drilling	27-May-22	30-Jun-22	29	09-Jan-23	14-Feb-23	-79	0%
15								
P28&P29-BP26.	BP - Excavation	25-Feb-23	03-Mar-23	117	10-Jun-22 A	28-Oct-22	132	100%
P28&P29-BP26.:	BP - RCD Drilling	04-Mar-23	11-Apr-23	29	29-Oct-22	01-Dec-22	132	0%
P28&P29-BP26.:	BP - Airlift, Cage Install and Concrete	12-Apr-23	20-Apr-23	8	02-Dec-22	10-Dec-22	160	0%
VD09								
01								
CBA-BPC54Jb.1(	BP - Excavation	26-Feb-22	04-Mar-22	6	22-Oct-22	28-Oct-22	-5	0%
CBA-BPC54Jb.2(	BP - RCD Drilling	05-Mar-22	11-Apr-22	31	29-Oct-22	03-Dec-22	-5	0%
CBA-BPC54Jb.3(	BP - Airlift, Cage Install and Concrete	12-Apr-22	21-Apr-22	6	05-Dec-22	10-Dec-22	317	0%
02								
CBA-BPC54Ka.1	BP - Excavation	04-Apr-22	11-Apr-22	6	28-Nov-22	03-Dec-22	-5	0%
CBA-BPC54Ka.2	BP - RCD Drilling	12-Apr-22	25-May-22	33	05-Dec-22	14-Jan-23	-5	0%



Planned Bar
Critical Bar
Baseline
Milestone
Actual MS
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West Kowloon Cultural District Authority
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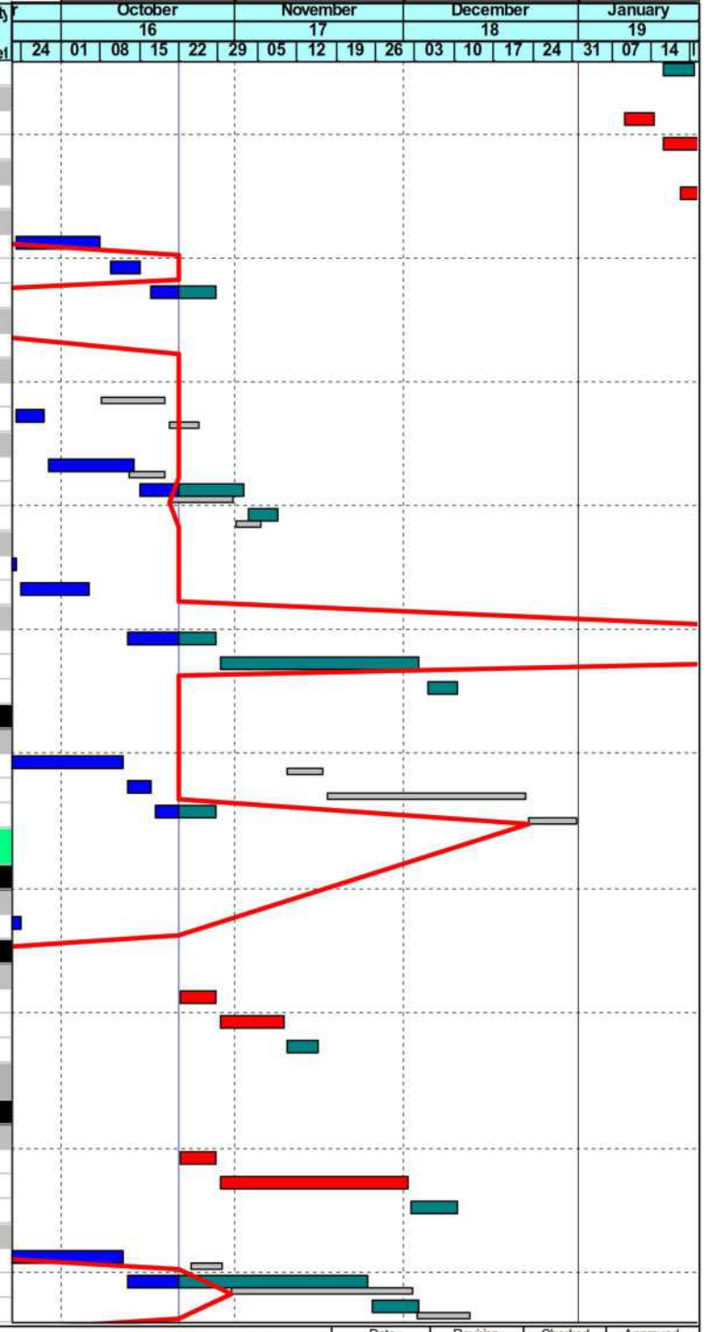
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
CBA-BPC54Ka.3	BP - Airlift, Cage Install and Concrete	26-May-22	01-Jun-22	6	16-Jan-23	21-Jan-23	127	0%
03								
CBA-BPC59Ka.1	BP - Excavation	19-May-22	25-May-22	6	09-Jan-23	14-Jan-23	-5	0%
CBA-BPC59Ka.2	BP - RCD Drilling	26-May-22	07-Jun-22	10	16-Jan-23	30-Jan-23	-5	0%
05								
CBA-BPC56Ka.1	BP - Excavation	11-Jun-22	18-Jun-22	7	19-Jan-23	30-Jan-23	-5	0%
06								
CBA-BPC55Ja.1(	BP - Excavation	28-Jun-22	06-Jul-22	11	23-Sep-22 A	08-Oct-22 A		0%
CBA-BPC55Ja.2(	BP - RCD Drilling	07-Jul-22	22-Jul-22	5	10-Oct-22 A	15-Oct-22 A		0%
CBA-BPC55Ja.3(	BP - Airlift, Cage Install and Concrete	23-Jul-22	29-Jul-22	11	17-Oct-22 A	28-Oct-22	197	0%
09								
CBA-BPC56Jc.30	BP - Airlift, Cage Install and Concrete	27-Aug-22	01-Sep-22	5	16-Sep-22 A	22-Sep-22 A		0%
11								
CBA-BPC58Jc.20	BP - RCD Drilling	08-Oct-22	19-Oct-22	1	21-Sep-22 A	22-Sep-22 A		0%
CBA-BPC58Jc.30	BP - Airlift, Cage Install and Concrete	20-Oct-22	25-Oct-22	4	23-Sep-22 A	28-Sep-22 A		0%
12								
CBA-BPC57Jb.1(	BP - Excavation	13-Oct-22	19-Oct-22	11	29-Sep-22 A	14-Oct-22 A		0%
CBA-BPC57Jb.2(	BP - RCD Drilling	20-Oct-22	31-Oct-22	16	15-Oct-22 A	02-Nov-22	188	0%
CBA-BPC57Jb.3(	BP - Airlift, Cage Install and Concrete	01-Nov-22	05-Nov-22	5	03-Nov-22	08-Nov-22	188	0%
18								
CBA-BPC53Ja.2(	BP - RCD Drilling	28-Feb-23	04-Apr-23	3	20-Sep-22 A	23-Sep-22 A		0%
CBA-BPC53Ja.3(	BP - Airlift, Cage Install and Concrete	06-Apr-23	15-Apr-23	8	24-Sep-22 A	06-Oct-22 A		0%
20								
CBA-BPC53Ka.1	BP - Excavation	10-May-23	16-May-23	14	13-Oct-22 A	28-Oct-22	160	0%
CBA-BPC53Ka.2	BP - RCD Drilling	17-May-23	23-Jun-23	31	29-Oct-22	03-Dec-22	160	0%
CBA-BPC53Ka.3	BP - Airlift, Cage Install and Concrete	24-Jun-23	30-Jun-23	6	05-Dec-22	10-Dec-22	160	0%
VD10								
15								
CBA-BPC52Jc.10	BP - Excavation	10-Nov-22	16-Nov-22	25	09-Sep-22 A	12-Oct-22 A		0%
CBA-BPC52Jc.20	BP - RCD Drilling	17-Nov-22	22-Dec-22	3	13-Oct-22 A	17-Oct-22 A		0%
CBA-BPC52Jc.30	BP - Airlift, Cage Install and Concrete	23-Dec-22	31-Dec-22	10	18-Oct-22 A	28-Oct-22	197	0%
KD08 (Section 4)								
TD01								
07								
P30-BP06.30	BP - Airlift, Cage Install and Concrete	30-Jun-22	09-Jul-22	9	14-Sep-22 A	24-Sep-22 A		0%
TD09								
01								
CBA-BPC54V.10	BP - Excavation	08-Apr-22	14-Apr-22	6	22-Oct-22	28-Oct-22	-90	0%
CBA-BPC54V.20	BP - RCD Drilling	19-Apr-22	29-Apr-22	10	29-Oct-22	09-Nov-22	-90	0%
CBA-BPC54V.30	BP - Airlift, Cage Install and Concrete	30-Apr-22	06-May-22	5	10-Nov-22	15-Nov-22	74	0%
Bored Piles								
VD01								
04								
P26-BP12.10	BP - Excavation	09-Apr-22	19-Apr-22	6	22-Oct-22	28-Oct-22	-73	0%
P26-BP12.20	BP - RCD Drilling	20-Apr-22	25-May-22	29	29-Oct-22	01-Dec-22	-73	0%
P26-BP12.30	BP - Airlift, Cage Install and Concrete	26-May-22	04-Jun-22	8	02-Dec-22	10-Dec-22	52	0%
11								
P26-BP13.10	BP - Excavation	24-Oct-22	29-Oct-22	42	20-Aug-22 A	12-Oct-22 A		0%
P26-BP13.20	BP - RCD Drilling	31-Oct-22	02-Dec-22	37	13-Oct-22 A	24-Nov-22	58	0%
P26-BP13.30	BP - Airlift, Cage Install and Concrete	03-Dec-22	12-Dec-22	8	25-Nov-22	03-Dec-22	58	0%

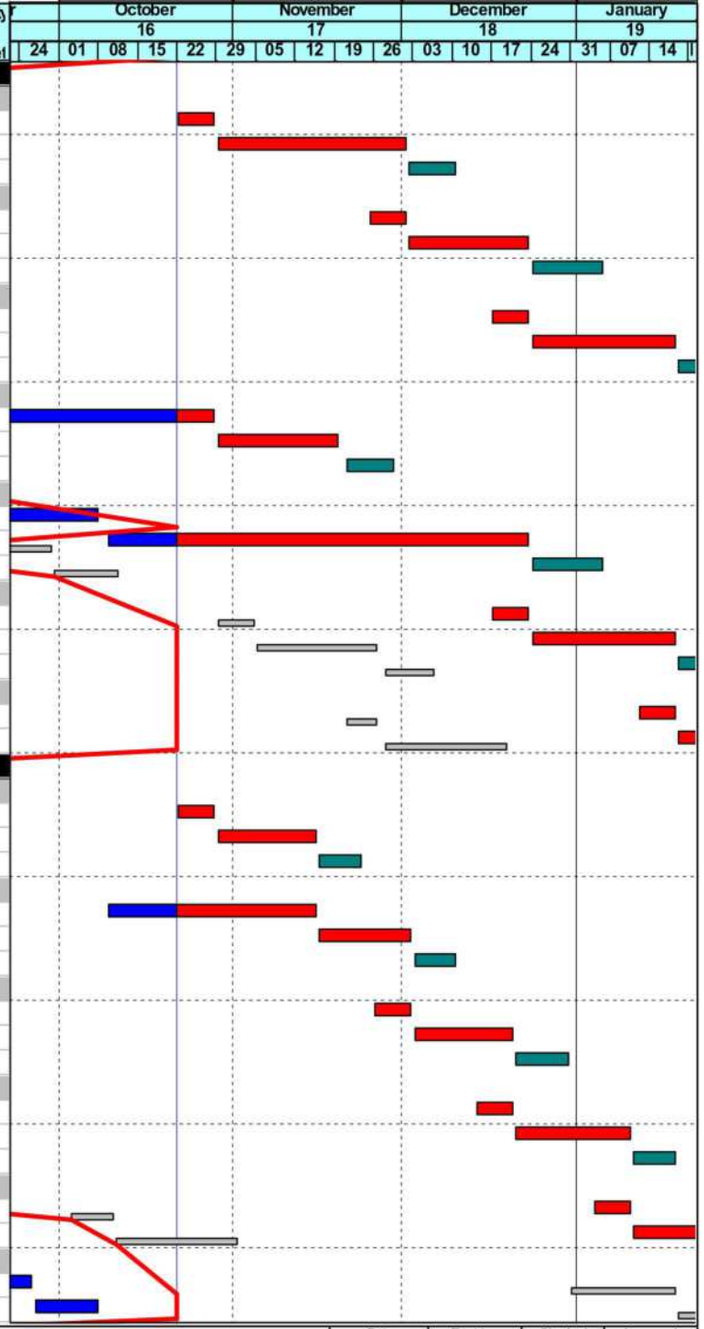


Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
VD03								
03								
P30-BP44.10	BP - Excavation	29-Mar-22	04-Apr-22	6	22-Oct-22	28-Oct-22	-78	0%
P30-BP44.20	BP - RCD Drilling	06-Apr-22	14-May-22	29	29-Oct-22	01-Dec-22	-78	0%
P30-BP44.30	BP - Airlift, Cage Install and Concrete	16-May-22	24-May-22	8	02-Dec-22	10-Dec-22	52	0%
04								
P30-BP50.10	BP - Excavation	07-May-22	14-May-22	6	25-Nov-22	01-Dec-22	-78	0%
P30-BP50.20	BP - RCD Drilling	16-May-22	07-Jun-22	19	02-Dec-22	23-Dec-22	-78	0%
P30-BP50.30	BP - Airlift, Cage Install and Concrete	08-Jun-22	16-Jun-22	8	24-Dec-22	05-Jan-23	33	0%
05								
P30-BP55.10	BP - Excavation	31-May-22	07-Jun-22	6	17-Dec-22	23-Dec-22	-78	0%
P30-BP55.20	BP - RCD Drilling	08-Jun-22	29-Jun-22	19	24-Dec-22	18-Jan-23	-78	0%
P30-BP55.30	BP - Airlift, Cage Install and Concrete	30-Jun-22	09-Jul-22	8	19-Jan-23	31-Jan-23	14	0%
14								
P30-BP56.10	BP - Excavation	28-Jul-22	03-Aug-22	39	10-Sep-22 A	28-Oct-22	-5	0%
P30-BP56.20	BP - RCD Drilling	04-Aug-22	25-Aug-22	19	29-Oct-22	19-Nov-22	-5	0%
P30-BP56.30	BP - Airlift, Cage Install and Concrete	26-Aug-22	03-Sep-22	8	21-Nov-22	29-Nov-22	62	0%
15								
P30-BP51.10	BP - Excavation	19-Aug-22	25-Aug-22	29	01-Sep-22 A	08-Oct-22 A		0%
P30-BP51.20	BP - RCD Drilling	26-Aug-22	29-Sep-22	65	10-Oct-22 A	23-Dec-22	-5	0%
P30-BP51.30	BP - Airlift, Cage Install and Concrete	30-Sep-22	11-Oct-22	8	24-Dec-22	05-Jan-23	33	0%
17								
P30-BP63.10	BP - Excavation	29-Oct-22	04-Nov-22	6	17-Dec-22	23-Dec-22	-5	0%
P30-BP63.20	BP - RCD Drilling	05-Nov-22	26-Nov-22	19	24-Dec-22	18-Jan-23	-5	0%
P30-BP63.30	BP - Airlift, Cage Install and Concrete	28-Nov-22	06-Dec-22	8	19-Jan-23	31-Jan-23	14	0%
18								
P30-BP49.10	BP - Excavation	21-Nov-22	26-Nov-22	6	12-Jan-23	18-Jan-23	-5	0%
P30-BP49.20	BP - RCD Drilling	28-Nov-22	19-Dec-22	19	19-Jan-23	13-Feb-23	-5	0%
VD04								
02								
P30-BP47.10	BP - Excavation	09-Feb-22	15-Feb-22	6	22-Oct-22	28-Oct-22	-12	0%
P30-BP47.20	BP - RCD Drilling	16-Feb-22	04-Mar-22	15	29-Oct-22	15-Nov-22	-12	0%
P30-BP47.30	BP - Airlift, Cage Install and Concrete	05-Mar-22	12-Mar-22	7	16-Nov-22	23-Nov-22	67	0%
06								
P30-BP62.10	BP - Excavation	29-Apr-22	06-May-22	32	10-Oct-22 A	15-Nov-22	-12	0%
P30-BP62.20	BP - RCD Drilling	07-May-22	25-May-22	15	16-Nov-22	02-Dec-22	-12	0%
P30-BP62.30	BP - Airlift, Cage Install and Concrete	26-May-22	02-Jun-22	7	03-Dec-22	10-Dec-22	52	0%
07								
P30-BP42.10	BP - Excavation	19-May-22	25-May-22	6	26-Nov-22	02-Dec-22	-12	0%
P30-BP42.20	BP - RCD Drilling	26-May-22	13-Jun-22	15	03-Dec-22	20-Dec-22	-12	0%
P30-BP42.30	BP - Airlift, Cage Install and Concrete	14-Jun-22	21-Jun-22	7	21-Dec-22	30-Dec-22	37	0%
08								
P30-BP46.10	BP - Excavation	07-Jun-22	13-Jun-22	6	14-Dec-22	20-Dec-22	-12	0%
P30-BP46.20	BP - RCD Drilling	14-Jun-22	30-Jun-22	15	21-Dec-22	10-Jan-23	-12	0%
P30-BP46.30	BP - Airlift, Cage Install and Concrete	02-Jul-22	09-Jul-22	7	11-Jan-23	18-Jan-23	22	0%
14								
P30-BP52.10	BP - Excavation	03-Oct-22	10-Oct-22	6	04-Jan-23	10-Jan-23	-12	0%
P30-BP52.20	BP - RCD Drilling	11-Oct-22	01-Nov-22	19	11-Jan-23	04-Feb-23	-12	0%
18								
P30-BP61.20	BP - RCD Drilling	31-Dec-22	18-Jan-23	21	31-Aug-22 A	26-Sep-22 A		0%
P30-BP61.30	BP - Airlift, Cage Install and Concrete	19-Jan-23	30-Jan-23	8	27-Sep-22 A	08-Oct-22 A		0%



Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

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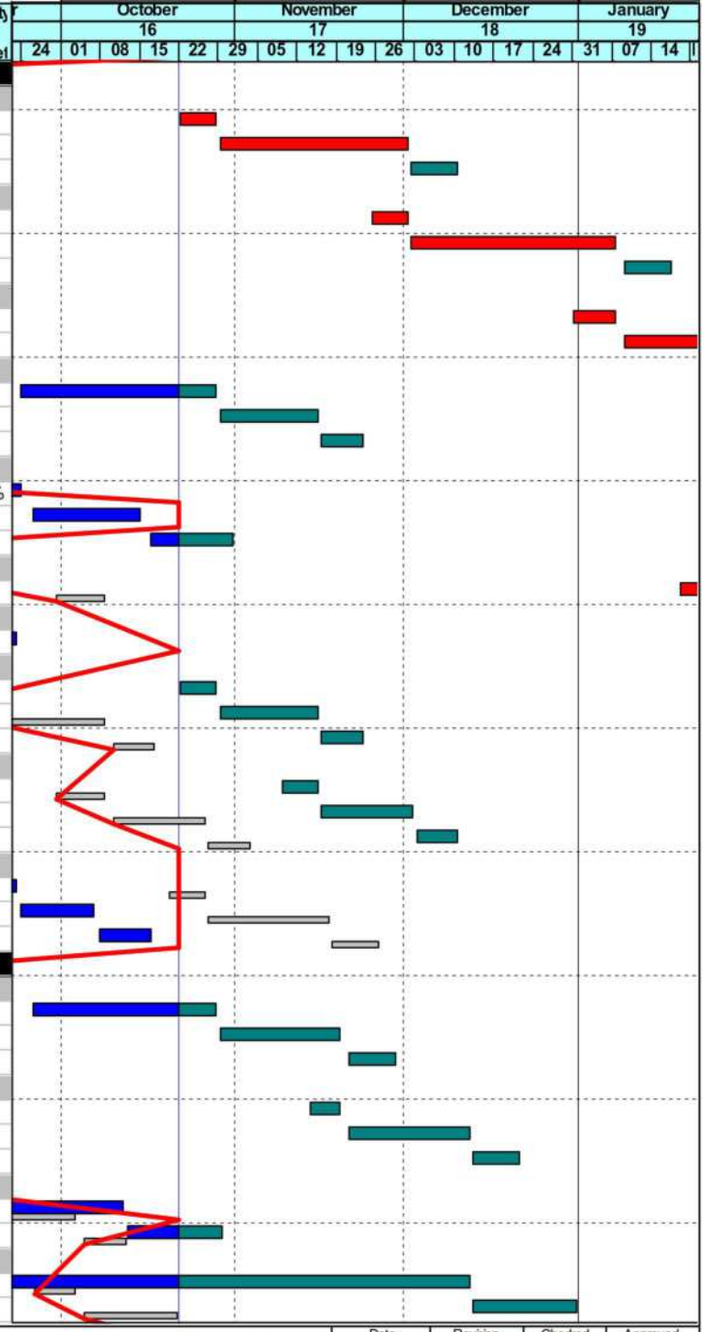
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
VD05								
02								
P30-BP19.10	BP - Excavation	16-Dec-21	22-Dec-21	6	22-Oct-22	28-Oct-22	-54	0%
P30-BP19.20	BP - RCD Drilling	23-Dec-21	28-Jan-22	29	29-Oct-22	01-Dec-22	-54	0%
P30-BP19.30	BP - Airlift, Cage Install and Concrete	29-Jan-22	10-Feb-22	8	02-Dec-22	10-Dec-22	52	0%
04								
P30-BP31.10	BP - Excavation	17-Feb-22	23-Feb-22	6	25-Nov-22	01-Dec-22	-54	0%
P30-BP31.20	BP - RCD Drilling	24-Feb-22	29-Mar-22	29	02-Dec-22	07-Jan-23	-54	0%
P30-BP31.30	BP - Airlift, Cage Install and Concrete	30-Mar-22	08-Apr-22	8	09-Jan-23	17-Jan-23	23	0%
05								
P30-BP34.10	BP - Excavation	23-Mar-22	29-Mar-22	6	31-Dec-22	07-Jan-23	-54	0%
P30-BP34.20	BP - RCD Drilling	30-Mar-22	20-Apr-22	15	09-Jan-23	27-Jan-23	-54	0%
07								
P30-BP28.10	BP - Excavation	05-May-22	12-May-22	28	24-Sep-22 A	28-Oct-22	67	0%
P30-BP28.20	BP - RCD Drilling	13-May-22	30-May-22	15	29-Oct-22	15-Nov-22	67	0%
P30-BP28.30	BP - Airlift, Cage Install and Concrete	31-May-22	08-Jun-22	7	16-Nov-22	23-Nov-22	67	0%
10								
P30-BP32.10	BP - Excavation	05-Jul-22	11-Jul-22	115	10-May-22 A	24-Sep-22 A		100%
P30-BP32.20	BP - RCD Drilling	12-Jul-22	13-Aug-22	15	26-Sep-22 A	15-Oct-22 A		0%
P30-BP32.30	BP - Airlift, Cage Install and Concrete	15-Aug-22	23-Aug-22	13	17-Oct-22 A	31-Oct-22	87	0%
14								
P30-BP25.10	BP - Excavation	30-Sep-22	08-Oct-22	6	19-Jan-23	27-Jan-23	-54	0%
17								
P30-BP27.30	BP - Airlift, Cage Install and Concrete	01-Sep-22	08-Sep-22	4	19-Sep-22 A	23-Sep-22 A		0%
19								
P30-BP35.10	BP - Excavation	13-Sep-22	19-Sep-22	6	22-Oct-22	28-Oct-22	52	0%
P30-BP35.20	BP - RCD Drilling	20-Sep-22	08-Oct-22	15	29-Oct-22	15-Nov-22	52	0%
P30-BP35.30	BP - Airlift, Cage Install and Concrete	10-Oct-22	17-Oct-22	7	16-Nov-22	23-Nov-22	67	0%
20								
P30-BP29.10	BP - Excavation	30-Sep-22	08-Oct-22	6	09-Nov-22	15-Nov-22	52	0%
P30-BP29.20	BP - RCD Drilling	10-Oct-22	26-Oct-22	15	16-Nov-22	02-Dec-22	52	0%
P30-BP29.30	BP - Airlift, Cage Install and Concrete	27-Oct-22	03-Nov-22	7	03-Dec-22	10-Dec-22	52	0%
21								
P30-BP37.10	BP - Excavation	20-Oct-22	26-Oct-22	56	19-Jul-22 A	23-Sep-22 A		0%
P30-BP37.20	BP - RCD Drilling	27-Oct-22	17-Nov-22	9	24-Sep-22 A	07-Oct-22 A		0%
P30-BP37.30	BP - Airlift, Cage Install and Concrete	18-Nov-22	26-Nov-22	7	08-Oct-22 A	17-Oct-22 A		0%
TD01								
06								
P30-BP11.10	BP - Excavation	07-May-22	14-May-22	27	26-Sep-22 A	28-Oct-22	29	0%
P30-BP11.20	BP - RCD Drilling	16-May-22	07-Jun-22	19	29-Oct-22	19-Nov-22	29	0%
P30-BP11.30	BP - Airlift, Cage Install and Concrete	08-Jun-22	16-Jun-22	8	21-Nov-22	29-Nov-22	62	0%
09								
P30-BP18.10	BP - Excavation	12-Jul-22	18-Jul-22	6	14-Nov-22	19-Nov-22	29	0%
P30-BP18.20	BP - RCD Drilling	19-Jul-22	09-Aug-22	19	21-Nov-22	12-Dec-22	29	0%
P30-BP18.30	BP - Airlift, Cage Install and Concrete	10-Aug-22	18-Aug-22	8	13-Dec-22	21-Dec-22	43	0%
12								
P30-BP09.20	BP - RCD Drilling	15-Sep-22	03-Oct-22	18	19-Sep-22 A	12-Oct-22 A		0%
P30-BP09.30	BP - Airlift, Cage Install and Concrete	05-Oct-22	12-Oct-22	15	13-Oct-22 A	29-Oct-22	88	0%
13								
P30-BP16.10	BP - Excavation	26-Sep-22	03-Oct-22	77	10-Sep-22 A	12-Dec-22	29	0%
P30-BP16.20	BP - RCD Drilling	05-Oct-22	21-Oct-22	15	13-Dec-22	31-Dec-22	29	0%



Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

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Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
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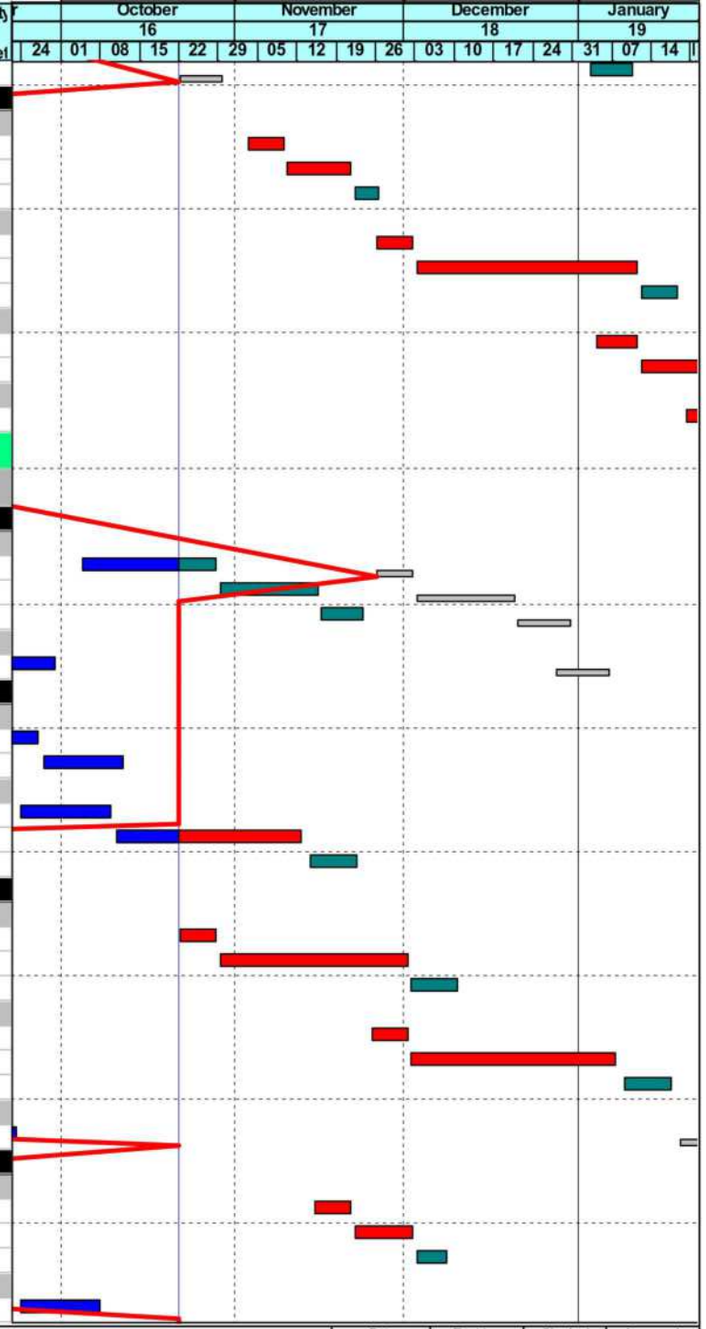
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P30-BP16.30	BP - Airlift, Cage Install and Concrete	22-Oct-22	29-Oct-22	7	03-Jan-23	10-Jan-23	29	0%
TD09								
02								
CBA-BPC52Va.1	BP - Excavation	23-Apr-22	29-Apr-22	6	03-Nov-22	09-Nov-22	-90	0%
CBA-BPC52Va.2	BP - RCD Drilling	30-Apr-22	13-May-22	10	10-Nov-22	21-Nov-22	-90	0%
CBA-BPC52Va.3	BP - Airlift, Cage Install and Concrete	14-May-22	19-May-22	5	22-Nov-22	26-Nov-22	64	0%
04								
P26-BP15.10	BP - Excavation	19-May-22	25-May-22	6	26-Nov-22	02-Dec-22	-90	0%
P26-BP15.20	BP - RCD Drilling	26-May-22	02-Jul-22	31	03-Dec-22	11-Jan-23	-90	0%
P26-BP15.30	BP - Airlift, Cage Install and Concrete	04-Jul-22	09-Jul-22	6	12-Jan-23	18-Jan-23	22	0%
05								
P26-BP16.10	BP - Excavation	24-Jun-22	02-Jul-22	7	04-Jan-23	11-Jan-23	-90	0%
P26-BP16.20	BP - RCD Drilling	04-Jul-22	19-Jul-22	14	12-Jan-23	31-Jan-23	-90	0%
06								
CBA-BPC54U.10	BP - Excavation	12-Jul-22	19-Jul-22	7	20-Jan-23	31-Jan-23	-90	0%
KD09 (Section 5)								
Bored Piles								
VD01								
12								
P23-BP45.10	BP - Excavation	26-Nov-22	02-Dec-22	21	05-Oct-22 A	28-Oct-22	63	0%
P23-BP45.20	BP - RCD Drilling	03-Dec-22	20-Dec-22	15	29-Oct-22	15-Nov-22	63	0%
P23-BP45.30	BP - Airlift, Cage Install and Concrete	21-Dec-22	30-Dec-22	7	16-Nov-22	23-Nov-22	83	0%
19								
P23-BP46.30	BP - Airlift, Cage Install and Concrete	28-Dec-22	06-Jan-23	7	22-Sep-22 A	30-Sep-22 A		0%
CD01								
06								
P23-BP40.20	BP - RCD Drilling	02-Mar-22	18-Mar-22	11	14-Sep-22 A	27-Sep-22 A		0%
P23-BP40.30	BP - Airlift, Cage Install and Concrete	19-Mar-22	26-Mar-22	10	28-Sep-22 A	12-Oct-22 A		0%
15								
P23-BP52.10	BP - Excavation	20-May-22	26-May-22	11	24-Sep-22 A	10-Oct-22 A		0%
P23-BP52.20	BP - RCD Drilling	27-May-22	18-Jun-22	29	11-Oct-22 A	12-Nov-22	-22	0%
P23-BP52.30	BP - Airlift, Cage Install and Concrete	20-Jun-22	28-Jun-22	8	14-Nov-22	22-Nov-22	84	0%
CD02								
02								
P23-BP37.10	BP - Excavation	21-Dec-21	29-Dec-21	6	22-Oct-22	28-Oct-22	-95	0%
P23-BP37.20	BP - RCD Drilling	30-Dec-21	05-Feb-22	29	29-Oct-22	01-Dec-22	-95	0%
P23-BP37.30	BP - Airlift, Cage Install and Concrete	07-Feb-22	15-Feb-22	8	02-Dec-22	10-Dec-22	68	0%
03								
P23-BP48.10	BP - Excavation	27-Jan-22	05-Feb-22	6	25-Nov-22	01-Dec-22	-95	0%
P23-BP48.20	BP - RCD Drilling	07-Feb-22	11-Mar-22	29	02-Dec-22	07-Jan-23	-95	0%
P23-BP48.30	BP - Airlift, Cage Install and Concrete	12-Mar-22	21-Mar-22	8	09-Jan-23	17-Jan-23	39	0%
15								
P23-BP61.30	BP - Airlift, Cage Install and Concrete	19-Jan-23	31-Jan-23	7	15-Sep-22 A	23-Sep-22 A		0%
TD09								
03								
CBA-BPC52U.10	BP - Excavation	06-May-22	13-May-22	6	15-Nov-22	21-Nov-22	-90	0%
CBA-BPC52U.20	BP - RCD Drilling	14-May-22	25-May-22	10	22-Nov-22	02-Dec-22	-90	0%
CBA-BPC52U.30	BP - Airlift, Cage Install and Concrete	26-May-22	31-May-22	5	03-Dec-22	08-Dec-22	70	0%
08								
CBA-BPC52V.10	BP - Excavation	10-Aug-22	16-Aug-22	10	24-Sep-22 A	08-Oct-22 A		0%



Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
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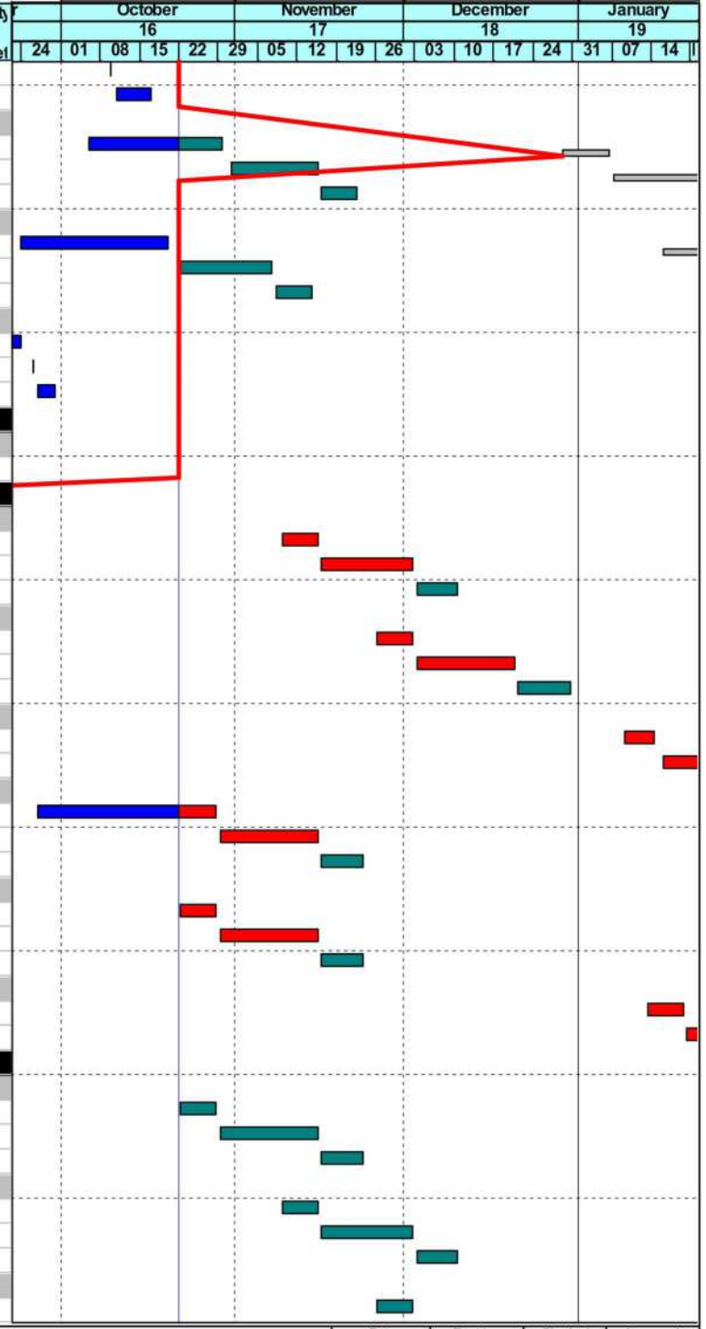
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
CBA-BPC52V.20	BP - RCD Drilling	17-Aug-22	27-Aug-22	0	10-Oct-22 A	10-Oct-22 A		0%
CBA-BPC52V.30	BP - Airlift, Cage Install and Concrete	29-Aug-22	02-Sep-22	5	11-Oct-22 A	17-Oct-22 A		0%
16								
CBA-BPC40Wa.'	BP - Excavation	29-Dec-22	06-Jan-23	21	06-Oct-22 A	29-Oct-22	84	0%
CBA-BPC40Wa.:	BP - RCD Drilling	07-Jan-23	25-Jan-23	14	31-Oct-22	15-Nov-22	84	0%
CBA-BPC40Wa.:	BP - Airlift, Cage Install and Concrete	26-Jan-23	02-Feb-23	6	16-Nov-22	22-Nov-22	84	0%
17								
CBA-BPC40T.10	BP - Excavation	16-Jan-23	25-Jan-23	20	24-Sep-22 A	20-Oct-22 A		0%
CBA-BPC40T.20	BP - RCD Drilling	26-Jan-23	11-Feb-23	14	22-Oct-22	07-Nov-22	91	0%
CBA-BPC40T.30	BP - Airlift, Cage Install and Concrete	13-Feb-23	18-Feb-23	6	08-Nov-22	14-Nov-22	91	0%
18								
CBA-BPC40V.10	BP - Excavation	04-Feb-23	11-Feb-23	21	30-Aug-22 A	24-Sep-22 A		0%
CBA-BPC40V.20	BP - RCD Drilling	13-Feb-23	28-Feb-23	0	26-Sep-22 A	26-Sep-22 A		0%
CBA-BPC40V.30	BP - Airlift, Cage Install and Concrete	01-Mar-23	07-Mar-23	3	27-Sep-22 A	30-Sep-22 A		0%
TD08								
18								
CBA-BPC40R.30	BP - Airlift, Cage Install and Concrete	06-Sep-22	13-Sep-22	9	10-Sep-22 A	22-Sep-22 A		0%
TD07								
03								
P18-BP23.10	BP IAR-S - Excavation	10-Jan-22	15-Jan-22	6	09-Nov-22	15-Nov-22	-158	0%
P18-BP23.20	BP IAR-S - RCD Drilling	17-Jan-22	05-Feb-22	15	16-Nov-22	02-Dec-22	-158	0%
P18-BP23.30	BP IAR-S - Airlift, Cage Install and Concrete	07-Feb-22	14-Feb-22	7	03-Dec-22	10-Dec-22	68	0%
04								
P18-BP21.10	BP - Excavation	27-Jan-22	05-Feb-22	6	26-Nov-22	02-Dec-22	-158	0%
P18-BP21.20	BP - RCD Drilling	07-Feb-22	23-Feb-22	15	03-Dec-22	20-Dec-22	-158	0%
P18-BP21.30	BP - Airlift, Cage Install and Concrete	24-Feb-22	03-Mar-22	7	21-Dec-22	30-Dec-22	53	0%
08								
P18-BP13.10	BP - Excavation	20-Apr-22	26-Apr-22	6	09-Jan-23	14-Jan-23	-158	0%
P18-BP13.20	BP - RCD Drilling	27-Apr-22	20-May-22	19	16-Jan-23	09-Feb-23	-158	0%
10								
P18-BP15.10	BP IAR-S - Excavation	01-Jun-22	08-Jun-22	26	27-Sep-22 A	28-Oct-22	-75	0%
P18-BP15.20	BP IAR-S - RCD Drilling	09-Jun-22	25-Jun-22	15	29-Oct-22	15-Nov-22	-75	0%
P18-BP15.30	BP IAR-S - Airlift, Cage Install and Concrete	27-Jun-22	05-Jul-22	7	16-Nov-22	23-Nov-22	83	0%
15								
P18-BP18.10	BP IAR-S (Optional Item no.3) - Excavation	28-Apr-22	05-May-22	6	22-Oct-22	28-Oct-22	-98	0%
P18-BP18.20	BP IAR-S (Optional Item no.3) - RCD Drilling	06-May-22	24-May-22	15	29-Oct-22	15-Nov-22	-98	0%
P18-BP18.30	BP IAR-S (Optional Item no.3) - Airlift, Cage Install and Concrete	25-May-22	01-Jun-22	7	16-Nov-22	23-Nov-22	83	0%
20								
P18-BP17.10	BP IAR-S (Optional Item no.3) - Excavation	08-Aug-22	13-Aug-22	6	13-Jan-23	19-Jan-23	0	0%
P18-BP17.20	BP IAR-S (Optional Item no.3) - RCD Drilling	15-Aug-22	31-Aug-22	15	20-Jan-23	09-Feb-23	0	0%
TD06								
01								
P18-BP36.10	BP - Excavation	20-Dec-21	28-Dec-21	6	22-Oct-22	28-Oct-22	3	0%
P18-BP36.20	BP - RCD Drilling	29-Dec-21	15-Jan-22	15	29-Oct-22	15-Nov-22	3	0%
P18-BP36.30	BP - Airlift, Cage Install and Concrete	17-Jan-22	24-Jan-22	7	16-Nov-22	23-Nov-22	83	0%
02								
P18-BP40.10	BP - Excavation	10-Jan-22	15-Jan-22	6	09-Nov-22	15-Nov-22	3	0%
P18-BP40.20	BP - RCD Drilling	17-Jan-22	05-Feb-22	15	16-Nov-22	02-Dec-22	3	0%
P18-BP40.30	BP - Airlift, Cage Install and Concrete	07-Feb-22	14-Feb-22	7	03-Dec-22	10-Dec-22	68	0%
04								
P18-BP33.10	BP - Excavation	22-Feb-22	28-Feb-22	6	26-Nov-22	02-Dec-22	3	0%



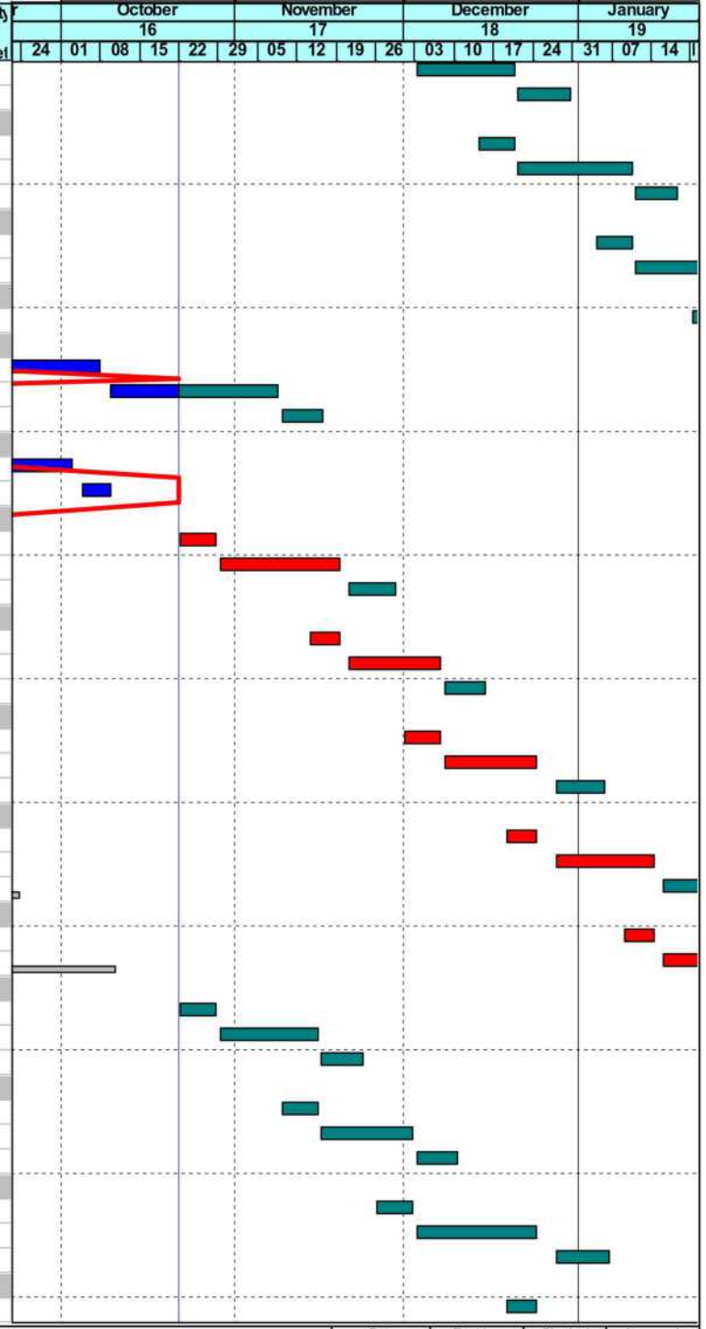
Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

VIBRO

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P18-BP33.20	BP - RCD Drilling	01-Mar-22	17-Mar-22	15	03-Dec-22	20-Dec-22	3	0%
P18-BP33.30	BP - Airlift, Cage Install and Concrete	18-Mar-22	25-Mar-22	7	21-Dec-22	30-Dec-22	53	0%
05								
P18-BP28.10	BP - Excavation	11-Mar-22	17-Mar-22	6	14-Dec-22	20-Dec-22	3	0%
P18-BP28.20	BP - RCD Drilling	18-Mar-22	04-Apr-22	15	21-Dec-22	10-Jan-23	3	0%
P18-BP28.30	BP - Airlift, Cage Install and Concrete	06-Apr-22	13-Apr-22	7	11-Jan-23	18-Jan-23	38	0%
06								
P18-BP42.10	BP - Excavation	29-Mar-22	04-Apr-22	6	04-Jan-23	10-Jan-23	3	0%
P18-BP42.20	BP - RCD Drilling	06-Apr-22	26-Apr-22	15	11-Jan-23	31-Jan-23	3	0%
07								
P18-BP31.10	BP - Excavation	20-Apr-22	26-Apr-22	6	21-Jan-23	31-Jan-23	3	0%
08								
P18-BP20.10	BP - Excavation	14-May-22	20-May-22	26	05-Sep-22 A	08-Oct-22 A		0%
P18-BP20.20	BP - RCD Drilling	21-May-22	08-Jun-22	26	10-Oct-22 A	08-Nov-22	89	0%
P18-BP20.30	BP - Airlift, Cage Install and Concrete	09-Jun-22	16-Jun-22	7	09-Nov-22	16-Nov-22	89	0%
09								
P18-BP39.20	BP - RCD Drilling	09-Jun-22	30-Jun-22	11	19-Sep-22 A	03-Oct-22 A		0%
P18-BP39.30	BP - Airlift, Cage Install and Concrete	02-Jul-22	11-Jul-22	4	05-Oct-22 A	10-Oct-22 A		0%
10								
P18-BP44.10	BP - Excavation	24-Jun-22	30-Jun-22	6	22-Oct-22	28-Oct-22	-24	0%
P18-BP44.20	BP - RCD Drilling	02-Jul-22	23-Jul-22	19	29-Oct-22	19-Nov-22	-24	0%
P18-BP44.30	BP - Airlift, Cage Install and Concrete	25-Jul-22	02-Aug-22	8	21-Nov-22	29-Nov-22	78	0%
11								
P18-BP29.10	BP - Excavation	18-Jul-22	23-Jul-22	6	14-Nov-22	19-Nov-22	-24	0%
P18-BP29.20	BP - RCD Drilling	25-Jul-22	10-Aug-22	15	21-Nov-22	07-Dec-22	-24	0%
P18-BP29.30	BP - Airlift, Cage Install and Concrete	11-Aug-22	18-Aug-22	7	08-Dec-22	15-Dec-22	64	0%
12								
P18-BP41.10	BP - Excavation	04-Aug-22	10-Aug-22	6	01-Dec-22	07-Dec-22	-24	0%
P18-BP41.20	BP - RCD Drilling	11-Aug-22	27-Aug-22	15	08-Dec-22	24-Dec-22	-24	0%
P18-BP41.30	BP - Airlift, Cage Install and Concrete	29-Aug-22	05-Sep-22	7	28-Dec-22	05-Jan-23	49	0%
13								
P18-BP34.10	BP - Excavation	22-Aug-22	27-Aug-22	6	19-Dec-22	24-Dec-22	-24	0%
P18-BP34.20	BP - RCD Drilling	29-Aug-22	15-Sep-22	15	28-Dec-22	14-Jan-23	-24	0%
P18-BP34.30	BP - Airlift, Cage Install and Concrete	16-Sep-22	23-Sep-22	7	16-Jan-23	25-Jan-23	34	0%
14								
P18-BP43.10	BP - Excavation	08-Sep-22	15-Sep-22	6	09-Jan-23	14-Jan-23	-24	0%
P18-BP43.20	BP - RCD Drilling	16-Sep-22	10-Oct-22	19	16-Jan-23	09-Feb-23	-24	0%
17								
P18-BP30.10	BP (Optional Item no.3) - Excavation	28-Apr-22	05-May-22	6	22-Oct-22	28-Oct-22	14	0%
P18-BP30.20	BP (Optional Item no.3) - RCD Drilling	06-May-22	24-May-22	15	29-Oct-22	15-Nov-22	14	0%
P18-BP30.30	BP (Optional Item no.3) - Airlift, Cage Install and Concrete	25-May-22	01-Jun-22	7	16-Nov-22	23-Nov-22	83	0%
18								
P18-BP27.10	BP - Excavation	18-May-22	24-May-22	6	09-Nov-22	15-Nov-22	14	0%
P18-BP27.20	BP - RCD Drilling	25-May-22	11-Jun-22	15	16-Nov-22	02-Dec-22	14	0%
P18-BP27.30	BP - Airlift, Cage Install and Concrete	13-Jun-22	20-Jun-22	7	03-Dec-22	10-Dec-22	68	0%
19								
P18-BP37.10	BP - Excavation	06-Jun-22	11-Jun-22	6	26-Nov-22	02-Dec-22	14	0%
P18-BP37.20	BP - RCD Drilling	13-Jun-22	05-Jul-22	19	03-Dec-22	24-Dec-22	14	0%
P18-BP37.30	BP - Airlift, Cage Install and Concrete	06-Jul-22	14-Jul-22	8	28-Dec-22	06-Jan-23	48	0%
20								
P18-BP35.10	BP - Excavation	28-Jun-22	05-Jul-22	6	19-Dec-22	24-Dec-22	14	0%



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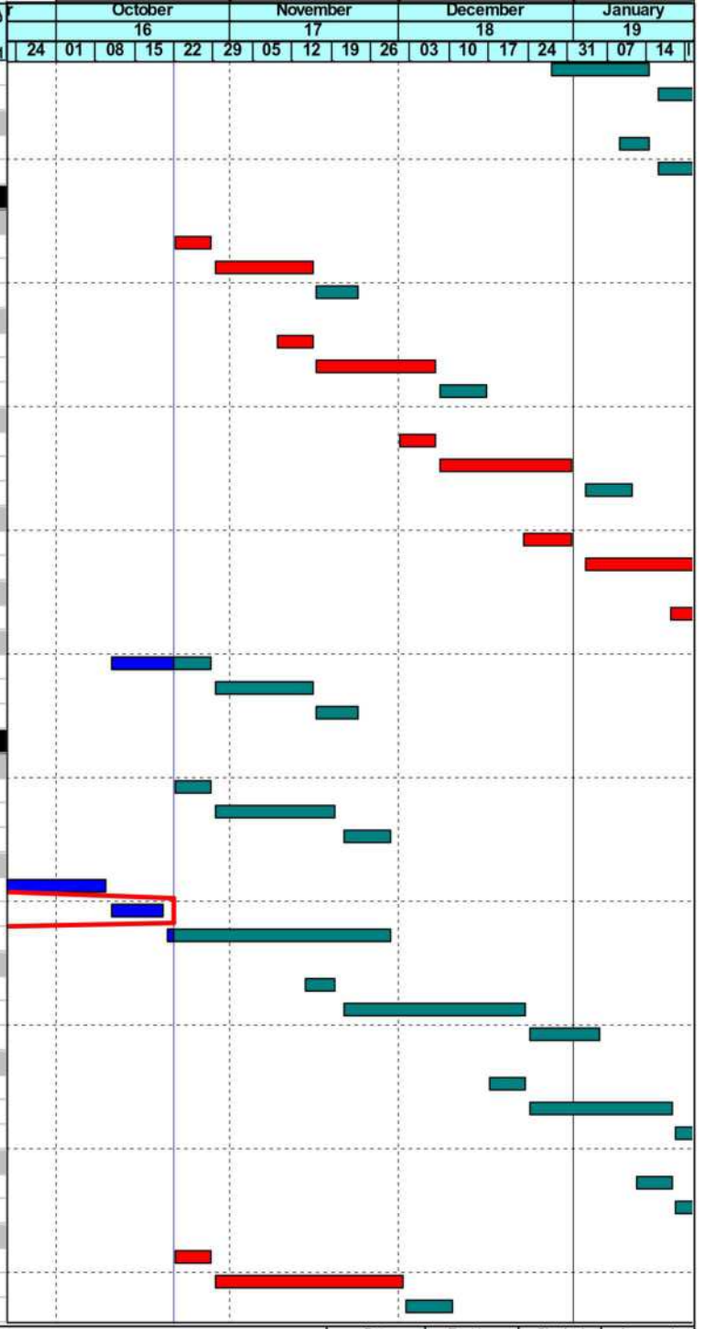
Planned Bar
Critical Bar
Baseline
Milestone
Actual MS
Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P18-BP35.20	BP - RCD Drilling	06-Jul-22	22-Jul-22	15	28-Dec-22	14-Jan-23	14	0%
P18-BP35.30	BP - Airlift, Cage Install and Concrete	23-Jul-22	30-Jul-22	7	16-Jan-23	25-Jan-23	34	0%
21								
P18-BP19.10	BP - Excavation	16-Jul-22	22-Jul-22	6	09-Jan-23	14-Jan-23	14	0%
P18-BP19.20	BP - RCD Drilling	23-Jul-22	13-Aug-22	19	16-Jan-23	09-Feb-23	14	0%
TD05								
01								
P18-BP48.10	BP - Excavation	20-Dec-21	28-Dec-21	6	22-Oct-22	28-Oct-22	-127	0%
P18-BP48.20	BP - RCD Drilling	29-Dec-21	15-Jan-22	15	29-Oct-22	15-Nov-22	-127	0%
P18-BP48.30	BP - Airlift, Cage Install and Concrete	17-Jan-22	24-Jan-22	7	16-Nov-22	23-Nov-22	83	0%
02								
P18-BP60.10	BP - Excavation	10-Jan-22	15-Jan-22	6	09-Nov-22	15-Nov-22	-127	0%
P18-BP60.20	BP - RCD Drilling	17-Jan-22	10-Feb-22	19	16-Nov-22	07-Dec-22	-127	0%
P18-BP60.30	BP - Airlift, Cage Install and Concrete	11-Feb-22	19-Feb-22	8	08-Dec-22	16-Dec-22	63	0%
03								
P18-BP63.10	BP - Excavation	04-Feb-22	10-Feb-22	6	01-Dec-22	07-Dec-22	-127	0%
P18-BP63.20	BP - RCD Drilling	11-Feb-22	04-Mar-22	19	08-Dec-22	31-Dec-22	-127	0%
P18-BP63.30	BP - Airlift, Cage Install and Concrete	05-Mar-22	14-Mar-22	8	03-Jan-23	11-Jan-23	44	0%
04								
P18-BP62.10	BP - Excavation	26-Feb-22	04-Mar-22	6	23-Dec-22	31-Dec-22	-127	0%
P18-BP62.20	BP - RCD Drilling	05-Mar-22	26-Mar-22	19	03-Jan-23	26-Jan-23	-127	0%
05								
P18-BP61.10	BP - Excavation	21-Mar-22	26-Mar-22	6	18-Jan-23	26-Jan-23	-127	0%
17								
P18-BP47.10	BP - Excavation	25-Jun-22	02-Jul-22	16	11-Oct-22 A	28-Oct-22	25	0%
P18-BP47.20	BP - RCD Drilling	04-Jul-22	20-Jul-22	15	29-Oct-22	15-Nov-22	25	0%
P18-BP47.30	BP - Airlift, Cage Install and Concrete	21-Jul-22	28-Jul-22	7	16-Nov-22	23-Nov-22	83	0%
TD04								
05								
P23-BP75.10	BP - Excavation	26-Jan-22	04-Feb-22	6	22-Oct-22	28-Oct-22	1	0%
P23-BP75.20	BP - RCD Drilling	05-Feb-22	26-Feb-22	19	29-Oct-22	19-Nov-22	1	0%
P23-BP75.30	BP - Airlift, Cage Install and Concrete	28-Feb-22	08-Mar-22	8	21-Nov-22	29-Nov-22	78	0%
06								
P23-BP73.10	BP - Excavation	21-Feb-22	26-Feb-22	22	10-Sep-22 A	10-Oct-22 A		0%
P23-BP73.20	BP - RCD Drilling	28-Feb-22	21-Mar-22	8	11-Oct-22 A	20-Oct-22 A		0%
P23-BP73.30	BP - Airlift, Cage Install and Concrete	22-Mar-22	30-Mar-22	34	21-Oct-22 A	29-Nov-22	78	0%
07								
P23-BP97.10	BP - Excavation	15-Mar-22	21-Mar-22	6	14-Nov-22	19-Nov-22	1	0%
P23-BP97.20	BP - RCD Drilling	22-Mar-22	28-Apr-22	29	21-Nov-22	23-Dec-22	1	0%
P23-BP97.30	BP - Airlift, Cage Install and Concrete	29-Apr-22	10-May-22	8	24-Dec-22	05-Jan-23	49	0%
08								
P23-BP85.10	BP - Excavation	22-Apr-22	28-Apr-22	6	17-Dec-22	23-Dec-22	1	0%
P23-BP85.20	BP - RCD Drilling	29-Apr-22	23-May-22	19	24-Dec-22	18-Jan-23	1	0%
P23-BP85.30	BP - Airlift, Cage Install and Concrete	24-May-22	01-Jun-22	8	19-Jan-23	31-Jan-23	30	0%
09								
P23-BP95.10	BP - Excavation	17-May-22	23-May-22	6	12-Jan-23	18-Jan-23	1	0%
P23-BP95.20	BP - RCD Drilling	24-May-22	27-Jun-22	29	19-Jan-23	24-Feb-23	1	0%
11								
P23-BP108.10	BP - Excavation	26-Jan-22	04-Feb-22	6	22-Oct-22	28-Oct-22	-19	0%
P23-BP108.20	BP - RCD Drilling	05-Feb-22	10-Mar-22	29	29-Oct-22	01-Dec-22	-19	0%
P23-BP108.30	BP - Airlift, Cage Install and Concrete	11-Mar-22	19-Mar-22	8	02-Dec-22	10-Dec-22	68	0%



Planned Bar
Critical Bar
Baseline
Milestone
Actual MS
Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
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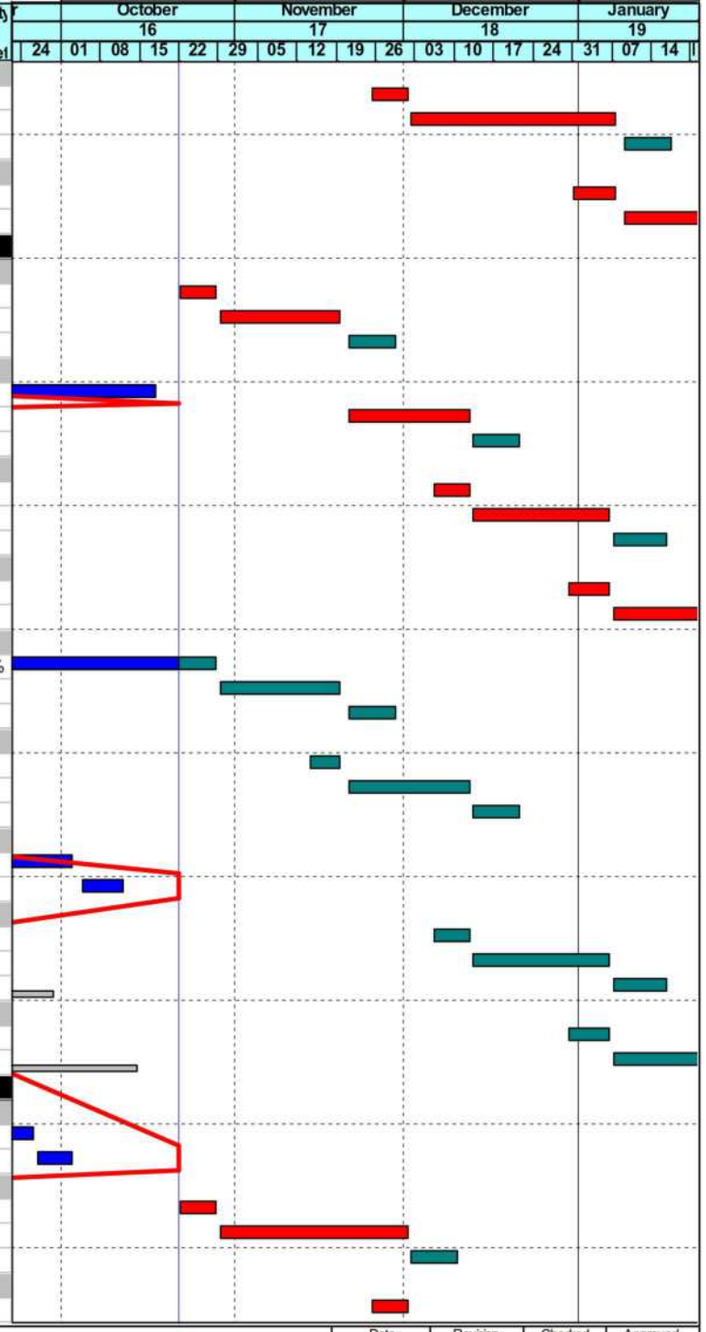
4-Mar-22	Rev.0	KL	B

Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
13								
P23-BP84.10	BP - Excavation	26-Mar-22	01-Apr-22	6	25-Nov-22	01-Dec-22	-19	0%
P23-BP84.20	BP - RCD Drilling	02-Apr-22	12-May-22	29	02-Dec-22	07-Jan-23	-19	0%
P23-BP84.30	BP - Airlift, Cage Install and Concrete	13-May-22	21-May-22	8	09-Jan-23	17-Jan-23	39	0%
15								
P23-BP96.10	BP - Excavation	28-May-22	04-Jun-22	6	31-Dec-22	07-Jan-23	-19	0%
P23-BP96.20	BP - RCD Drilling	06-Jun-22	09-Jul-22	29	09-Jan-23	14-Feb-23	-19	0%
TD03								
04								
P23-BP109.10	BP - Excavation	09-Mar-22	15-Mar-22	6	22-Oct-22	28-Oct-22	-46	0%
P23-BP109.20	BP - RCD Drilling	16-Mar-22	07-Apr-22	19	29-Oct-22	19-Nov-22	-46	0%
P23-BP109.30	BP - Airlift, Cage Install and Concrete	08-Apr-22	20-Apr-22	8	21-Nov-22	29-Nov-22	78	0%
05								
P23-BP99.10	BP - Excavation	31-Mar-22	07-Apr-22	20	22-Sep-22 A	18-Oct-22 A		0%
P23-BP99.20	BP - RCD Drilling	08-Apr-22	04-May-22	19	21-Nov-22	12-Dec-22	-46	0%
P23-BP99.30	BP - Airlift, Cage Install and Concrete	05-May-22	14-May-22	8	13-Dec-22	21-Dec-22	59	0%
06								
P23-BP77.10	BP - Excavation	27-Apr-22	04-May-22	6	06-Dec-22	12-Dec-22	-46	0%
P23-BP77.20	BP - RCD Drilling	05-May-22	27-May-22	19	13-Dec-22	06-Jan-23	-46	0%
P23-BP77.30	BP - Airlift, Cage Install and Concrete	28-May-22	07-Jun-22	8	07-Jan-23	16-Jan-23	40	0%
07								
P23-BP55.10	BP - Excavation	21-May-22	27-May-22	6	30-Dec-22	06-Jan-23	-46	0%
P23-BP55.20	BP - RCD Drilling	28-May-22	20-Jun-22	19	07-Jan-23	01-Feb-23	-46	0%
15								
P23-BP98.10	BP - Excavation	02-Jun-22	09-Jun-22	236	11-Jan-22 A	28-Oct-22	2	100%
P23-BP98.20	BP - RCD Drilling	10-Jun-22	02-Jul-22	19	29-Oct-22	19-Nov-22	2	0%
P23-BP98.30	BP - Airlift, Cage Install and Concrete	04-Jul-22	12-Jul-22	8	21-Nov-22	29-Nov-22	78	0%
16								
P23-BP78.10	BP - Excavation	25-Jun-22	02-Jul-22	6	14-Nov-22	19-Nov-22	2	0%
P23-BP78.20	BP - RCD Drilling	04-Jul-22	25-Jul-22	19	21-Nov-22	12-Dec-22	2	0%
P23-BP78.30	BP - Airlift, Cage Install and Concrete	26-Jul-22	03-Aug-22	8	13-Dec-22	21-Dec-22	59	0%
17								
P23-BP67.20	BP - RCD Drilling	26-Jul-22	27-Aug-22	10	20-Sep-22 A	03-Oct-22 A		0%
P23-BP67.30	BP - Airlift, Cage Install and Concrete	29-Aug-22	06-Sep-22	6	05-Oct-22 A	12-Oct-22 A		0%
18								
P23-BP102.10	BP - Excavation	22-Aug-22	27-Aug-22	6	06-Dec-22	12-Dec-22	2	0%
P23-BP102.20	BP - RCD Drilling	29-Aug-22	20-Sep-22	19	13-Dec-22	06-Jan-23	2	0%
P23-BP102.30	BP - Airlift, Cage Install and Concrete	21-Sep-22	29-Sep-22	8	07-Jan-23	16-Jan-23	40	0%
19								
P23-BP89.10	BP - Excavation	14-Sep-22	20-Sep-22	6	30-Dec-22	06-Jan-23	2	0%
P23-BP89.20	BP - RCD Drilling	21-Sep-22	14-Oct-22	19	07-Jan-23	01-Feb-23	2	0%
TD02								
03								
P23-BP71.20	BP - RCD Drilling	11-Mar-22	14-Apr-22	5	20-Sep-22 A	26-Sep-22 A		0%
P23-BP71.30	BP - Airlift, Cage Install and Concrete	19-Apr-22	27-Apr-22	4	27-Sep-22 A	03-Oct-22 A		0%
04								
P23-BP83.10	BP - Excavation	08-Apr-22	14-Apr-22	6	22-Oct-22	28-Oct-22	-54	0%
P23-BP83.20	BP - RCD Drilling	19-Apr-22	24-May-22	29	29-Oct-22	01-Dec-22	-54	0%
P23-BP83.30	BP - Airlift, Cage Install and Concrete	25-May-22	02-Jun-22	8	02-Dec-22	10-Dec-22	68	0%
05								
P23-BP93.10	BP - Excavation	18-May-22	24-May-22	6	25-Nov-22	01-Dec-22	-54	0%



Planned Bar
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West Kowloon Cultural District Authority
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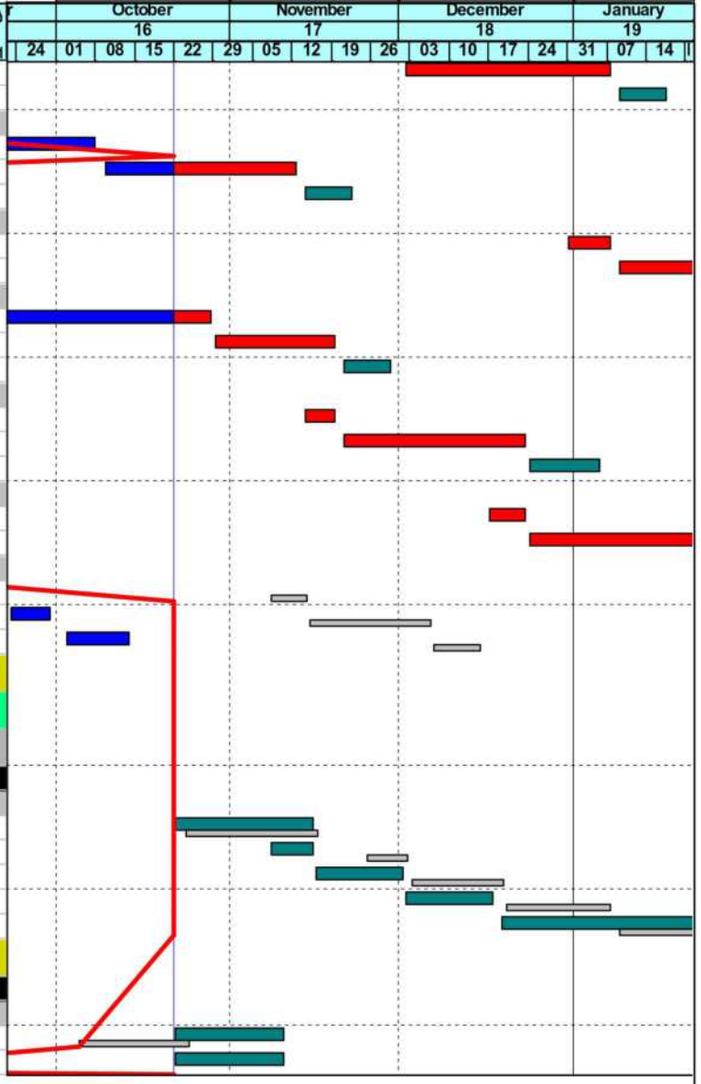
Activity ID	Activity Name	Baseline Start	Baseline Finish	Dur	Forecast / Actual Start	Forecast / Actual Finsih	Total Float	Activity % omplet
P23-BP93.20	BP - RCD Drilling	25-May-22	28-Jun-22	29	02-Dec-22	07-Jan-23	-54	0%
P23-BP93.30	BP - Airlift, Cage Install and Concrete	29-Jun-22	08-Jul-22	8	09-Jan-23	17-Jan-23	39	0%
06								
P23-BP105.10	BP - Excavation	22-Jun-22	28-Jun-22	24	07-Sep-22 A	08-Oct-22 A		0%
P23-BP105.20	BP - RCD Drilling	29-Jun-22	21-Jul-22	30	10-Oct-22 A	12-Nov-22	-9	0%
P23-BP105.30	BP - Airlift, Cage Install and Concrete	22-Jul-22	30-Jul-22	8	14-Nov-22	22-Nov-22	84	0%
07								
P23-BP103.10	BP - Excavation	15-Jul-22	21-Jul-22	6	31-Dec-22	07-Jan-23	-54	0%
P23-BP103.20	BP - RCD Drilling	22-Jul-22	12-Aug-22	19	09-Jan-23	02-Feb-23	-54	0%
12								
P23-BP111.10	BP - Excavation	26-Mar-22	01-Apr-22	75	30-Jul-22 A	28-Oct-22	-9	0%
P23-BP111.20	BP - RCD Drilling	02-Apr-22	28-Apr-22	19	29-Oct-22	19-Nov-22	-9	0%
P23-BP111.30	BP - Airlift, Cage Install and Concrete	29-Apr-22	10-May-22	8	21-Nov-22	29-Nov-22	78	0%
13								
P23-BP92.10	BP - Excavation	22-Apr-22	28-Apr-22	6	14-Nov-22	19-Nov-22	-9	0%
P23-BP92.20	BP - RCD Drilling	29-Apr-22	04-Jun-22	29	21-Nov-22	23-Dec-22	-9	0%
P23-BP92.30	BP - Airlift, Cage Install and Concrete	06-Jun-22	14-Jun-22	8	24-Dec-22	05-Jan-23	49	0%
15								
P23-BP80.10	BP - Excavation	04-Jul-22	09-Jul-22	6	17-Dec-22	23-Dec-22	-9	0%
P23-BP80.20	BP - RCD Drilling	11-Jul-22	12-Aug-22	29	24-Dec-22	02-Feb-23	-9	0%
19								
P23-BP104.10	BP - Excavation	08-Nov-22	14-Nov-22	32	15-Aug-22 A	22-Sep-22 A		0%
P23-BP104.20	BP - RCD Drilling	15-Nov-22	06-Dec-22	6	23-Sep-22 A	30-Sep-22 A		0%
P23-BP104.30	BP - Airlift, Cage Install and Concrete	07-Dec-22	15-Dec-22	9	03-Oct-22 A	14-Oct-22 A		0%
Pile Test								
KD08 (Section 4) (incl. BP for KD04 (Stage 4-1) & SSHP in KD09 (Section 5))								
SSHP								
KD08.TS.1100	Post Construction Proof Drilling (2 Nos.)	24-Oct-22	16-Nov-22	21	22-Oct-22	15-Nov-22	94	0%
KD08.TS.1120	Submit BA14	25-Nov-22	02-Dec-22	7	08-Nov-22	15-Nov-22	94	0%
KD08.TS.1140	Selection of Pile for Static Load Test	03-Dec-22	19-Dec-22	14	16-Nov-22	01-Dec-22	94	0%
KD08.TS.1160	Static Load Test of Selected Pile	20-Dec-22	07-Jan-23	14	02-Dec-22	17-Dec-22	94	0%
KD08.TS.1180	Obtain BA14 Acknowledgement / Satisfaction of CA, Completion As-built Drawings, Repo	09-Jan-23	13-Feb-23	28	19-Dec-22	25-Jan-23	94	0%
Attendance to Other Project Contractors (optional works item no. 2A to 2E)								
S1.AT.0000	Attendance at Section 1 Area (optional works item no. 2A) (Duration TBC)	05-Oct-22	24-Oct-22	20	22-Oct-22	10-Nov-22	54	0%
S1.AT.0020	Attendance at Section 1 Area (optional works item no. 2A) if item No. 3 is instructed (Dura	16-Aug-22	04-Sep-22	20	22-Oct-22	10-Nov-22	424	0%



Planned Bar | Critical Bar | Baseline | Milestone | Actual MS | Critical MS

West Kowloon Cultural District Authority
Piling for Integrated Basement and U/G Road in Zone 2B 2C
3 Month Rolling Programme as of 21 October 2022
Based on CMWP Rev.0

VIBRO

Date	Revision	Checked	Approved
4-Mar-22	Rev.0	KL	B

C. Action and Limit Levels for Construction Phase

Air Quality

The Action and Limit Levels for 1-hour and 24-hour TSP for the monitoring stations are presented in following tables:

Table C-1: Action and Limit Levels for 1-hour TSP

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
AM3A	280.4	500
AM4A	278.5	500
AM5A	275.4	500

Table C-2: Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
AM3A	152.4	260
AM4A	152.6	260
AM5A	141.1	260

Noise

The Action and Limit Levels for Noise for the monitoring stations are presented in following table:

Table C-3: Action and Limit Levels for Construction Noise

Time Period & Monitoring Locations	Action Level	Limit Level
NM2A, NM3A, NM4A and NM5A		
0700-1900 hours on normal weekdays	When one valid documented complaint is received from any one of the sensitive receiver	75

Note:

*Reduce to 70dB(A) for school and 65 dB(A) during school examination period.

D. Event and Action Plan for Air Quality, Noise, Landscape and Visual Impact

Air Quality

In case the Action and Limit Levels are not complied during construction stage, the following Event and Action Plan should be followed:

Table D-1: Typical Event and Action Plan for Air Quality

Event	Action			
	ET	IEC	WKCDA	Contractor
Action Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and WKCDA; 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.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and WKCDA; 3. Advise the WKCDA 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 WKCDA; 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. Monitor the 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 WKCDA within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Event	Action			
	ET	IEC	WKCDA	Contractor
Limit Level				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform WKCDA, 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 WKCDA 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 WKCDA on the effectiveness of the proposed remedial measures; 5. Monitor the 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 three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, WKCDA, 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 WKCDA to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCDA informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss amongst WKCDA, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCDA accordingly; 5. Monitor the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation 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 three 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 WKCDA until the exceedance is abated.

Construction Noise

In case the Action and Limit Levels are not complied during construction stage, the following Event and Action Plan should be followed:

Table D-2: Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	WKCDA	Contractor
Action Level	1. Notify WKCDA, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, WKCDA and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the WKCDA accordingly; 3. Advise the WKCDA on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures.	1. Submit noise mitigation proposals to IEC and WKCDA; 2. Implement noise mitigation proposals.
Limit Level	1. Inform IEC, WKCDA, Contractor and EPD; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and WKCDA on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCDA informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst WKCDA, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCDA accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Supervise the implementation of remedial measures; 5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and WKCDA within 3 working days of notification; 3. Implement the agreed proposals; 4. Submit further proposal if problem still not under control; 5. Stop the relevant portion of works as instructed by the WKCDA until the exceedance is abated.

Landscape and Visual Impact

In case of non-compliance of landscape and visual impacts, procedures in accordance with the Event and Action Plan should be followed:

Table D-3: Event and Action Plan for Landscape and Visual Impact

Event	Action			
	Action	Event	Action	Event
Design Check	1. Design check to make sure the design complies with all the proposed mitigation measures in the EIA report; 2. Prepare and submit report.	1. Check report submitted by ET; 2. Recommend remedial design if necessary.	1. Undertake remedial design if necessary.	-
Non-conformity on one occasion	1. Identify source of non-conformity; 2. Report to IEC and WKCDA; 3. Discuss remedial actions with IEC, WKCDA and Contractor; 4. Monitor remedial actions until rectification has been completed.	1. Check and verify source of non-conformity; 2. Discuss remedial actions with ET and Contractor; 3. Advise WKCDA on effectiveness of proposed remedial actions; 4. Check implementation of remedial actions.	1. Notify Contractor; 2. Ensure remedial actions are properly implemented.	1. Amend working method as necessary; 2. Rectify damage and undertake necessary replacement and remedial actions.
Repeated non-conformity	1. Identify source of non-conformity; 2. Report to IEC and WKCDA; 3. Increase monitoring frequency; 4. Discuss remedial actions with IEC, WKCDA and Contractor; 5. Monitor remedial actions until rectification has been completed; 6. If non-conformity rectified, reduce monitoring frequency back to normal.	1. Check and verify source of non-conformity; 2. Check Contractor's working method; 3. Discuss remedial actions with ET and Contractor; 4. Advise WKCDA on effectiveness of proposed remedial actions; 5. Supervise implementation of remedial actions.	1. Notify Contractor; 2. Ensure remedial actions are properly implemented.	1. Amend working method as necessary; 2. Rectify damage and undertake necessary replacement and remedial actions.

E. Monitoring Schedule

Notes:
AM3A - Northeast corner of West Kowloon Station's station box (G/F)
AM4A - Southeast corner of West Kowloon Station's station box (G/F)
AM5A - North of West Kowloon Station's station box (G/F)
NM2A - The Arch – Sun Tower (G/F)
NM3A - Xiqu Centre (G/F)
NM4A - Next to Tsim Sha Tsui Fire Station (G/F)
NM5A - Pedestrian road (G/F) outside West Kowloon Station

October 2022 (Hong Kong)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
25	26	27	28	29	30	1 ● National Day of the People's Republic of China
2	3	4 ● Chung Yeung Festival	5 Landscape & Visual Inspection Zone 2B & 2C	6 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	7	8
9	10	11	12 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	13 Landscape & Visual Inspection Zone 2A	14	15
16	17	18 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	19 Landscape & Visual Inspection Zone 2B & 2C	20	21	22
23	24 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	25	26	27 Landscape & Visual Inspection Zone 2A	28	29 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring
30	31	1	2	3	4	5

● Federal Holidays ● Local Holidays ●● Multiple Events

Notes:
AM3A - Northeast corner of West Kowloon Station's station box (G/F)
AM4A - Southeast corner of West Kowloon Station's station box (G/F)
AM5A - North of West Kowloon Station's station box (G/F)
NM2A - The Arch – Sun Tower (G/F)
NM3A - Xiqu Centre (G/F)
NM4A - Next to Tsim Sha Tsui Fire Station (G/F)
NM5A - Pedestrian road (G/F) outside West Kowloon Station

November 2022 (Hong Kong)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2 Landscape & Visual Inspection Zone 2B & 2C	3	4 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	5
6	7	8	9	10 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring Landscape & Visual Inspection Zone 2A	11	12
13	14	15	16 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring Landscape & Visual Inspection Zone 2B & 2C	17	18	19
20	21	22 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	23	24 Landscape & Visual Inspection Zone 2A	25	26
27	28 AM3A,AM4A,AM5A - 24-hr TSP, 1-hr TSP X 3 NM2A,NM3A,NM4A,NM5A - Noise Impact Monitoring	29	30 Landscape & Visual Inspection Zone 2B & 2C	1	2	3

F. Calibration Certifications

TISCH Environmental

RECALIBRATION DUE DATE:
October 20, 2022

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	October 20, 2021	**Rootsmeter S/N:** 438320	**Ta:** 295	°K	
Operator:	Jim Tisch		**Pa:** 753.9	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3543**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4300	3.2	2.00
2	3	4	1	1.0060	6.4	4.00
3	5	6	1	0.8990	7.9	5.00
4	7	8	1	0.8550	8.8	5.50
5	9	10	1	0.7050	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9978	0.6977	1.4156	0.9958	0.6963	0.8847
0.9935	0.9876	2.0020	0.9915	0.9856	1.2511
0.9915	1.1029	2.2383	0.9895	1.1007	1.3988
0.9903	1.1583	2.3476	0.9883	1.1559	1.4670
0.9850	1.3972	2.8313	0.9830	1.3944	1.7693
QSTD	**m=**	**2.02434**	**QA**	**m=**	**1.26761**
	b=	**0.00347**		**b=**	**0.00217**
	r=	**1.00000**		**r=**	**1.00000**

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

RECALIBRATION

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

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

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

TE-5170 Calibration Worksheet

Site Information

Location:	AM3A	Site ID:	Zones 2A at West Kowloon Cultural	Date:	3-Oct-22
Sampler:	TE-5170	Serial No:	4340	Tech:	CS Tang

Site Conditions

Barometric Pressure (in Hg):	29.96	Corrected Pressure (mm Hg):	761
Temperature (deg F):	86	Temperature (deg K):	303
Average Press. (in Hg):	29.96	Corrected Average (mm Hg):	761
Average Temp. (deg F):	86	Average Temp. (deg K):	303

Calibration Orifice

Make:	Tisch	Qstd Slope:	2.02434
Model:	TE-5025A	Qstd Intercept:	0.00347
Serial#:	3543	Date Certified:	20-Oct-21

Calibration Information

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)
1	12.70	1.745	53.0	52.59
2	10.50	1.587	48.0	47.63
3	7.70	1.359	41.0	40.69
4	4.50	1.038	33.0	32.75
5	2.60	0.789	23.0	22.82

Linear Regression

Slope:	30.1884
Intercept:	-0.0532
Corr. Coeff:	0.9972
# of Observations:	5

Calculations

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

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 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

Average I (chart): 40
Average Flow Calculation m3/min
1.303499577
Average Flow Calculation in CFM
46.02657007
Sample Time (Hrs): 1.0
Total Flow in m3/min
78.20997463
Total Flow in CFM
2761.594204

NOTE: Ensure calibration orifice has been certified within 12 months of use

TE-5170 Calibration Worksheet

Site Information

Location:	AM4A	Site ID:	Zones 2A at West Kowloon Cultural	Date:	3-Oct-22
Sampler:	TE-5170	Serial No:	3998	Tech:	CS Tang

Site Conditions

Barometric Pressure (in Hg):	29.96	Corrected Pressure (mm Hg):	761
Temperature (deg F):	86	Temperature (deg K):	303
Average Press. (in Hg):	29.96	Corrected Average (mm Hg):	761
Average Temp. (deg F):	86	Average Temp. (deg K):	303

Calibration Orifice

Make:	Tisch	Qstd Slope:	2.02434
Model:	TE-5025A	Qstd Intercept:	0.00347
Serial#:	3543	Date Certified:	20-Oct-21

Calibration Information

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)
1	12.50	1.731	53.0	52.59
2	10.60	1.594	48.0	47.63
3	7.30	1.323	41.0	40.69
4	4.70	1.061	33.0	32.75
5	2.50	0.773	23.0	22.82

Linear Regression

Slope:	30.3829
Intercept:	-0.0968
Corr. Coeff:	0.9986
# of Observations:	5

Calculations

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

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 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

Average I (chart): 40
Average Flow Calculation m3/min
1.296587665
Average Flow Calculation in CFM
45.78251045
Sample Time (Hrs): 1.0
Total Flow in m3/min
77.79525989
Total Flow in CFM
2746.950627

NOTE: Ensure calibration orifice has been certified within 12 months of use

TE-5170 Calibration Worksheet

Site Information

Location:	AM5A	Site ID:	Zones 2A at West Kowloon Cultural	Date:	3-Oct-22
Sampler:	TE-5170	Serial No:	4344	Tech:	CS Tang

Site Conditions

Barometric Pressure (in Hg):	29.96	Corrected Pressure (mm Hg):	761
Temperature (deg F):	86	Temperature (deg K):	303
Average Press. (in Hg):	29.96	Corrected Average (mm Hg):	761
Average Temp. (deg F):	86	Average Temp. (deg K):	303

Calibration Orifice

Make:	Tisch	Qstd Slope:	2.02434
Model:	TE-5025A	Qstd Intercept:	0.00347
Serial#:	3543	Date Certified:	20-Oct-21

Calibration Information

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)
1	12.80	1.752	53.0	52.59
2	10.40	1.579	48.0	47.63
3	7.40	1.332	41.0	40.69
4	4.70	1.061	33.0	32.75
5	2.80	0.819	23.0	22.82

Linear Regression

Slope:	31.2641
Intercept:	-1.6130
Corr. Coeff:	0.9969
# of Observations:	5

Calculations

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

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 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

Average I (chart): 40
Average Flow Calculation m3/min
1.308542764
Average Flow Calculation in CFM
46.20464501
Sample Time (Hrs): 1.0
Total Flow in m3/min
78.51256587
Total Flow in CFM
2772.278701

NOTE: Ensure calibration orifice has been certified within 12 months of use

CERTIFICATE OF ACCREDITATION

This is to attest that

AQUALITY TESTCONSULT LIMITED

11A&B, KAI FONG GARDEN, PING CHE ROAD
FANLING, HONG KONG

Calibration Laboratory CL-207

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories.* This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date December 17, 2021

Expiration Date December 1, 2022

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

3060 Saturn Street, Suite 100, Brea, California 92821, U.S.A. | www.iasonline.org

AQUALITY TESTCONSULT LIMITED

Contact Name Lee Mei Yee **Contact Phone** + 852-6309-2280

Accredited to ISO/IEC 17025:2017 *Effective Date December 17, 2021*

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION PROCEDURE AND/OR STANDARD EQUIPMENT USED
Dimensional			
Caliper -Vernier, Dial & Electronic[3]	0 mm to 300 mm	30 µm	Checker by comparison method (BS 887:1982)
Steel Ruler[3]	1 mm to 1000 mm	280 µm	Reference Steel Rule by comparison method (BS 4372:1968)
Dial Indicator/Gauge (Plunger) [3]	0 mm to 50 mm	8 µm	Reference micrometer head by comparison method (BS 907:2008)
Feeler Gauge[3]	0.01 mm to 1 mm	8 µm	Reference Dial Gauge by comparison method (BS 957: 2008)
Measuring tape[3]	0 m to 5 m	1200 µm	Reference steel ruler by comparison method (BS 4035:1966)
Engineering Square[3]	Length: 0 mm to 160 mm	20 µm	Reference engineering square and Feeler Gauge (BS 939:2007)
Slump cone[3]	Diameter: 0 mm to 200 mm Thickness: 1.5 mm Height: 0 mm to 300 mm	 560 µm 100 µm 560 µm	Reference Caliper & Reference Steel ruler by direct measurement (Verification in accordance with in-house method for the dimensional requirements as specified CS1:1990 Vol.1 A4; CS1: 2010 Vol. 1, A5)

** If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION PROCEDURE AND/OR STANDARD EQUIPMENT USED
Tamping rod[3]	Diameter: 0 mm to 16 mm Length: 600 mm	600 µm 950 µm	Reference steel ruler & Reference Caliper by direct measurement (Verification in accordance with in-house method for the dimensional requirements as specified CS1:1990 Vol.1 A5; CS1: 2010 Vol. 1, A6)
Cube mould[3]	(Max dimensions 150 mm per side) Dimension Flatness Perpendicularity Parallelism	 50 µm 10 µm 10 µm 50 µm	Reference Caliper, straight edge & feeler gauge by direct measurement. (Verification in accordance with in-house method for the dimensional requirements as specified in BS1881: Part 108:1983; CS1:1990 Vol1, A21; CS1:2010 Vol 1, A25; BS EN 12390-2:2000)
Compacting Bar[3]	Ramming Face: 25 mm Length: 380 mm Weight: 1.8 kg	100 µm 560 µm 1 g	Reference Caliper & Steel ruler by direct measurement. (Verification in accordance with in-house method for the dimensional & mass requirements as specified in BS 1881: Part 105:1984 Cl 3.3; CS1:1990 Vol 2, E3 CS1:2010 Vol 1, A15.3; BS EN 12350 -5:2000 Cl 4.3.)
Covermeter	20 mm to 103 mm	2.9 mm	Reference concrete block (Verification in accordance with in-house method for the dimensional requirements as specified in BS 1881-204:1988 Cl.6.4- Method C)
Flow table[3]	15 kg to 17 kg 1 mm up to 71 mm	12 g 600 µm	Weighing Balance, Reference caliper & Reference steel ruler by direct measurement
Test Sieve[3]	4 mm to 50 mm	50 µm	Reference Caliper by direct measurement
Mechanical			
Force Measuring Machine[3] (Compression Mode)	1 kN to 3000 kN	0.4 %	Reference Load cell by direct measurement BS 1610: Part 1:1985; BS 1610: Part 1:1992; BS EN ISO 12390-4:2000 Annex B; BS EN ISO 7500-1:2004

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION PROCEDURE AND/OR STANDARD EQUIPMENT USED
Laser Dust Meter[3]	Dust particles 0.001 mg/m^3 to 10.00 mg/m^3	0.9 mg/m^3	By comparison method by using reference laser dust meter
Rebound Hammer[3]	80 unit (hardness)	1.6 rebound count	Reference Rebound count by comparison method. BS1881: Part 202:1986; BS EN 12504-2:2001; BS EN 12504-2:2012
Mass (F2 class and coarser)	0 g to 200 g 200 g to 5 kg 5 kg to 10 kg 10 kg to 50 kg	1.3 mg 0.5 g 0.88 g 3 g	Standard Weight E2/ F1 Class & Weighing Balances by comparison method (OIML-R-111)
Weighing Scale & Balance[3]	0 g to 200 g 0 kg to 5 kg 0 kg to 50 kg	0.8 mg 0.13 g 7.7 g	Standard weight of E2/F1 Grade by direct measurement (OIML-R-111)
Volumetric Glassware	1 mL to 100 mL 100 mL to 1000 mL	0.004 mL 0.09 mL	Standard weight E2 Class, Weighing Balances & Distilled water by gravimetric method
Thermal			
Digital/Liquid in Glass Thermometers & RTD/ Thermocouples with or without Indicators	15 °C to 55 °C 55 °C to 95 °C	0.4 °C 0.9 °C	Water Baths, Reference Sensor and Indictor by Comparison Method (OIML R133)
Curing Tank[3]	(Calibration at 20 °C & 27 °C @ 30 min) 20 °C Temperature distribution 27 °C Temperature distribution Efficiency of circulation	 0.4 °C 0.8 °C 5 s	Reference Temperature datalogger by Mapping Method & Reference Stop Watch (Verification in accordance with in-house method for the Temp & Time requirements as specified in BS1881-111:1983 CS1:1990 Vol 1 App A24 CS1:2010 Vol 1 App A28 BE EN 12390-2:2000
Oven[3]	40.0 °C to 180.0 °C	1.5 °C	Reference Temperature datalogger by Mapping Method (AS 2853:1986)
Furnace[3]	200 °C to 1300 °C	6 °C	Reference Thermocouple with Indicator By single point Calibration (AS 2853:1986)
Water bath[3]	15 °C to 95 °C	0.2 °C	Reference Temperature datalogger by Mapping Method (AS 2853:1986)

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY[1,2] (±)	CALIBRATION PROCEDURE AND/OR STANDARD EQUIPMENT USED
Time and Frequency			
Stop Watch / Timer[3]	0 s to 3600 s 0 s to 21600 s (6 hours) 0 s to 86400 s (24 hours)	0.2 s 0.6 s 0.61 s	Reference stop watch
Grout Flow Cone[3]	7 s to 9 s	0.2 s	Reference stop watch by direct method (ASTM C939-10 Cl.9)

[1]The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

[2]When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

[3]Also available as site calibration. Note that actual measurement uncertainties achievable at a customer's site can normally be expected to be larger than the uncertainties listed on this Scope of Accreditation

FAQ / Information

Mutual Recognition Arrangements (MRA) / Multilateral Recognition Arrangements (MLA)

Mutual Recognition Arrangement (MRA) Partners for HOKLAS

Every effort is made to promote acceptance of test data from accredited laboratories, both internationally and locally. HKAS has concluded mutual recognition arrangements with accreditation bodies listed below by being one of the signatories of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and the Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA) for testing, calibration, medical testing, Proficiency Testing Providers (PTP) and Reference Material Producers (RMP). Click here to view the up-to-date signatories of ILAC and here to access the up-to-date signatories of APAC.

Visitors checking the names, logos and accreditation symbols shown on an endorsed certificate or report should note that some of our MRA partners may have their names, logos or accreditation symbols changed recently and test reports or certificates endorsed by displaying their old accreditation symbols may still be valid during the change-over period. For details, please visit their websites or contact them directly.

» Mutual Recognition Arrangement (MRA) Partners for HOKLAS

HKAS MRA partners will recognise HOKLAS endorsed test certificates as having the same technical validity as certificates endorsed by their respective schemes.

Multilateral Recognition Arrangements (MLA) for HKCAS

HKAS has been a signatory of Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA) for Quality Management System (QMS), Environmental Management System (EMS), Food Safety Management System (FSMS), Energy Management System (EnMS), Occupational Health and Safety Management System (OHSMS) certifications, product certifications, and Greenhouse Gas (GHG) validation and verification.

HKAS has also been a signatory of the International Accreditation Forum Multilateral Recognition Arrangement (IAF MLA) for Quality Management System (QMS), Environmental Management System (EMS), Food Safety Management System (FSMS), Energy Management System (EnMS), Occupational Health and Safety Management System (OHSMS) certifications, product certifications, and Greenhouse Gas (GHG) validation and verification.

Click here to view the up-to-date signatories of IAF and here to access the up-to-date signatories of APAC.

» Mutual / Multilateral Recognition Arrangements (MRA / MLA) Partners for HKCAS

Mutual Recognition Arrangement (MRA) Partners for HKIAS

HKAS has concluded mutual recognition arrangements with accreditation bodies listed below by being one of the signatories of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA) for inspection. Click here to view the up-to-date signatories of ILAC and here to access the up-to-date signatories of APAC.

HKAS MRA partners will recognise HKIAS endorsed inspection reports or certificates having the same technical validity as reports or certificates endorsed by their respective schemes.

» Mutual Recognition Arrangement (MRA) Partners for HKIAS

back

Hong Kong Laboratory Accreditation Scheme (HOKLAS) - Mutual Recognition Arrangement (MRA) Partners

Economy	Logo	Name of Partner	URL	Test Area
United States of America		International Accreditation Service Inc. (IAS)	www.iasonline.org	Calibration, Non-medical Testing
United States of America		National Voluntary Laboratory Accreditation Program (NVLAP)	www.nist.gov/nvlap	Calibration, Non-medical Testing
United States of America		Perry Johnson Laboratory Accreditation, Inc. (PJLA)	www.pjlabs.com	Calibration, Medical Testing, Non-medical Testing, Proficiency Testing Provider, Reference Material Producer
Uruguay		Organismo Uruguayo de Acreditación (OUA)	www.organismouruguayodeacreditacion.org	Calibration, Non-medical Testing
Viet Nam		Accreditation Office for Standards Conformity Assessment Capacity (AOSC)	aosc.vn/	Calibration, Medical Testing, Non-medical Testing
Viet Nam		Bureau of Accreditation (BoA)	www.boa.gov.vn	Calibration, Medical Testing, Non-medical Testing

AQuality 東恒測試顧問有限公司
AQUALITY TESTCONSULT LIMITED
香港新界粉嶺坪輋路啟芳園11A&11B號
No. 11A&B, KAI FONG GARDEN, PING CHE ROAD, FANLING, NEW TERRITORIES, HONG KONG
TEL : 852-3582-9589 FAX : 852-2674-1177 EMAIL : cal.aqtl@gmail.com WEBSITE: www.aqtlgroup.com

CERTIFICATE OF CALIBRATION

Report Number : 220908MCA-166F
Date of Report : 10-Sep-22
Page Number : 1 of 2
Customer * : Apex Testing & Certification Ltd.
Customer Address* : Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T., HK
Customers Ref. * : A005

Item Under Calibration (IUC)*
Equipment No. : N/A
Manufacturer : Sibata Scientific Technology Ltd
Model No. : LD-3B
Serial No. : 235811
Scale Division : 0.001 mg/m3
Range : 0.001 to 1 mg/m3
Condition of Item : Normal

Date Item Received : 8-Sep-22
Date Calibrated : 8-Sep-22
Calibration Location : AQuality Calibration Lab.
Date of Next Calibration : 7-Sep-23
Calibrated By : Jessica Liu

Test Environment
Ambient Temperature : 25.7 °C to 33.8 °C
Relative Humidity : 46 % to 83 %

Calibration Results

Reference True Reading (mg/m3)	Average IUC Reading (mg/m^3)	Correction (mg/m^3)	Error of IUC Reading (%)	Expanded Uncertainty (mg/m^3)	Coverage Factor K
0.158	0.167	-0.008	5.1%	0.020	2.0
5.164	5.647	-0.484	8.5%	0.463	2.0
10.100	11.141	-1.041	9.3%	0.904	2.0

Remarks :
1. * Denotes information supplied by customer.
2. The results relate only to the items calibrated.
3. The results apply to the items as received.
4. Correction = Average of (Ref reading - IUC reading)
5. The technical requirement of laser dust meter. +/- 20% error for the particles concentration.

Approved by: _____
LEE Mei Yee, Julia
Managing Director

The results shown in this certificate are metrologically traceable to the International System of Units (SI) or recognised measurement standards.

The certificate shall not be reproduced except in full without approval of the laboratory.

東恒測試顧問有限公司
AQUALITY TESTCONSULT LIMITED
香港新界粉嶺坪輋路啟芳園11A&11B號
No. 11A&11B, KAI FONG GARDEN, PING CHE ROAD, FANLING, NEW TERRITORIES, HONG KONG
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CERTIFICATE OF CALIBRATION

Report Number : 220908MCA-166F
Date of Report : 10-Sep-22

Customer * : Apex Testing & Certification Ltd.
Customers Ref. * : A005

Details of Calibration

1. The calibration was performed in accordance with AQuality Testconsult Procedure Number ENV-L-003 (in-house method), by comparison with the laboratory's reference equipment which have traceable international standards of measurement.

2. The item under calibration (IUC) was allowed to stabilize in the laboratory for 0.25 hour before commencement of calibration.

3. A set of readings were made at each calibration concentration. The values quoted in the results are the average of each set of readings.

4. The values given in this calibration certificate only relate to the values measured at the time of calibration. Any uncertainties quoted do not include allowance for the capabiliy of any other laboratory to repeat the measurement. The uncertainty quoted relate only to item at time of calibration. AQuality Testconsult Limited is not liable for any loss or damage resulting from the use of this equipment.

5. The identification, calibration certificate numbers for the reference equipment used were as follows :

Equipment Number	Certificate Number	Description
CH-LDM-1	HBW202101714	粉尘测试仪

6. Copies of the Calibration certificates of the reference equipment used in this calibration may be obtained from AQuality Testconsult Limited, if necessary.

- End of Report -

The results shown in this certificate are metrologically traceable to the International System of Units (SI) or recognised measurement standards.
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AQUALITY TESTCONSULT LIMITED
香港新界粉嶺坪輋路啟芳園11A&11B號
No. 11A&11B, KAI FONG GARDEN, PING CHE ROAD, FANLING, N.T., HONG KONG
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WEBSITE: www.aqtlgroup.com

CERTIFICATE OF CALIBRATION

Apex Testing & Certification Ltd. Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T., HK	Test Report No.	220908MCA-166F
	Date of Issue	10-Sep-22
	Date of Testing	8-Sep-22
	Page	1 of 1

Item for Calibration

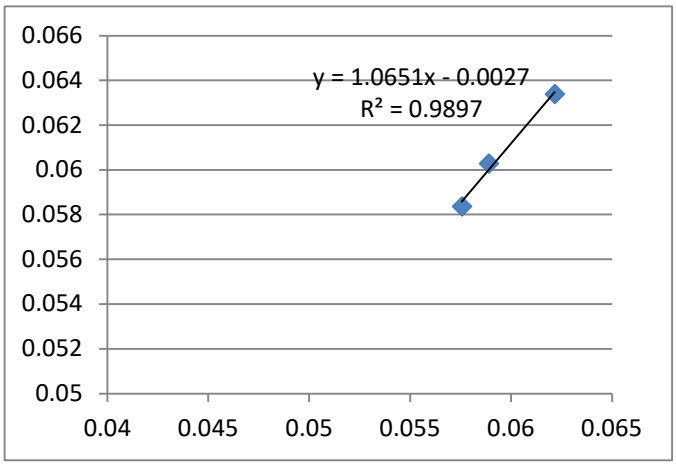
Description : Laser Dust Monitor
Manufacturer : Sibata Scientific Technology Ltd
Model No. : LD-3B
Serial No. : 235811

Standard Equipment

Description : High Volume Sampler / Calibration Orifice
Manufacturer : Tisch Environmental, Inc.
Model No. : TE-5170 / TE-5025A
Serial No. 3476 / 3543
Last Calibration : 6-SEP-22 / 20-OCT-21

Date	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration Standard Equipment (mg/m3)	Concentration Calibrated Equipment (mg/m3)
8-Sep-22	19:00	29.8	1013.8	0.0622	0.0634
8-Sep-22	20:05	29.8	1013.8	0.0576	0.0584
8-Sep-22	21:10	29.8	1013.8	0.0589	0.0603

By Linear Regression of Y or X
Slope (K-factor) : 1.0651
Correlation Coefficient : 0.9897
Validity of Calibration : 7-Sep-23



Recorded by : Jessica Liu Signature: Jessica Date: 8-Sep-22

Checked by : S Tang Signature: S Tang Date: 8-Sep-22

AQuality 東恒測試顧問有限公司
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CERTIFICATE OF CALIBRATION

Report Number : 220908MCA-163F
Date of Report : 10-Sep-22
Page Number : 1 of 2
Customer * : Apex Testing & Certification Ltd.
Customer Address* : Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T., HK
Customers Ref. * : A005

Item Under Calibration (IUC)*
Equipment No. : N/A
Manufacturer : Sibata Scientific Technology Ltd
Model No. : LD-3B
Serial No. : 336338
Scale Division : 0.001 mg/m3
Range : 0.001 to 1 mg/m3
Condition of Item : Normal

Date Item Received : 8-Sep-22
Date Calibrated : 8-Sep-22
Calibration Location : AQuality Calibration Lab.
Date of Next Calibration : 7-Sep-23
Calibrated By : Jessica Liu

Test Environment
Ambient Temperature : 25.7 °C to 33.8 °C
Relative Humidity : 46 % to 83 %

Calibration Results

Reference True Reading (mg/m3)	Average IUC Reading (mg/m^3)	Correction (mg/m^3)	Error of IUC Reading (%)	Expanded Uncertainty (mg/m^3)	Coverage Factor K
0.158	0.168	-0.010	5.7%	0.026	2.0
5.164	5.562	-0.398	7.1%	0.462	2.0
10.100	10.936	-0.837	7.6%	0.905	2.0

Remarks :
1. * Denotes information supplied by customer.
2. The results relate only to the items calibrated.
3. The results apply to the items as received.
4. Correction = Average of (Ref reading - IUC reading)
5. The technical requirement of laser dust meter. +/- 20% error for the particles concentration.

Approved by: _____
LEE Mei Yee, Julia
Managing Director

The results shown in this certificate are metrologically traceable to the International System of Units (SI) or recognised measurement standards.

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香港新界粉嶺坪輋路啟芳園11A&11B號
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CERTIFICATE OF CALIBRATION

Report Number : 220908MCA-163F
Date of Report : 10-Sep-22

Customer * : Apex Testing & Certification Ltd.
Customers Ref. * : A005

Details of Calibration

1. The calibration was performed in accordance with AQuality Testconsult Procedure Number ENV-L-003 (in-house method), by comparison with the laboratory's reference equipment which have traceable international standards of measurement.

2. The item under calibration (IUC) was allowed to stabilize in the laboratory for 0.25 hour before commencement of calibration.

3. A set of readings were made at each calibration concentration. The values quoted in the results are the average of each set of readings.

4. The values given in this calibration certificate only relate to the values measured at the time of calibration. Any uncertainties quoted do not include allowance for the capabiliy of any other laboratory to repeat the measurement. The uncertainty quoted relate only to item at time of calibration. AQuality Testconsult Limited is not liable for any loss or damage resulting from the use of this equipment.

5. The identification, calibration certificate numbers for the reference equipment used were as follows :

Equipment Number	Certificate Number	Description
CH-LDM-1	HBW202101714	粉尘测试仪

6. Copies of the Calibration certificates of the reference equipment used in this calibration may be obtained from AQuality Testconsult Limited, if necessary.

- End of Report -

The results shown in this certificate are metrologically traceable to the International System of Units (SI) or recognised measurement standards.
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AQUALITY TESTCONSULT LIMITED
香港新界粉嶺坪輋路啟芳園11A&11B號
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CERTIFICATE OF CALIBRATION

Apex Testing & Certification Ltd. Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T., HK	Test Report No.	220908MCA-163F
	Date of Issue	10-Sep-22
	Date of Testing	8-Sep-22
	Page	1 of 1

Item for Calibration

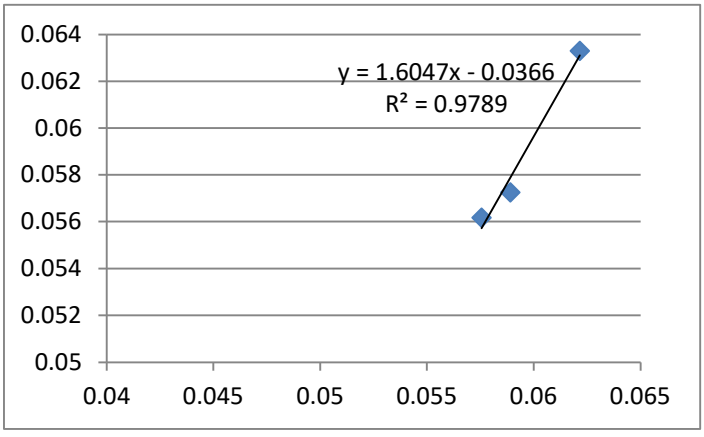
Description : Laser Dust Monitor
Manufacturer : Sibata Scientific Technology Ltd
Model No. : LD-3B
Serial No. : 336338

Standard Equipment

Description : High Volume Sampler / Calibration Orifice
Manufacturer : Tisch Environmental, Inc.
Model No. : TE-5170 / TE-5025A
Serial No. 3476 / 3543
Last Calibration : 6-SEP-22 / 20-OCT-21

Date	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration Standard Equipment (mg/m3)	Concentration Calibrated Equipment (mg/m3)
8-Sep-22	19:00	29.8	1013.8	0.0622	0.0633
8-Sep-22	20:05	29.8	1013.8	0.0576	0.0562
8-Sep-22	21:10	29.8	1013.8	0.0589	0.0573

By Linear Regression of Y or X
Slope (K-factor) : 1.6047
Correlation Coefficient : 0.9789
Validity of Calibration : 7-Sep-23



Recorded by : Jessica Liu Signature: Jessica Date: 8-Sep-22

Checked by : S Tang Signature: Tang Date: 8-Sep-22

AQuality 東恒測試顧問有限公司
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香港新界粉嶺坪輋路啟芳園11A&11B號
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CERTIFICATE OF CALIBRATION

Report Number : 220908MCA-165F
Date of Report : 10-Sep-22
Page Number : 1 of 2
Customer * : Apex Testing & Certification Ltd.
Customer Address* : Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T., HK
Customers Ref. * : A005

Item Under Calibration (IUC)*
Equipment No. : N/A
Manufacturer : Sibata Scientific Technology Ltd
Model No. : LD-3B
Serial No. : 567188
Scale Division : 0.001 mg/m3
Range : 0.001 to 1 mg/m3
Condition of Item : Normal

Date Item Received : 8-Sep-22
Date Calibrated : 8-Sep-22
Calibration Location : AQuality Calibration Lab.
Date of Next Calibration : 7-Sep-23
Calibrated By : Jessica Liu

Test Environment
Ambient Temperature : 25.7 °C to 33.8 °C
Relative Humidity : 46 % to 83 %

Calibration Results

Reference True Reading (mg/m3)	Average IUC Reading (mg/m^3)	Correction (mg/m^3)	Error of IUC Reading (%)	Expanded Uncertainty (mg/m^3)	Coverage Factor K
0.158	0.167	-0.008	4.9%	0.023	2.0
5.164	5.693	-0.530	9.3%	0.463	2.0
10.100	11.045	-0.945	8.6%	0.905	2.0

Remarks :
1. * Denotes information supplied by customer.
2. The results relate only to the items calibrated.
3. The results apply to the items as received.
4. Correction = Average of (Ref reading - IUC reading)
5. The technical requirement of laser dust meter. +/- 20% error for the particles concentration.

Approved by: _____
LEE Mei Yee, Julia
Managing Director

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CERTIFICATE OF CALIBRATION

Report Number : 220908MCA-165F
Date of Report : 10-Sep-22

Customer * : Apex Testing & Certification Ltd.
Customers Ref. * : A005

Details of Calibration

1. The calibration was performed in accordance with AQuality Testconsult Procedure Number ENV-L-003 (in-house method), by comparison with the laboratory's reference equipment which have traceable international standards of measurement.

2. The item under calibration (IUC) was allowed to stabilize in the laboratory for 0.25 hour before commencement of calibration.

3. A set of readings were made at each calibration concentration. The values quoted in the results are the average of each set of readings.

4. The values given in this calibration certificate only relate to the values measured at the time of calibration. Any uncertainties quoted do not include allowance for the capabiliy of any other laboratory to repeat the measurement. The uncertainty quoted relate only to item at time of calibration. AQuality Testconsult Limited is not liable for any loss or damage resulting from the use of this equipment.

5. The identification, calibration certificate numbers for the reference equipment used were as follows :

Equipment Number	Certificate Number	Description
CH-LDM-1	HBW202101714	粉尘测试仪

6. Copies of the Calibration certificates of the reference equipment used in this calibration may be obtained from AQuality Testconsult Limited, if necessary.

- End of Report -

The results shown in this certificate are metrologically traceable to the International System of Units (SI) or recognised measurement standards.
The certificate shall not be reproduced except in full without approval of the laboratory.

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CERTIFICATE OF CALIBRATION

Apex Testing & Certification Ltd. Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T., HK	Test Report No.	220908MCA-165F
	Date of Issue	10-Sep-22
	Date of Testing	8-Sep-22
	Page	1 of 1

Item for Calibration

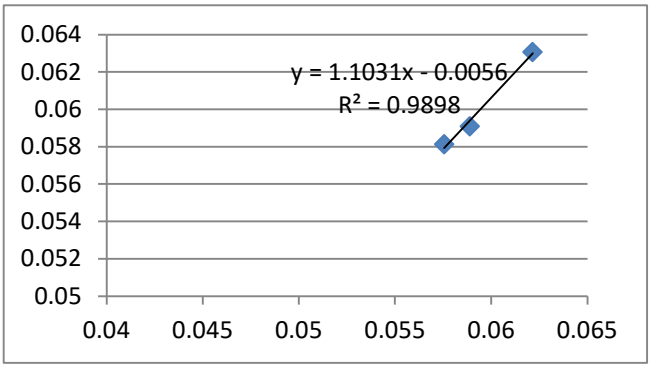
Description : Laser Dust Monitor
Manufacturer : Sibata Scientific Technology Ltd
Model No. : LD-3B
Serial No. : 567188

Standard Equipment

Description : High Volume Sampler / Calibration Orifice
Manufacturer : Tisch Environmental, Inc.
Model No. : TE-5170 / TE-5025A
Serial No. 3476 / 3543
Last Calibration : 6-SEP-22 / 20-OCT-21

Date	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration Standard Equipment (mg/m3)	Concentration Calibrated Equipment (mg/m3)
8-Sep-22	19:00	29.8	1013.8	0.0622	0.0631
8-Sep-22	20:05	29.8	1013.8	0.0576	0.0581
8-Sep-22	21:10	29.8	1013.8	0.0589	0.0591

By Linear Regression of Y or X
Slope (K-factor) : 1.1031
Correlation Coefficient : 0.9898
Validity of Calibration : 7-Sep-23



Recorded by : Jessica Liu Signature: Jessica Date: 8-Sep-22

Checked by : S Tang Signature: S Tang Date: 8-Sep-22

中国认可
校准
CALIBRATION
CNAS L2865

浙江省计量科学研究院

校准证书

证书编号：JT-20220900080 号

委托方	上峰检测认证有限公司
地　址	/
器具名称	声级计
型号规格	AWA5661
出厂编号	377204
制造单位	杭州爱华仪器有限公司
受理日期	2022 年 09 月 05 日
校准日期	2022 年 09 月 05 日
批准日期	2022 年 09 月 07 日

发证单位（专用章）

浙江省计量科学研究院 校准专用章

批准：　　职务：高级工程师

校准：张志凯　　核验：

地址：浙江省杭州市江干区下沙路 300 号　　电话：0571-85027145

微信公众号　传真：0571-85020687　　网址：www.zjim.cn

一、本机构经中国合格评定国家认可委员会评审，符合 CNAS-CL01:2018(ISO/IEC 17025：2017)《检测和校准实验室能力的通用要求》的要求，认可证书号：No. CNAS L2865。

二、校准所依据的技术文件（代号、名称）：

参照 JJG 188-2017《声级计检定规程》

三、校准环境条件及地点：

地　点：本院交通与声学计量研究所声学振动实验室

温　度：23 ℃　　相对湿度：50 %

大气压：100.0 kPa

四、本次校准所用主要测量设备：

名称	测量范围	不确定度/准确度等级/最大允许误差	溯源机构名称	证书编号	有效期至
低频声耦合腔	10Hz～2kHz	失真＜3.0%	浙江省计量科学研究院	JT-202112 01216	2022-12-27
信号发生器	(0～100)s 31.5Hz～16kHz	持续时间 MPE:±1.0%	浙江省计量科学研究院	DC-202112 00220	2022-12-09
声校准器	94.0dB、114.0dB	1 级	浙江省计量科学研究院	JT-202112 01220	2022-12-27
低失真信号发生器	10 Hz～100 kHz	幅频特性 MPE：±0.2dB	浙江省计量科学研究院	DC-202205 00126	2023-05-25

五、校准结果/说明：

1. 指示声级调整：

声校准器的型号 4231 ：声压级 94.0 dB。传声器编号： AWA14425 39158

声级计在参考环境条件下指示的等效自由场声级 93.8 dB。

2. 级线性

1)参考级量程（45～140）dB（8kHz）

起始点指示声级 90.0 dB，1kHz 的线性工作范围 95 dB。

起始点以上间隔 10 dB 点的最大误差 -0.2 dB；上限以下 5 dB 内的 1 dB 点的最大误差 -0.1 dB；

起始点以下间隔 10 dB 点的最大误差 +0.2 dB；下限以上 5 dB 内的 1 dB 点的最大误差 +0.1 dB；

2)其它级量程（20～140）dB（1kHz）

起始点以上间隔 10 dB 点的最大误差 -0.2 dB；上限以下 5 dB 内的 1 dB 点的最大误差 -0.1 dB；

起始点以下间隔 10 dB 点的最大误差 -0.2 dB；下限以上 5 dB 内的 1 dB 点的最大误差 -0.1 dB。

3. 自生噪声：

电信号自生噪声（dB）	A：8.8	C：11.1
声信号自生噪声（dB）	A：18.0	/

4. F 和 S 时间计权：

衰减速率：F 35.1 dB/s，S 4.4 dB/s，　F 和 S 差值 0.0 dB。

5. 1kHz 处的频率计权

C 频率计权相对 A 频率计权的偏差 0.0 dB；

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6. 频率计权：(A 计权为声信号、C 计权为电信号)

标称频率/Hz	频率计权/ dB		
	A	C	扩展不确定度 U (k=2)
10	-70.1	-14.1	0.5
16	-56.1	-8.2	
31.5	-39.3	-2.9	
63	-26.2	-0.8	
125	-16.2	-0.2	
250	-8.7	-0.1	0.4
500	-3.3	-0.1	0.4
1000	-0.1	0.0(Ref)	
2000	+1.2	-0.2	0.6
4000	+1.0	-0.8	
8000	-1.3	-3.2	
16000	-7.4	-14.1	1.0
20000	-12.3	-26.4	1.0

7. 猝发音响应（A 计权）：

单个猝发音持续时间/ms	猝发音响应/ dB	
	L_{AFmax} - L_A	L_{ASmax} - L_A
200	-1.0	-7.4
2	-18.2	-27.0
0.25	-27.2	/

8. 重复猝发音响应（A 计权）：

单个猝发音持续时间/ms	相邻单个猝发音之间间隔时间/ms	猝发音响应/ dB L_{Aeq}- L_A
200	800	-7.0
2	8	-7.0
0.25	1	-7.1

以下空白

计量研究院 章

注：

1) 本证书的校准结果仅对本次校准的计量器具有效。

2) 未经本院批准，部分采用本证书内容无效。

Certificate of Calibration

Certificate No.: A220075

	Sound level meter	**Microphone**	**Preamplifier**
Description:			
Make:	Hangzhou Aihua	Hangzhou Aihua	Hangzhou Aihua
Model:	AWA5661	AWA14421	-
Serial No.:	301135	102497	-
Type:	1	-	-

Customer: Apex Testing & Certification Ltd
Department: -
Address: Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T. Hong Kong

Date of receipt the calibration item: 2022-09-26

Environmental conditions:

Pressure:	(100.45	±0.50) kPa
Temperature:	(24.7	± 1.0) °C
Humidity:	(32.3	± 2.0)%RH

Date of calibration: 2022-10-11
Date of issue: 2022-10-11

Prepared by:

Wong Hau Chun

Checked by:

Choi Pui Sum

Approved Signatory:

Choi Pui Sum

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. HOKLAS 302) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific calibration activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this certificate are traceable to the International System of Unit (SI) or recognised measurement standards. This certificate shall not be reproduced except in full.

ESG Matters Limited – Acoustic Calibration Centre
Unit 1818-19, 18/F, Tower A, Regent Centre, 63 Wo Yi Hop Road, Kwai Chung, Hong Kong
Tel : 2525 8033 Website : www.esgmatters.asia Email : email@esgmatters.asia

Certificate No.: A220075

Preconditioning:
The equipment was preconditioned for more than 12 hours at the measurement conditions of pressure, temperature and humidity.

Measurement method:
A description of the in-house test procedure (ESG-NOISE-001) is available separately from the calibration laboratory.

Test Specification:
The Sound Level Meter has been calibrated in accordance with the requirements as specified the electrical tests in IEC 61672-3:2013 **(Clause 11.2, 13, 14, 15, 16, 17(If necessary) *, 18, 19, 20 and 21).**

*The application of Clause 17 is based on the more than one level range of Sound Level Meter.

Reference equipment used in the calibration:

Description:	Model:	Serial No.	Calibration Date:	Traceable to:
Signal generator	DS 360	123901	29-Jul-2021	The Government of HKSAR Standards and Calibration Laboratory
Meteo Station HM30	HM30	J120806	20-Aug-2021	Huber Instrumente Calibration Laboratory

Uncertainty:
The measurement uncertainty evaluation has been carried out in accordance with principles in the Evaluation of Measurement Data – Guide to the Expression of Uncertainty in Measurement, JCGM 100:2008. The expanded measurement uncertainty U, with its coverage factor k, corresponds to an approximate 95% probability that the value of measurand Y lies within the interval y-U to y+U. The combined standard measurement uncertainty u_c can be calculated as $u_c = U/k$ and its degree of freedom V_{eff} is given by the t-distribution with the respective k value.

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. HOKLAS 302) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific calibration activities as listed in the HOKLAS dirctory of accredited laboratories. The results shown in this certificate are traceable to the International System of Unit (SI) or recognised measurement standards. This certificate shall not be reproduced except in full.

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Certificate No.: A220075

Summary of Measurement Results
Self-generated noise - IEC 61672-3 Ed.2.0 Clause 11
Frequency weightings: A Network - IEC 61672-3 Ed.2.0 Clause 13.3
Frequency weightings: C Network - IEC 61672-3 Ed.2.0 Clause 13.3
Frequency weightings: Z Network - IEC 61672-3 Ed.2.0 Clause 13.3
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.2.0 Clause 14
Long term stability test - IEC 61672-3 Ed.2.0 Clause 15
Level linearity on the reference level range - IEC 61672-3 Ed.2.0 Clause 16
Level linearity including the level range control - IEC 61672-3 Ed.2.0 Clause 17
Toneburst response - IEC 61672-3 Ed.2.0 Clause 18
Peak C sound level - IEC 61672-3 Ed.2.0 Clause 19
Overload indication - IEC 61672-3 Ed.2.0 Clause 20
High level stability test - IEC 61672-3 Ed.2.0 Clause 21

Verification:
The verification measurements have been performed using the calibration system Nor1504A with software SlmCal62Y8.exe.

Detailed measurement results are printed on the following pages.

Comment:
The values given in this Certificate of Calibration only relate to values measured at the time of the test and any measurement uncertainties quoted will not include allowances for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, or the capability of any other laboratory to repeat the measurement. The results apply to the item as received.

The results in this Certificate of Calibration only apply to the sample / calibration item as received.

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. HOKLAS 302) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific calibration activities as listed in the HOKLAS dirctory of accredited laboratories. The results shown in this certificate are traceable to the International System of Unit (SI) or recognised measurement standards. This certificate shall not be reproduced except in full.

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ESG Matters

Certificate No.: A220075

Measurement results

Self-generated noise test - IEC 61672-3:2013 Clause 11		
Description: Relevant tests were carried out in accordance with Section 11 of IEC 61672-3:2013. The noise test is performed in the most sensitive of the SLM with the microphone replaced by an equivalent impedance.		
Noise level in A weighting network	16.6	dB
Noise level in C weighting network	19.0	dB
Noise level in Z (Lin) weighting network	25.4	dB

Frequency weighting test - IEC 61672-3:2013 Clause 13.3

Description:
Relevant tests were carried out in accordance with Section 13.3 of IEC 61672-3:2013. The frequency response of the weighting networks are tested at octave intervals over the frequency ranges 63.1Hz to 15848.9 Hz.

On the reference level range and for each frequency weighting to be tested, the level of a 1 kHz input signal shall be adjusted to yield an indication that is 45 dB less than the upper boundary stated in the Instruction Manual for the linear operating range at 1 kHz on the reference level range.

Frequency weighting A:

Frequency	Reference level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
Hz	dB	dB	dB		dB	+	-	dB
63.1	95.0	94.9	0.1	1.96	-0.1	1.0	1.0	0.6
125.9	95.0	95.0	0.1		0.0	1.0	1.0	
251.2	95.0	94.9	0.1		-0.1	1.0	1.0	
501.2	95.0	95.0	0.1		0.0	1.0	1.0	
1000.0	95.0	95.0	0.1		0.0	0.7	0.7	
1995.3	95.0	95.1	0.1		0.1	1.0	1.0	
3981.1	95.0	95.2	0.1		0.2	1.0	1.0	
7943.3	95.0	95.7	0.1		0.7	1.5	2.5	0.7
15848.9	95.0	92.0	0.1		-3.0	2.5	16	1.0

Frequency weighting C:

Frequency	Reference level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
Hz	dB	dB	dB		dB	+	-	dB
63.1	95.0	94.9	0.1	1.96	-0.1	1.0	1.0	0.6
125.9	95.0	95.0	0.1		0.0	1.0	1.0	
251.2	95.0	94.9	0.1		-0.1	1.0	1.0	
501.2	95.0	95.0	0.1		0.0	1.0	1.0	
1000.0	95.0	95.0	0.1		0.0	0.7	0.7	
1995.3	95.0	95.0	0.1		0.0	1.0	1.0	
3981.1	95.0	95.2	0.1		0.2	1.0	1.0	
7943.3	95.0	95.6	0.1		0.6	1.5	2.5	0.7
15848.9	95.0	91.9	0.1		-3.1	2.5	16	1.0

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Certificate No.: A220075

Frequency weighting Z:								
Frequency	Reference level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
Hz	dB	dB	dB		dB	+	-	dB
63.1	95.0	95.0	0.1	1.96	0.0	1.0	1.0	0.6
125.9	95.0	95.0	0.1		0.0	1.0	1.0	
251.2	95.0	95.0	0.1		0.0	1.0	1.0	
501.2	95.0	95.0	0.1		0.0	1.0	1.0	
1000.0	95.0	95.0	0.1		0.0	0.7	0.7	
1995.3	95.0	95.0	0.1		0.0	1.0	1.0	
3981.1	95.0	94.9	0.1		-0.1	1.0	1.0	
7943.3	95.0	95.0	0.1		0.0	1.5	2.5	0.7
15848.9	95.0	94.8	0.1		-0.2	2.5	16	1.0

Frequency and time weighting test at 1kHz- IEC 61672-3:2013 Clause 14

Description:

Relevant tests were carried out in accordance with Section 14 of IEC 61672-3:2013. For a steady sinusoidal electrical input signal at 1 kHz on the reference level range and with an input signal that yields an indication of the reference sound pressure level with frequency weighting A ,C and Z, with the sound level meter set to display F-time-weighted sound level, or time averaged sound level, as available. In addition, the indications with frequency weighting A shall be recorded with the sound level meter set to display F-time-weighted sound level, S-timeweighted sound level, and time-averaged sound level.

Parameter setting	Reference level	Measured Level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance Limits (dB)		Maximum permitted uncertainty
	dB	dB	dB		dB	+	-	dB
L_{AF}SPL	94.0	94.0	0.1	1.96	0.0	0.2	0.2	0.2
Lc_{F}SPL	94.0	94.0	0.1		0.0			
Lz_{F}SPL	94.0	94.0	0.1		0.0			
L_{As}SPL	94.0	94.0	0.1		0.0	0.1	0.1	
LAeq	94.0	94.0	0.1		0.0			
LAE	114.0	114.1	0.1		0.1			

Long term stability test - IEC 61672-3:2013 Clause 15

Description:

Relevant tests were carried out in accordance with Section 15 of IEC 61672-3:2013. The long-term stability of a sound level meter is evaluated from the difference between the A-weighted sound levels indicated in response to steady 1 kHz signals applied at the beginning and end of a period of operation. The period of continuous operation shall be between 25 min and 35 min are performed.

Test signal: Sine wave at 1 kHz

Time interval	Reading at beginning	Reading at Ending	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance Limits (dB)		Maximum permitted uncertainty
mm:ss	dB	dB	dB		dB	+	-	dB
25:10	94.0	94.0	0.1	1.96	0.0	0.1	0.1	0.1

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Level linearity on the reference level range test - IEC 61672-3:2013 Clause 16

Description:

Relevant tests were carried out in accordance with Section 16 of IEC 61672-3:2013. Level linearity shall be tested with steady sinusoidal electrical signals at a frequency of 8 kHz with the sound level meter set for frequency-weighting A. Level linearity shall be measured in 5 dB steps of increasing input signal level from the starting point up to within 5 dB of the upper boundary stated in the Instruction Manual for the linear operating range at 8 kHz, then at 1 dB steps of increasing input signal level up to, but not including, the first indication of overload. The test of level linearity shall then be continued at 5 dB steps of decreasing input signal level from the starting point down to within 5 dB of the specified lower boundary, then at 1 dB steps of decreasing input signal level down to, but not including, the first indication of an under-range condition.

Reference level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
dB	dB	dB		dB	+	-	dB
94.0	93.9	0.1	1.96	-0.1	0.8	0.8	0.3
99.0	98.9	0.1		-0.1			
104.0	103.9	0.1		-0.1			
109.0	108.9	0.1		-0.1			
114.0	113.9	0.1		-0.1			
119.0	118.8	0.1		-0.2			
124.0	123.8	0.1		-0.2			
129.0	128.8	0.1		-0.2			
134.0	133.8	0.1		-0.2			
136.0	135.8	0.1		-0.2			
137.0	136.8	0.1		-0.2			
138.0	137.8	0.1		-0.2			0.3
139.0	138.8	0.1		-0.2			
140.0	139.8	0.1		-0.2			
94.0	93.9	0.1		-0.1			
89.0	88.9	0.1		-0.1			
84.0	83.8	0.1		-0.2			
79.0	78.8	0.1		-0.2			
74.0	73.8	0.1		-0.2			
69.0	68.8	0.1		-0.2			
64.0	63.8	0.1		-0.2			
59.0	58.9	0.1		-0.1			
54.0	53.9	0.1		-0.1			
50.0	50.1	0.1		0.1			
49.0	49.1	0.1		0.1			
45.0	45.5	0.1		0.5			

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Tel : 2525 8033 Website : www.esgmatters.asia Email : email@esgmatters.asia

Certificate No.: A220075

Level linearity including the level range control test - IEC 61672-3:2013 Clause 17

Description:
Relevant tests were carried out in accordance with Section 17 of IEC 61672-3:2013. For sound level meters that have more than one level range, tests of level linearity deviations including deviations introduced by the level range control shall be performed with steady sinusoidal electrical input signals at a frequency of 1 kHz and with the sound level meter set for frequency weighting A.

For each level range, the level of the input signal shall then be adjusted to yield a signal level that is expected to be 5 dB greater than the signal level that first causes an indication of under-range on a level range.

Full Scale	Reference level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
dB	dB	dB	dB		dB	+	-	dB
Measured at 1 kHz								
The following measurements are SPL measurements								
Measuring the reference level on the available ranges								
140.0	94.0	94.0	0.1	1.96	0.0	0.3	0.3	0.3
120.0	94.0	94.1	0.1		0.1			
Measuring 5 dB below full scale on all available ranges								
140.0	135.0	135.0	0.1	1.96	0.0	0.8	0.8	0.3
120.0	115.0	115.0	0.1		0.0			

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Tel : 2525 8033 Website : www.esgmatters.asia Email : email@esgmatters.asia

Toneburst response test - IEC 61672-3:2013 Clause 18

Description:

Relevant tests were carried out in accordance with Section 18 of IEC 61672-3:2013. For the toneburst signals, indications of the sound level meter to be recorded are maximum F-time-weighted sound level, maximum S-time-weighted sound level, and sound exposure level. The level of the steady input signal shall be adjusted to display an F-time-weighted, S time-weighted, or time-averaged sound level, as appropriate, that is 3 dB less than the upper boundary stated in the Instruction Manual for the linear operating range at 4 kHz on the reference level range.

For tests with the F time weighting, the indication shall be recorded of the maximum F time-weighted sound level in response to tonebursts having durations of 200 ms, 2 ms, and 0.25 ms.

For tests with the S time weighting, the indication shall be recorded of the maximum S time-weighted sound level in response to tonebursts having durations of 200 ms and 2 ms.

For measurements of sound exposure level (or time-averaged sound level for an averaging time that includes the toneburst), the indications in response to tonebursts having durations of 200 ms, 2 ms, and 0.25 ms.

Parameter setting	Burst duration	Reference level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
	ms	dB	dB	dB		dB	+	-	dB
$L_{AF}MAX$	200	136.0	136.0	0.1	1.96	0.0	0.5	0.5	0.3
	2	119.0	118.7	0.1		-0.3	1.0	1.5	
	0.25	110.0	109.8	0.1		-0.2	1.0	3.0	
$L_{AS}MAX$	200	129.6	129.6	0.1		0.0	0.5	0.5	
	2	110.0	110.0	0.1		0.0	1.0	3.0	
LAE	200	130.0	130.1	0.1		0.1	0.5	0.5	
	2	110.0	110.0	0.1		0.0	1.0	1.5	
	0.25	101.0	100.9	0.1		-0.1	1.0	3.0	

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Certificate No.: A220075

Peak C sound level test - IEC 61672-3:2013 Clause 19

Description:
Relevant tests were carried out in accordance with Section 19 of IEC 61672-3:2013. Indications of C-weighted peak sound level shall be tested on the least-sensitive level range. The test signals consist of (a) a single complete cycle of an 8 kHz sinusoid starting and stopping at zero crossings and (b) positive and negative half cycles of a 500 Hz sinusoid that also start and stop at zero crossings.

The level of the steady sinusoidal 8 kHz electrical input signal, from which a single complete cycle is extracted, shall be adjusted to yield an indication of C-weighted, F-timeweighted sound level, or C-weighted, time-averaged sound level, that is 8 dB less than the upper boundary stated in the Instruction Manual for the peak level range at 8 kHz on the least sensitive level range.

The level of the steady sinusoidal 500 Hz electrical input signal, from which positive and negative half cycles are extracted, shall be adjusted to yield an indication of C-weighted, F time-weighted sound level, or C-weighted, time-averaged sound level, that is 8 dB less than the upper boundary stated in the Instruction Manual for the peak level range on the least-sensitive level range.

Pulse type	Pulse frequency	Reference Peak level	Measured level	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
	Hz	dB	dB	dB		dB	+	-	dB
1 cycle	8000	138.40	137.90	0.10	1.96	-0.50	2.00	2.00	0.35
Positive cycle	500	140.40	139.60	0.10		-0.80	1.00	1.00	
Negative cycle	500	140.40	139.50	0.10		-0.90			

Overload indication test - IEC 61672-3:2013 Clause 20

Description:
Relevant tests were carried out in accordance with Section 20 of IEC 61672-3:2013. The sound level meter set to display A-weighted, time-averaged sound level. Positive and negative one-half cycle sinusoidal electrical signals at a frequency of 4 kHz.

The test shall begin at an indicated time-averaged level for the steady input signal that corresponds to 1 dB less than the upper boundary specified for the linear operating range at 4 kHz. The level of the single positive one-half-cycle input signal shall be increased to the first indication of overload, to a resolution of 0,1 dB. The process shall be repeated for the single negative one-half-cycle signal.

Overload indication at 4 kHz		Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance limit (dB)		Maximum permitted uncertainty
Positive one-half-cycle	Negative one-half-cycle						
dB	dB	dB		dB	+	-	dB
146.70	147.10	0.10	1.96	0.40	1.50	1.50	0.25

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High level stability test - IEC 61672-3:2013 Clause 21							
Description: Relevant tests were carried out in accordance with Section 21 of IEC 61672-3:2013. The ability of a sound level meter to operate continuously in response to high signal levels without significant change in sensitivity is evaluated from the difference between the A weighted sound levels indicated in response to a steady 1 kHz electrical signal at the beginning and end of a 5 min period of continuous exposure to the signal. The level of the steady electrical input signal shall be that which is required to display the sound level that is 1 dB less than the upper boundary of the 1 kHz linear operating range on the least-sensitive level range.							
Reading at beginning	Reading at Ending	Expanded Measurement Uncertainty U	Coverage Factor k	Deviation	Acceptance Limits (dB)		Maximum permitted uncertainty
dB	dB	dB		dB	+	-	dB
139.0	139.0	1.0	1.96	0.0	0.1	0.1	0.1

Remark:
Acoustical levels are stated relative to 20μPa. Other dB levels are relative values.

- END -

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Certificate of Calibration

Certificate No.: B220032

Description:	**Sound calibrator**
Make:	Quest
Model:	QC-10
Serial No.:	QI9010183
Class:	1
Customer:	Apex Testing & Certificate Ltd
Department:	-
Address:	Unit D6A, 10/F, TML Tower, 3 Hoi Shing Road, Tsuen Wan, N.T.
Date of receipt the calibration item:	2022-09-26
Environmental conditions:	
Pressure:	(100.34 ±0.50) kPa
Temperature:	(21.6 ± 1.0) °C
Humidity:	(57,0 ± 2.0)%RH
Date of calibration:	2022-10-05
Date of issue:	2022-10-05

Prepared by:

Ho Tsz Chun

Checked by:

Choi Pui Sum

Approved Signatory:

Choi Pui Sum

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. HOKLAS 302) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific calibration activities as listed in the HOKLAS dirctory of accredited laboratories. The results shown in this certificate are traceable to the International System of Unit (SI) or recognised measurement standards. This certificate shall not be reproduced except in full.

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Certificate No.: B220032

Preconditioning:
The equipment was preconditioned for more than 12 hours at the measurement conditions of pressure, temperature and humidity.

Measurement method:
A description of the in-house test procedure (ESG-NOISE-003) is available separately from the calibration laboratory.

Test Specification:
The Sound Calibrator has been calibrated in accordance with the requirements as specified the in-house test procedure ESG-NOISE-003.

The verification measurements were performed using the calibration system Nor1504A with software CalCal62NCL.exe. As acoustical reference was used WSM - Nor1225-215371 with sensitivity: 54.76 mV/Pa.

Reference equipment used in the calibration:

Description:	Model:	Serial No.	Calibration Date:	Traceable to:
Signal generator	DS 360	123901	2021-07-30	The Government of HKSAR Standards and Calibration Laboratory
Multimeter	Agilent 34401A	MY41030277	2021-08-03	The Government of HKSAR Standards and Calibration Laboratory
Meteo Station HM30	HM30	J120806	2021-08-20	Huber Instrumente Calibration Laboratory
Reference microphone	Nor 1225	215371	2021-06-28	The Government of HKSAR Standards and Calibration Laboratory
Reference Calibrator	B&K 4231	3014997	2021-08-03	The Government of HKSAR Standards and Calibration Laboratory
Audio Analyzer	8903B	3011A11797	2021-08-13	China Ceprei Laboratory Calibration & Testing Centre

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Certificate No.: B220032

Uncertainty:
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k, which with the reported effective degree of freedom corresponds to coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA publication EA-4/02.

The measurement uncertainty evaluation has been carried out in accordance with principles in the Evaluation of Measurement Data – Guide to the Expression of Uncertainty in Measurement, JCGM 100:2008. The expanded measurement uncertainty U, with its coverage factor k, corresponds to an approximate 95% probability that the value of measurand Y lies within the interval y-U to y+U. The combined standard measurement uncertainty u_c can be calculated as $u_c = U/k$ and its degree of freedom V_{eff} is given by the t-distribution with the respective k value.

Comment:
The values given in this Certificate of Calibration only relate to values measured at the time of the test and any measurement uncertainties quoted will not include allowances for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, or the capability of any other laboratory to repeat the measurement. The results apply to the item as received.

All tests are performed according to in-house test procedure ESG-Noise-003.

The results in this Certificate of Calibration only apply to the sample / calibration item as received.

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Table 1

Sound Pressure Level Test Results

Description:

Performance tests were carried out in accordance with Annex B.3.4.3.2 of IEC 60942:2003. The sound pressure level generated by the equipment was compare to the reference sound pressure level by the reference equipment B&K 4231 (Equipment No.:3014997).

Quest QC-10			Measured Deviation (b) – (a)			Acceptance Limits	Maximum Permitted Uncertainty
Frequency Setting	Sound Pressure Level		Value	Measurement Uncertainty			
	Expected Reading (a)	Measured Reading (b)	y	Expanded Measurement Uncertainty U	Coverage Factor k		
(Hz)	(dB)	(dB)	(dB)	(dB)		(dB)	(dB)
1000.00	114.00	113.85	-0.15	0.13	1.96	±0.40	0.15

The calibrator was placed on top of the reference microphone, only held in place by gravity. At least three repetitions have been performed. No adapter ring was needed to obtain half inch configuration.

The calibrator level was not adjusted.

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Certificate No.: B220032

Table 2

Frequency Test Results

Description:

Relevant tests were carried out in accordance with Annex B.3.5 of IEC 60942:2003. The frequency of sound pressure level generated by the equipment was measured by the multimeter (Equipment No.: MY41030277).

Quest QC-10			Measured Deviation [=([b] – [a])/[a] x 100%]			Acceptance Limits	Maximum Permitted Uncertainty
Sound Pressure Level Setting	Frequency		Value	Measurement Uncertainty			
	Expected Reading (a)	Measured Reading (b)	y	Expanded Measurement Uncertainty U	Coverage Factor k		
(dB)	(Hz)	(Hz)	(%)	(%)		(%)	(%)
114.00	1000.00	998.68	-0.13	0.14	1.96	±1.00	0.30

The calibrator was placed on top of the reference microphone, only held in place by gravity. At least three repetitions have been performed. No adapter ring was needed to obtain half inch configuration.

The calibrator level was not adjusted.

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Table 3

Total Distortion Test Results

Description:

Relevant tests were carried out in accordance with Annex B.3.6 of IEC 60942:2003. The total distortion of the acoustic signal generated by the equipment was measured by the Laboratory's audio analyzer (Equipment No.: 3011A11797).

Quest QC-10		Measured Total Distortion			Acceptance Limits	Maximum Permitted Uncertainty
Frequency Setting	Sound Pressure Level Setting	Value y	Measurement Uncertainty			
			Expanded Measurement Uncertainty U	Coverage Factor k		
(Hz)	(dB)	(%)	(%)		(%)	(%)
1000.00	114.00	0.43	0.21	1.96	±3.00	0.50

The calibrator was placed on top of the reference microphone, only held in place by gravity. At least three repetitions have been performed. No adapter ring was needed to obtain half inch configuration.

The calibrator level was not adjusted.

The stated levels are relative to 20μPa. The distortion value (in %) is the signal to total noise ratio.

- END -

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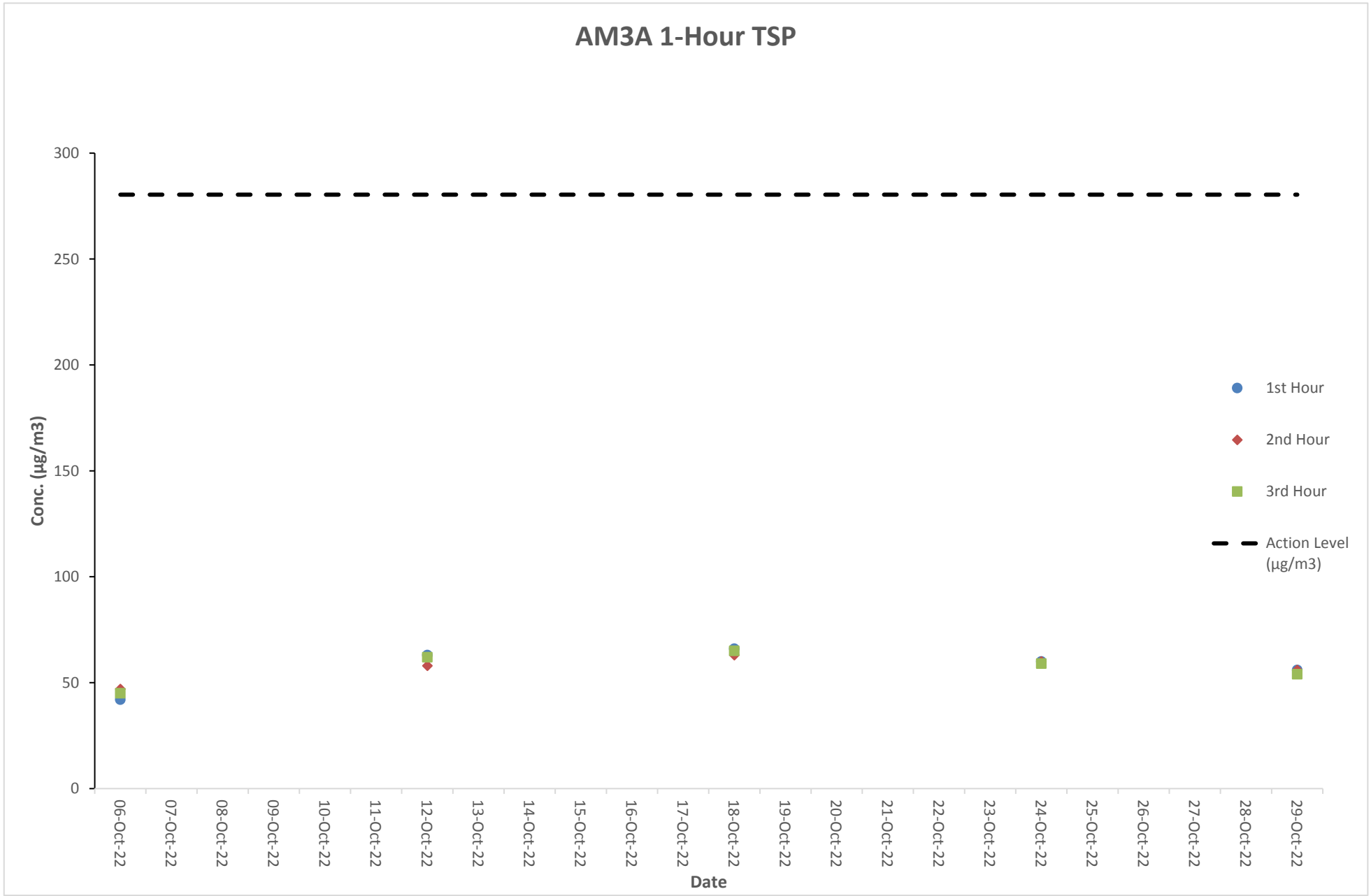
G. Graphical Plots of the Monitoring Results

Air Quality Monitoring Result at Station AM3A (1-hour TSP)

Date	Weather Condition	Time		Conc. (μg/m3)			Action Level	Limit Level
		Start	Finish	1st Hour	2nd Hour	3rd Hour		
06-Oct-22	Cloudy	8:01	11:01	42	47	45	280.4	500
12-Oct-22	Fine	14:05	17:05	63	58	62	280.4	500
18-Oct-22	Cloudy	8:03	11:03	66	63	65	280.4	500
24-Oct-22	Fine	14:06	17:06	60	60	59	280.4	500
29-Oct-22	Fine	8:07	11:07	56	56	54	280.4	500

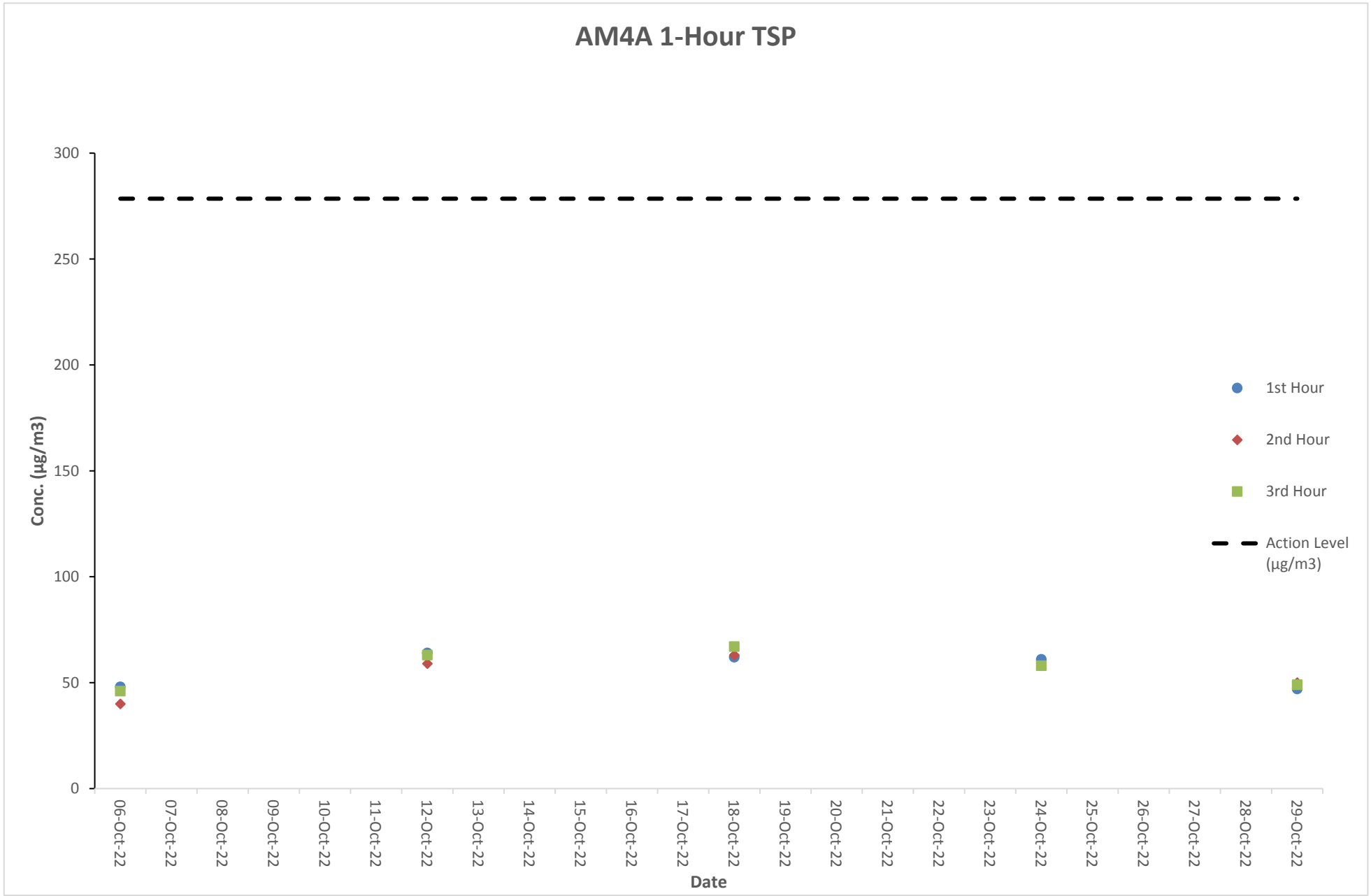
Graphical Presentation of Air Quality Monitoring Result at Station AM3A (1-hour TSP)



Air Quality Monitoring Result at Station AM4A (1-hour TSP)

Date	Weather Condition	Time		Conc. (μg/m3)			Action Level	Limit Level
		Start	Finish	1st Hour	2nd Hour	3rd Hour		
06-Oct-22	Cloudy	8:09	11:09	48	40	46	278.5	500
12-Oct-22	Fine	14:13	17:13	64	59	63	278.5	500
18-Oct-22	Cloudy	8:11	11:11	62	63	67	278.5	500
24-Oct-22	Fine	14:14	17:14	61	58	58	278.5	500
29-Oct-22	Fine	8:15	11:15	47	50	49	278.5	500

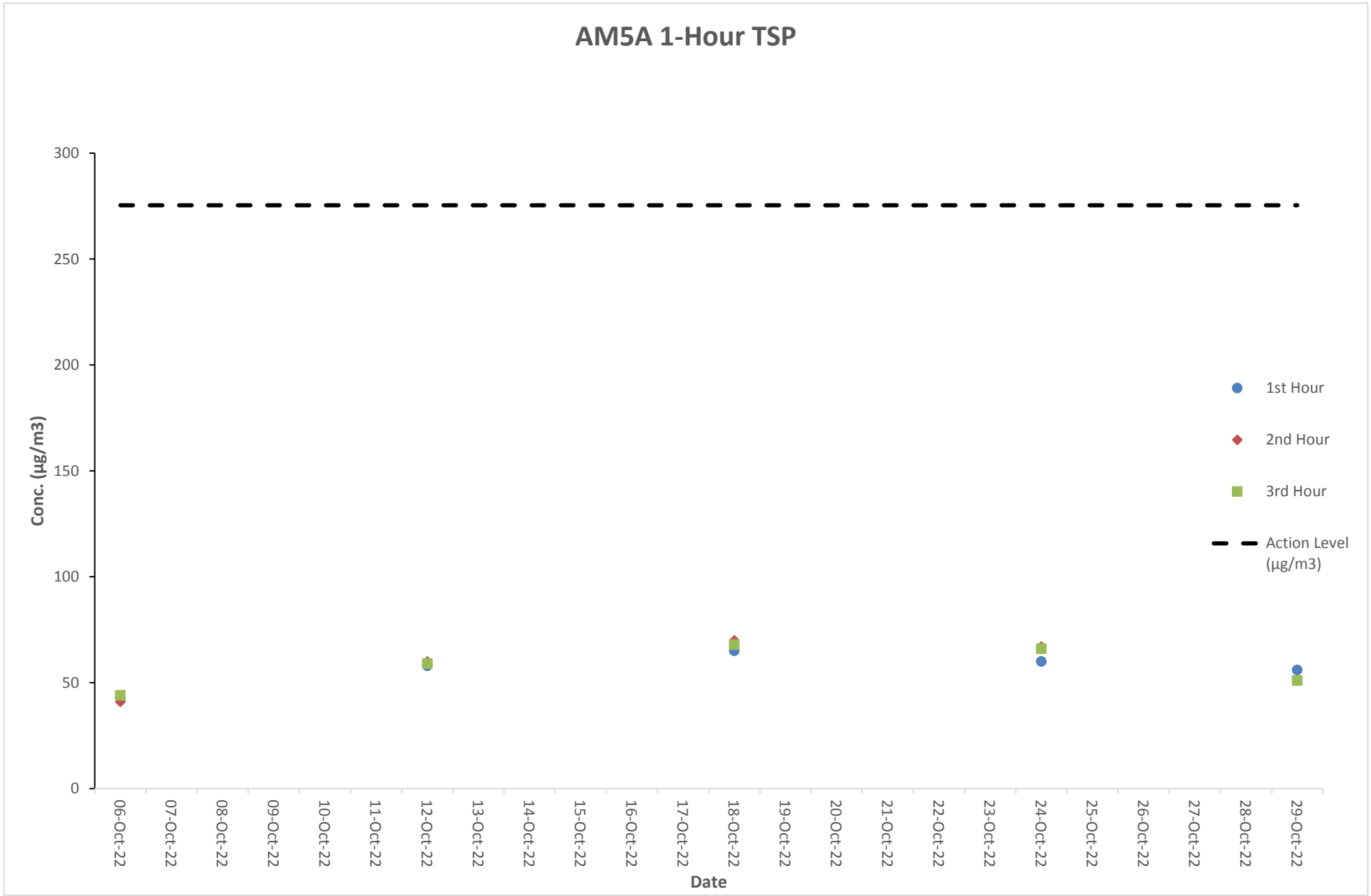
Graphical Presentation of Air Quality Monitoring Result at Station AM4A (1-hour TSP)



Air Quality Monitoring Result at Station AM5A (1-hour TSP)

Date	Weather Condition	Time		Conc. (μg/m3)			Action Level	Limit Level
		Start	Finish	1st Hour	2nd Hour	3rd Hour		
06-Oct-22	Cloudy	8:24	11:24	43	41	44	275.4	500
12-Oct-22	Fine	14:30	17:30	58	60	59	275.4	500
18-Oct-22	Cloudy	8:26	11:26	65	70	68	275.4	500
24-Oct-22	Fine	14:31	17:31	60	67	66	275.4	500
29-Oct-22	Fine	8:30	11:30	56	51	51	275.4	500

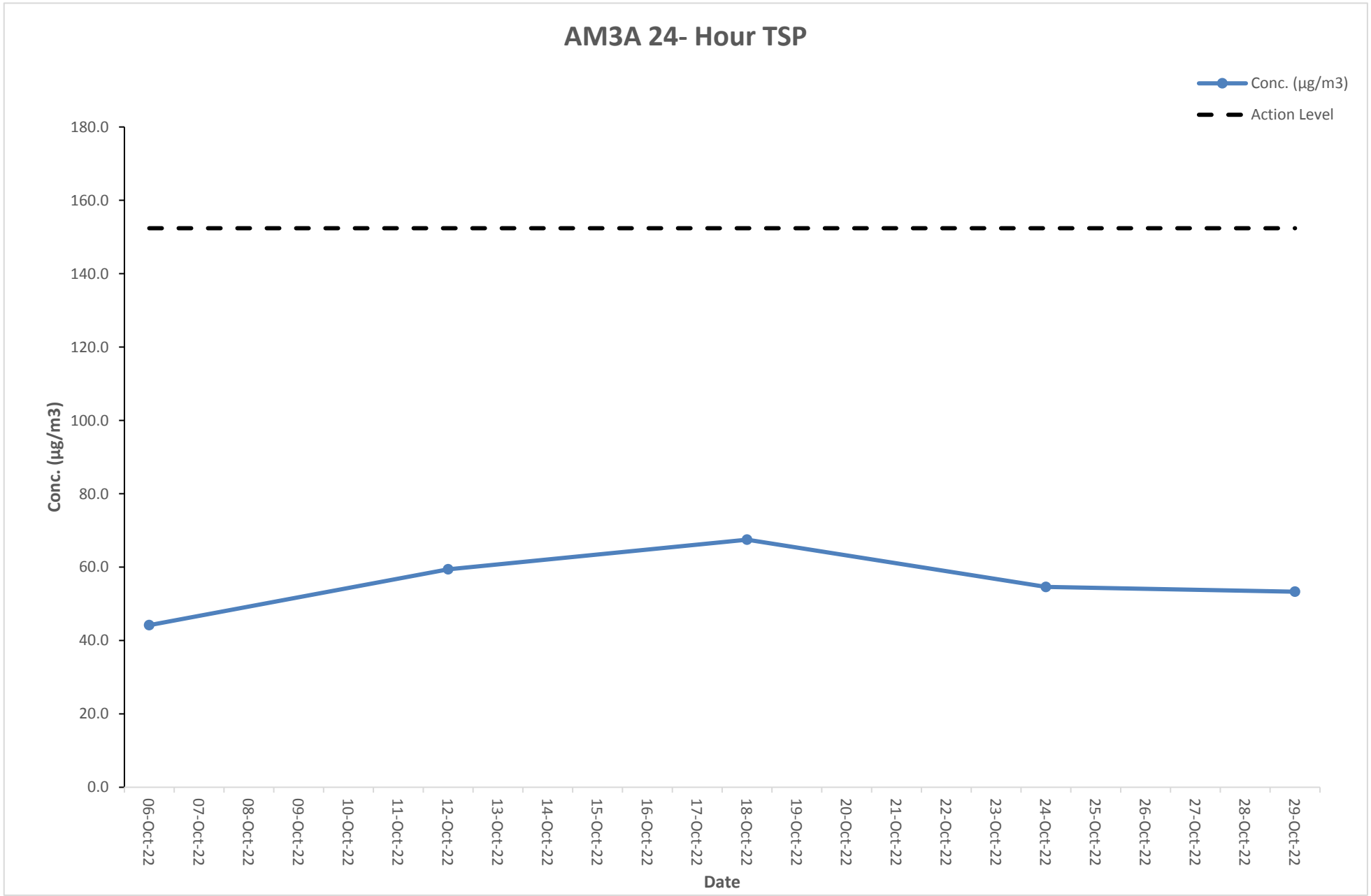
Graphical Presentation of Air Quality Monitoring Result at Station AM5A (1-hour TSP)



Air Quality Monitoring Result at Station AM3A (24-hour TSP)

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m3)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
06-Oct-22	10:00AM	07-Oct-22	10:00AM	2.8010	2.8722	4205.8	4229.8	24	1.12	1.12	1.12	44.2	Cloudy	152.4	260
12-Oct-22	10:00AM	13-Oct-22	10:00AM	2.8038	2.8994	4229.8	4253.8	24	1.12	1.12	1.12	59.4	Sunny	152.4	260
18-Oct-22	10:00AM	19-Oct-22	10:00AM	2.8018	2.9104	4253.8	4277.8	24	1.12	1.12	1.12	67.5	Rainy	152.4	260
24-Oct-22	10:00AM	25-Oct-22	10:00AM	2.8064	2.8943	4277.8	4301.8	24	1.12	1.12	1.12	54.6	Sunny	152.4	260
29-Oct-22	10:00AM	30-Oct-22	10:00AM	2.8039	2.8897	4301.8	4325.8	24	1.12	1.12	1.12	53.3	Sunny	152.4	260

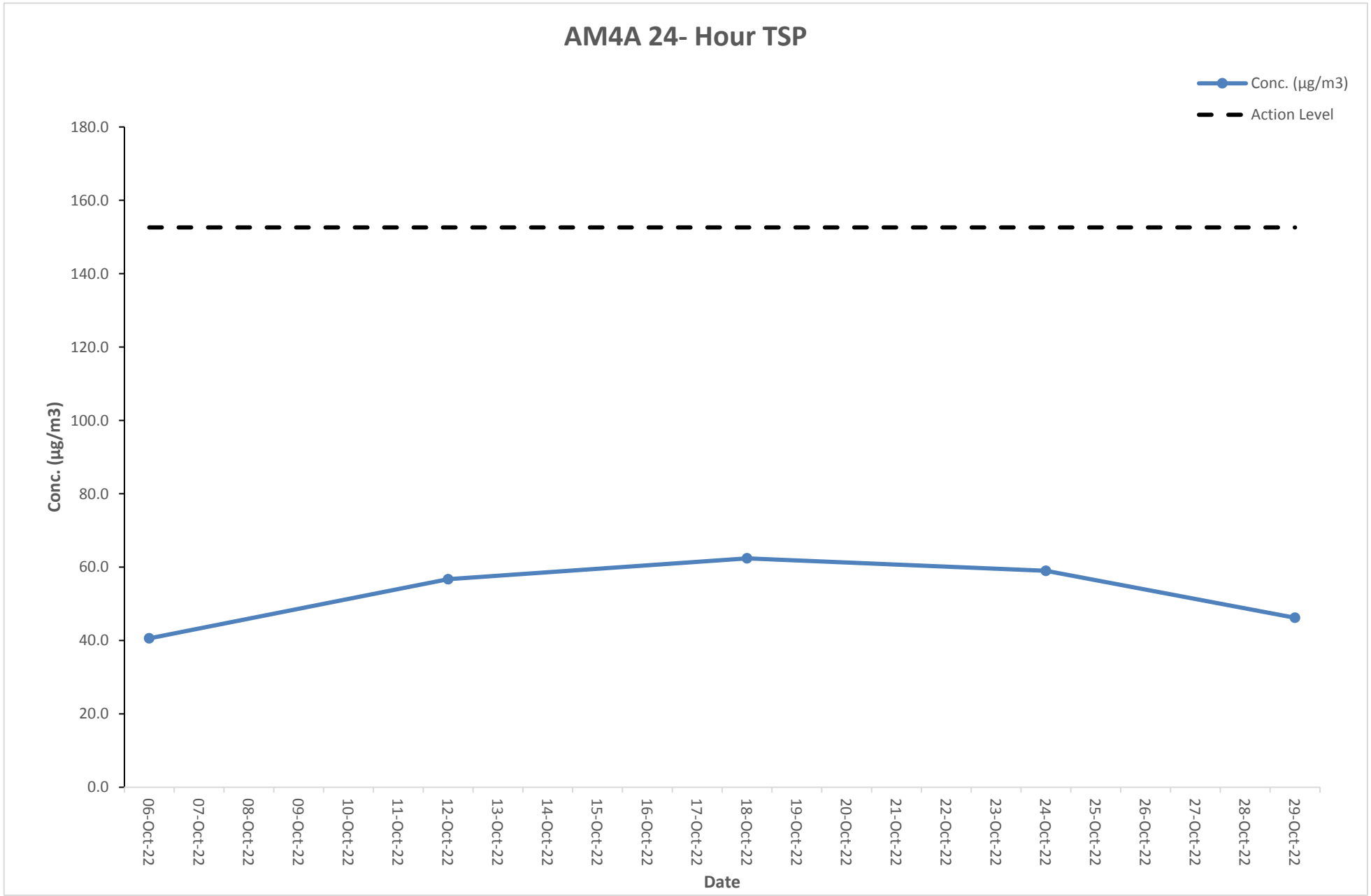
Graphical Presentation of Air Quality Monitoring Result at Station AM3A (24-hour TSP)



Air Quality Monitoring Result at Station AM4A (24-hour TSP)

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m3)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
06-Oct-22	10:00AM	07-Oct-22	10:00AM	2.8045	2.8699	4625.4	4649.4	24	1.12	1.12	1.12	40.6	Cloudy	152.6	260
12-Oct-22	10:00AM	13-Oct-22	10:00AM	2.8016	2.8929	4649.4	4673.4	24	1.12	1.12	1.12	56.7	Sunny	152.6	260
18-Oct-22	10:00AM	19-Oct-22	10:00AM	2.8062	2.9066	4673.4	4697.4	24	1.12	1.12	1.12	62.4	Rainy	152.6	260
24-Oct-22	10:00AM	25-Oct-22	10:00AM	2.8081	2.9030	4697.4	4721.4	24	1.12	1.12	1.12	59.0	Sunny	152.6	260
29-Oct-22	10:00AM	30-Oct-22	10:00AM	2.8012	2.8755	4721.4	4745.4	24	1.12	1.12	1.12	46.2	Sunny	152.6	260

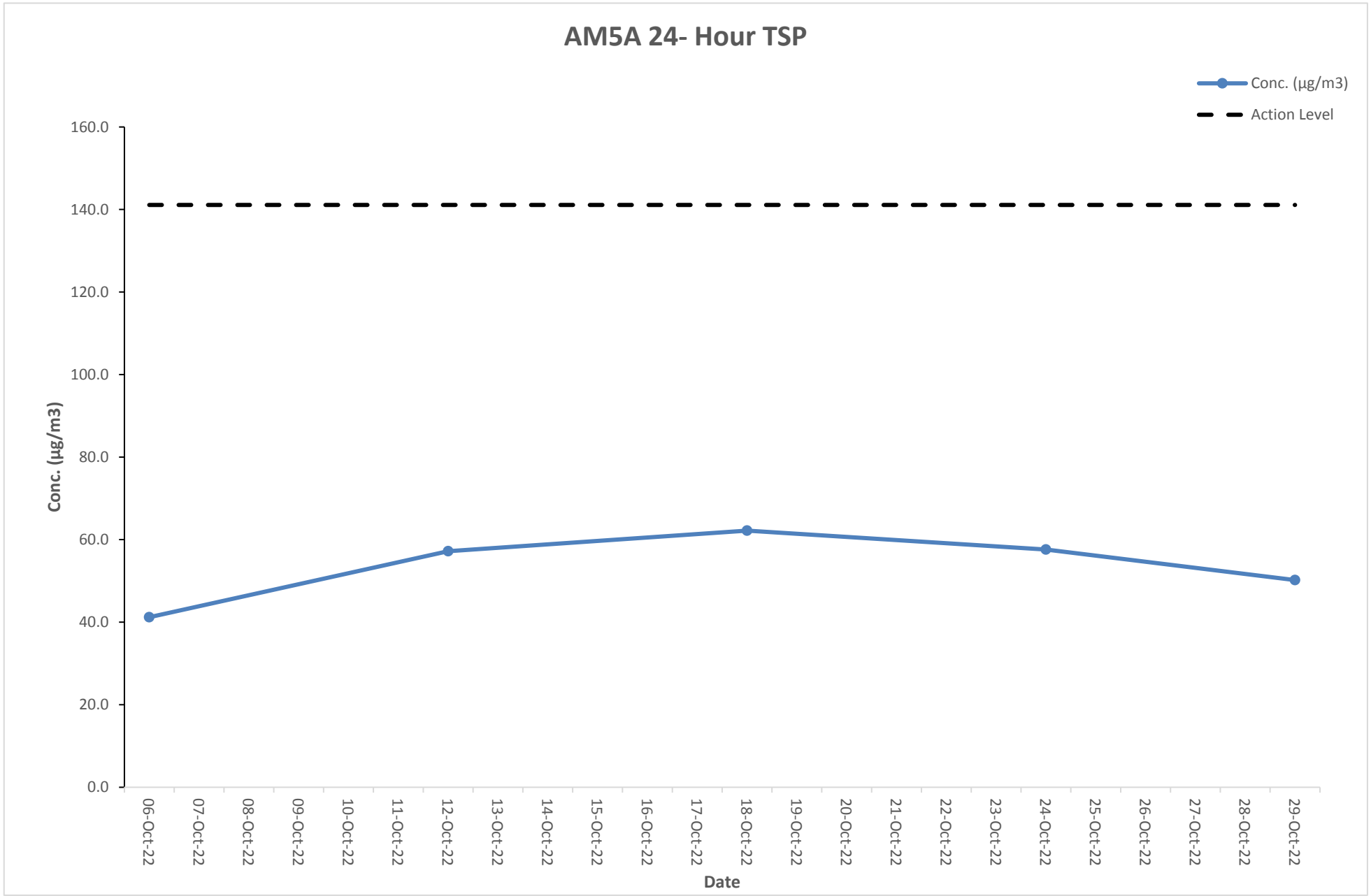
Graphical Presentation of Air Quality Monitoring Result at Station AM4A (24-hour TSP)



Air Quality Monitoring Result at Station AM5A (24-hour TSP)

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m^3/min)			Conc. (µg/m3)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
06-Oct-22	10:00AM	07-Oct-22	10:00AM	2.8019	2.8683	4765.6	4789.6	24	1.12	1.12	1.12	41.2	Cloudy	141.1	260
12-Oct-22	10:00AM	13-Oct-22	10:00AM	2.8051	2.8971	4789.6	4813.6	24	1.12	1.12	1.12	57.2	Sunny	141.1	260
18-Oct-22	10:00AM	19-Oct-22	10:00AM	2.8021	2.9023	4813.6	4837.6	24	1.12	1.12	1.12	62.2	Rainy	141.1	260
24-Oct-22	10:00AM	25-Oct-22	10:00AM	2.8039	2.8966	4837.6	4861.6	24	1.12	1.12	1.12	57.6	Sunny	141.1	260
29-Oct-22	10:00AM	30-Oct-22	10:00AM	2.8046	2.8853	4861.6	4885.6	24	1.12	1.12	1.12	50.2	Sunny	141.1	260

Graphical Presentation of Air Quality Monitoring Result at Station AM5A (24-hour TSP)

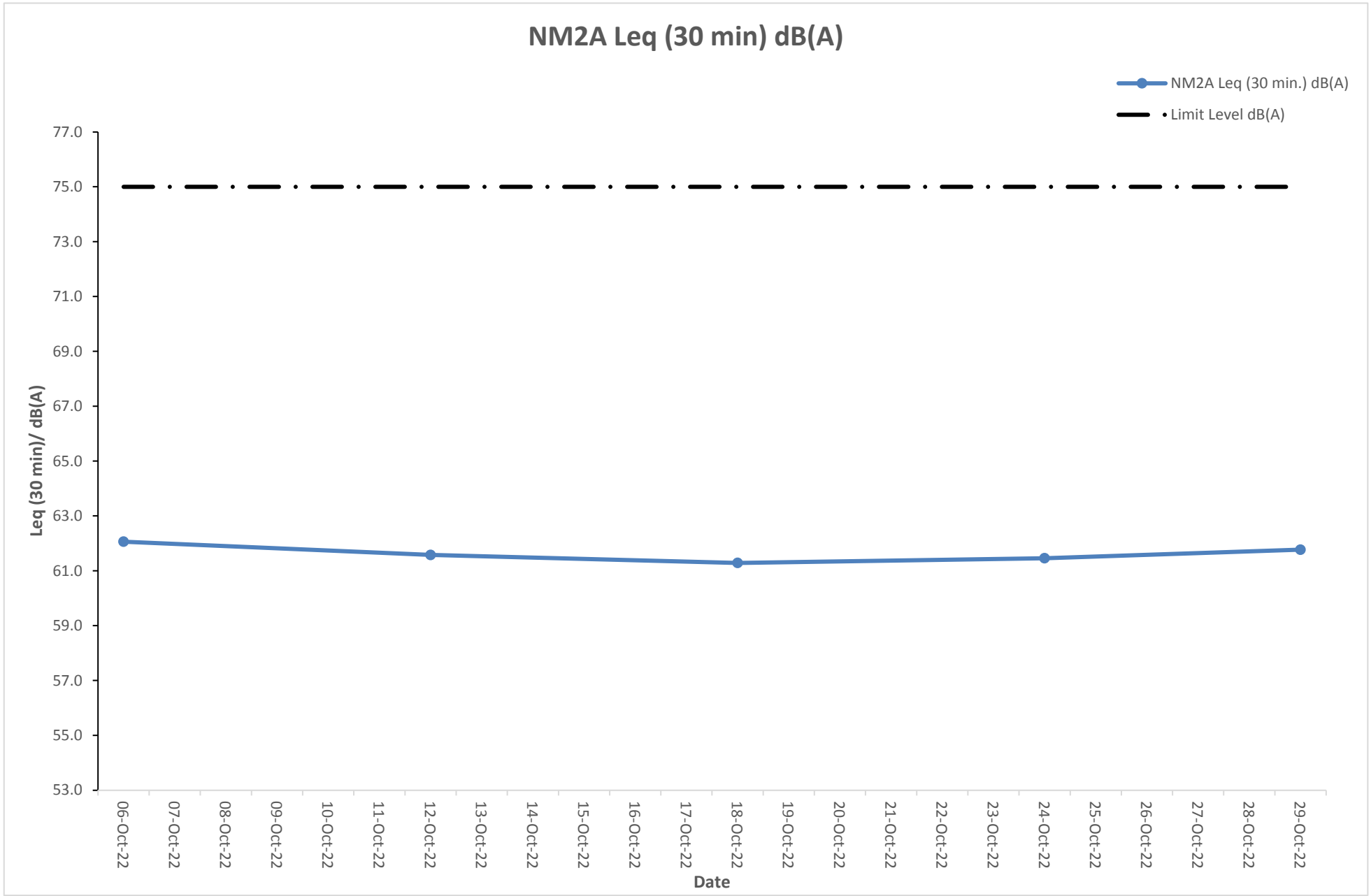


Noise Monitoring Result at Station NM2A

Date	Time	Measured L10 dB(A)	Measured L90 dB(A)	Leq (30 min.) dB(A)
06-Oct-22	8:31	64.5	59.1	62.1
06-Oct-22	8:36	64.0	60.2	
06-Oct-22	8:41	65.0	59.9	
06-Oct-22	8:46	65.6	60.9	
06-Oct-22	8:51	65.8	59.9	
06-Oct-22	8:56	65.6	60.7	
12-Oct-22	14:35	63.9	60.1	61.6
12-Oct-22	14:40	63.5	58.7	
12-Oct-22	14:45	64.0	59.7	
12-Oct-22	14:50	62.9	59.3	
12-Oct-22	14:55	63.5	58.9	
12-Oct-22	15:00	63.7	60.3	
18-Oct-22	8:33	62.8	59.5	61.3
18-Oct-22	8:38	62.9	58.9	
18-Oct-22	8:43	62.8	59.4	
18-Oct-22	8:48	63.1	59.7	
18-Oct-22	8:53	63.4	59.8	
18-Oct-22	8:58	63.6	59.6	
24-Oct-22	14:36	63.0	60.2	61.5
24-Oct-22	14:41	63.0	59.6	
24-Oct-22	14:46	63.0	59.7	
24-Oct-22	14:51	64.3	59.7	
24-Oct-22	14:56	63.3	60.5	
24-Oct-22	15:01	63.8	60.0	
29-Oct-22	8:37	63.6	60.3	61.8
29-Oct-22	8:42	64.2	58.6	
29-Oct-22	8:47	63.2	60.4	
29-Oct-22	8:52	64.4	58.7	
29-Oct-22	8:57	63.9	60.4	
29-Oct-22	9:02	63.7	59.4	

The station set-up of a façade measurement at station NM2A.

Graphical Presentation of Noise Monitoring Result at Station NM2A

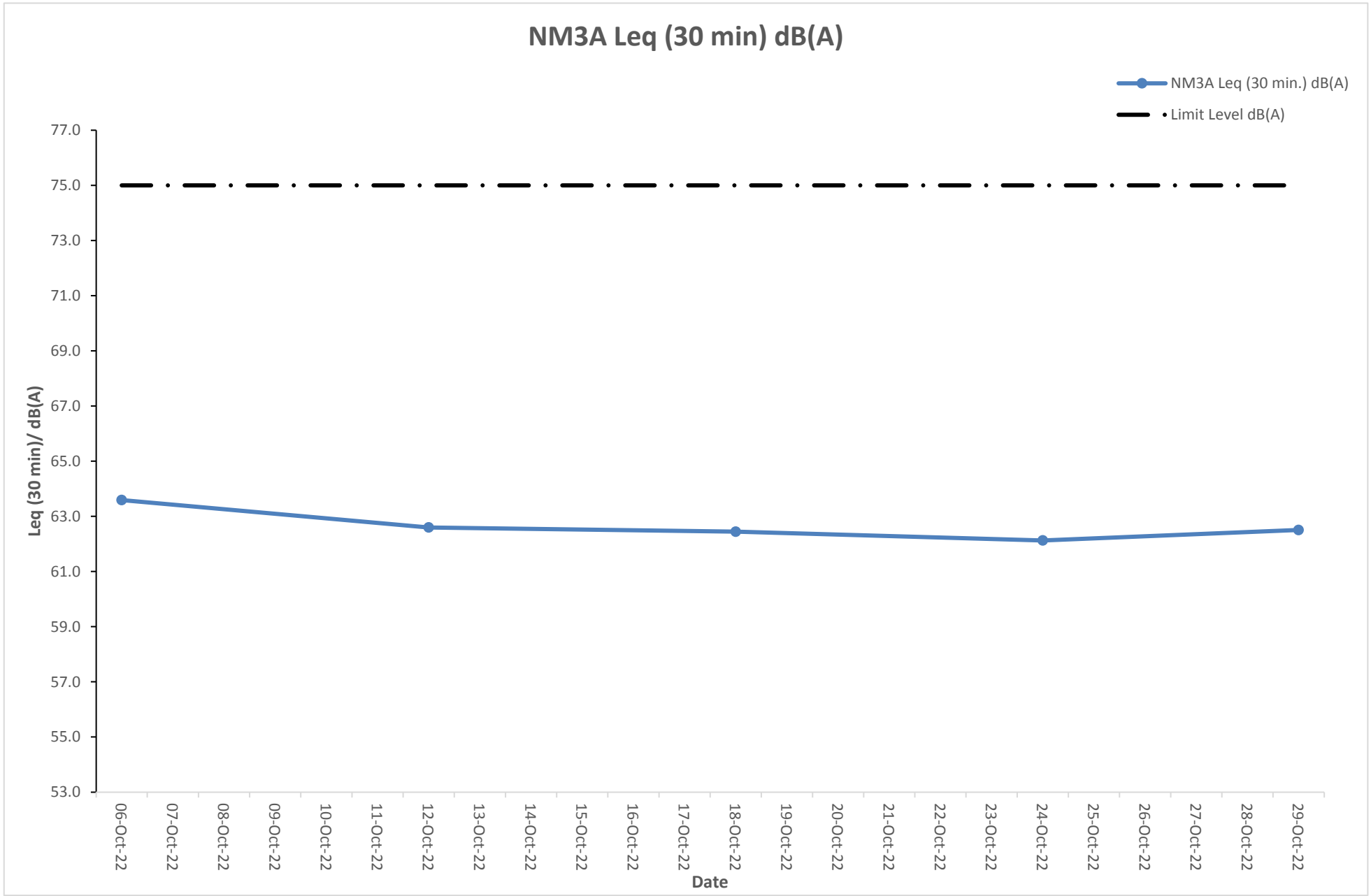


Noise Monitoring Result at Station NM3A

Date	Time	Measured L10 dB(A)	Measured L90 dB(A)	Leq (30 min.) dB(A)
06-Oct-22	10:01	65.4	59.8	63.6
06-Oct-22	10:06	64.1	60.3	
06-Oct-22	10:11	65.4	59.1	
06-Oct-22	10:16	65.7	60.4	
06-Oct-22	10:21	65.2	60.0	
06-Oct-22	10:26	65.0	60.9	
12-Oct-22	16:08	64.3	58.4	62.6
12-Oct-22	16:13	63.7	59.3	
12-Oct-22	16:18	63.5	58.9	
12-Oct-22	16:23	64.7	59.0	
12-Oct-22	16:28	64.2	58.0	
12-Oct-22	16:33	65.2	58.9	
18-Oct-22	10:03	63.6	59.9	62.4
18-Oct-22	10:08	64.9	58.5	
18-Oct-22	10:13	63.6	59.0	
18-Oct-22	10:18	64.8	58.3	
18-Oct-22	10:23	63.7	58.6	
18-Oct-22	10:28	65.2	59.5	
24-Oct-22	16:09	63.9	58.9	62.1
24-Oct-22	16:14	64.4	59.6	
24-Oct-22	16:19	64.8	59.8	
24-Oct-22	16:24	65.2	58.8	
24-Oct-22	16:29	64.9	58.8	
24-Oct-22	16:34	64.4	58.3	
29-Oct-22	10:07	64.3	58.6	62.5
29-Oct-22	10:12	65.0	58.9	
29-Oct-22	10:17	63.9	58.4	
29-Oct-22	10:22	65.4	58.6	
29-Oct-22	10:27	65.1	58.7	
29-Oct-22	10:32	64.8	58.5	

The station set-up of a façade measurement at station NM3A.

Graphical Presentation of Noise Monitoring Result at Station NM3A

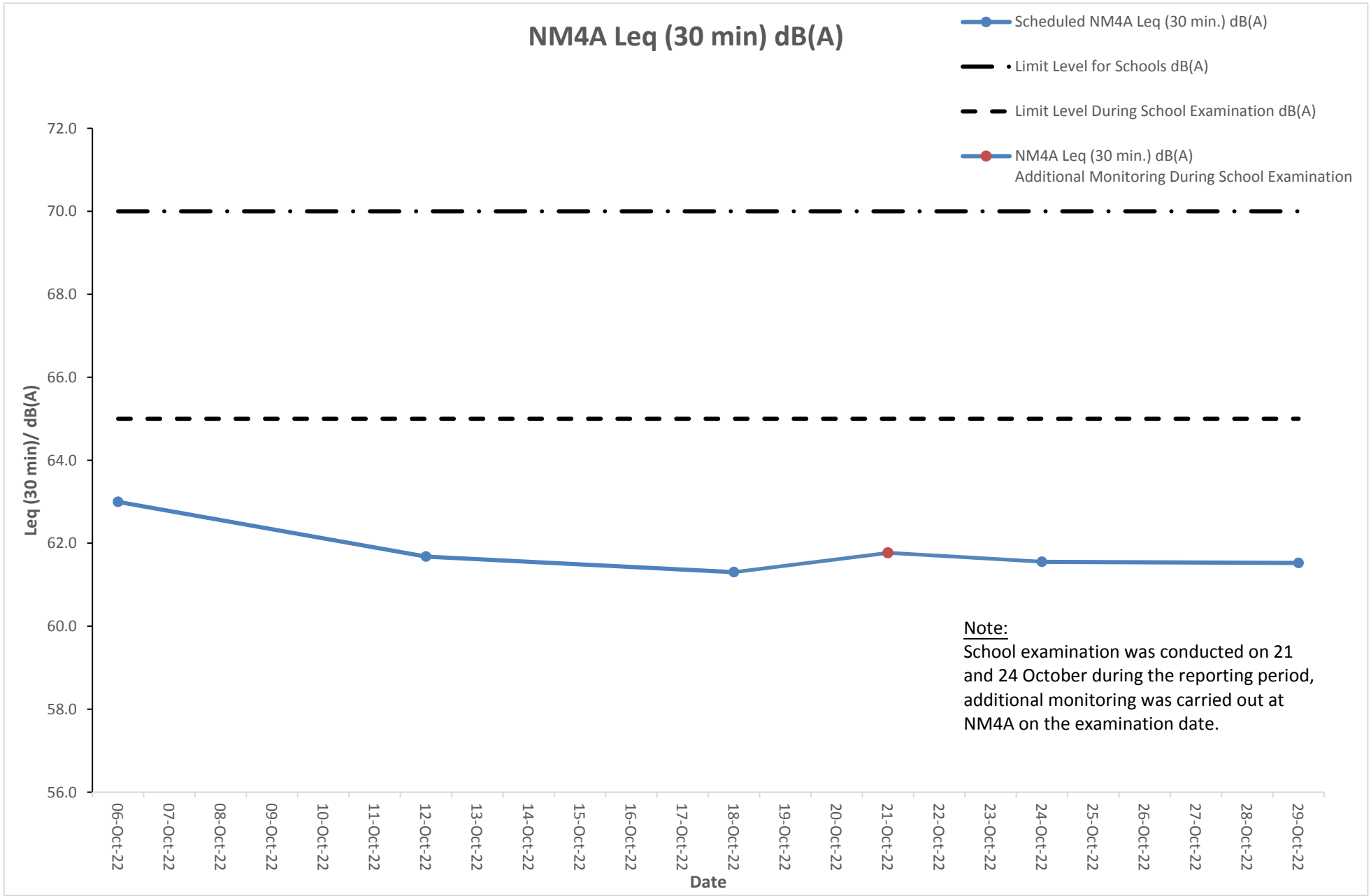


Noise Monitoring Result at Station NM4A

Date	Time	Measured L10 dB(A)	Measured L90 dB(A)	Leq (30 min.) dB(A)
06-Oct-22	10:36	63.8	60.4	63.0
06-Oct-22	10:41	63.8	60.8	
06-Oct-22	10:46	63.9	59.6	
06-Oct-22	10:51	63.3	61.2	
06-Oct-22	10:56	64.7	60.5	
06-Oct-22	11:01	64.4	61.4	
12-Oct-22	16:43	63.8	60.5	61.7
12-Oct-22	16:48	63.0	59.8	
12-Oct-22	16:53	64.4	59.9	
12-Oct-22	16:58	64.0	59.8	
12-Oct-22	17:03	63.2	59.3	
12-Oct-22	17:08	64.0	59.4	
18-Oct-22	10:38	63.5	60.1	61.3
18-Oct-22	10:43	64.2	60.1	
18-Oct-22	10:48	63.1	60.0	
18-Oct-22	10:53	62.9	60.2	
18-Oct-22	10:58	62.6	59.0	
18-Oct-22	11:03	62.7	60.3	
24-Oct-22	16:44	64.3	58.8	61.6
24-Oct-22	16:49	63.2	60.4	
24-Oct-22	16:54	62.9	59.4	
24-Oct-22	16:59	63.4	60.0	
24-Oct-22	17:04	63.9	59.9	
24-Oct-22	17:09	63.8	59.8	
29-Oct-22	10:42	62.7	60.4	61.5
29-Oct-22	10:47	64.3	60.6	
29-Oct-22	10:52	63.2	59.0	
29-Oct-22	10:57	63.7	59.0	
29-Oct-22	11:02	63.4	59.5	
29-Oct-22	11:07	62.5	59.3	

The station set-up of a façade measurement at station NM4A.

Graphical Presentation of Noise Monitoring Result at Station NM4A



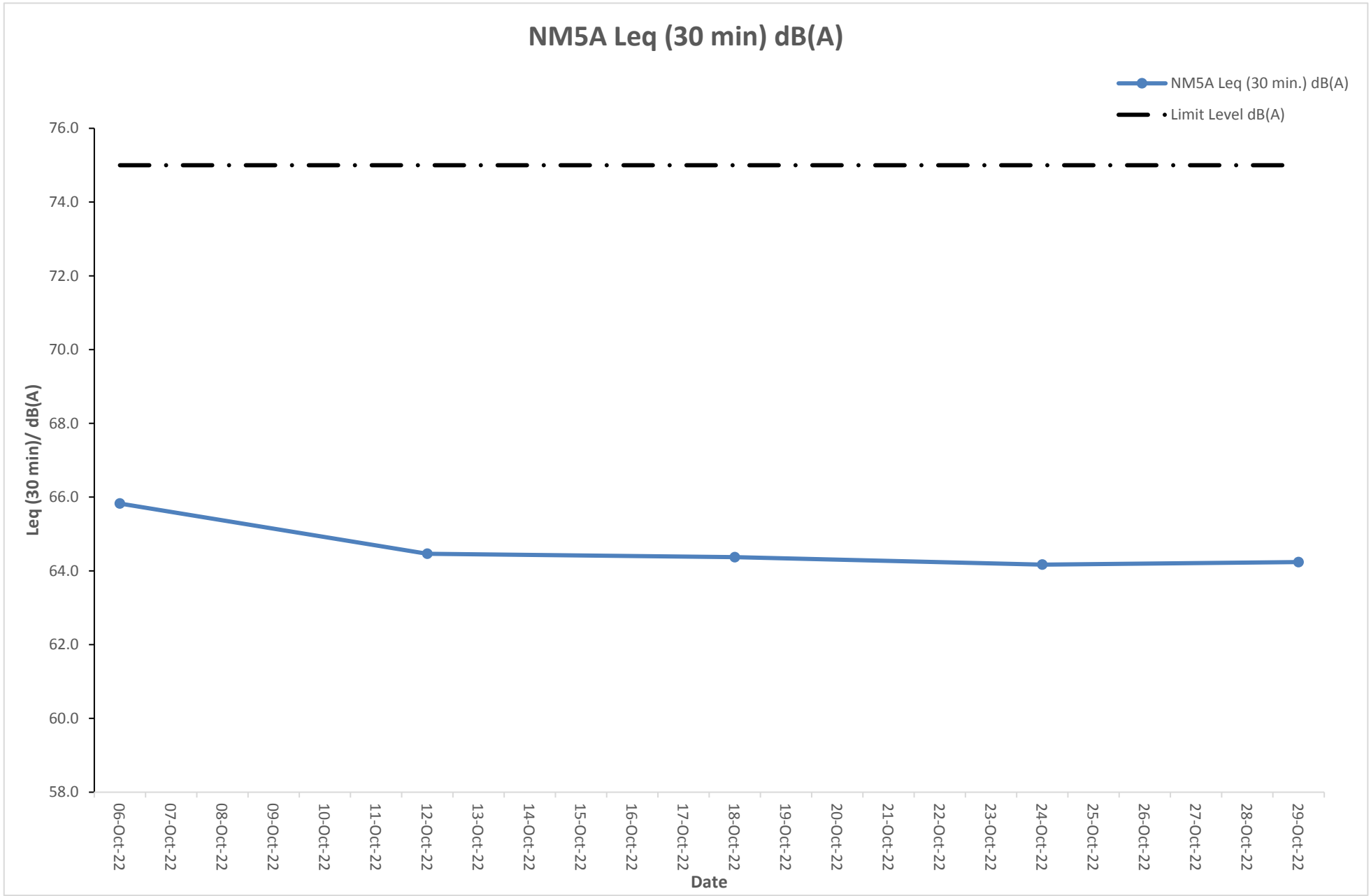
Noise Monitoring Result at Station NM5A

Date	Time	Measured L10 dB(A)	Measured L90 dB(A)	Leq (30 min.) dB(A)	Leq (30 min.) +3 dB(A)
06-Oct-22	9:21	63.6	59.5	62.8	65.8
06-Oct-22	9:26	64.8	60.1		
06-Oct-22	9:31	63.6	60.3		
06-Oct-22	9:36	64.4	59.6		
06-Oct-22	9:41	64.4	59.0		
06-Oct-22	9:46	64.4	58.5		
12-Oct-22	15:27	64.0	57.8	61.5	64.5
12-Oct-22	15:32	64.1	58.7		
12-Oct-22	15:37	63.4	59.7		
12-Oct-22	15:42	63.3	58.6		
12-Oct-22	15:47	62.3	57.8		
12-Oct-22	15:52	62.6	58.0		
18-Oct-22	9:23	64.2	58.9	61.4	64.4
18-Oct-22	9:28	62.3	58.7		
18-Oct-22	9:33	63.9	59.7		
18-Oct-22	9:38	63.8	57.8		
18-Oct-22	9:43	63.7	58.0		
18-Oct-22	9:48	63.8	59.6		
24-Oct-22	15:28	64.1	59.5	61.2	64.2
24-Oct-22	15:33	62.6	58.3		
24-Oct-22	15:38	63.3	58.4		
24-Oct-22	15:43	62.6	58.4		
24-Oct-22	15:48	63.0	58.3		
24-Oct-22	15:53	63.0	58.2		
29-Oct-22	9:27	63.3	58.9	61.2	64.2
29-Oct-22	9:32	63.7	59.1		
29-Oct-22	9:37	62.9	58.3		
29-Oct-22	9:42	62.8	59.1		
29-Oct-22	9:47	63.8	59.6		
29-Oct-22	9:52	63.4	59.7		

Remarks:
+3dB(A) correction was applied to free-field measurement.

The station set-up of a free-field measurement at station NM5A.

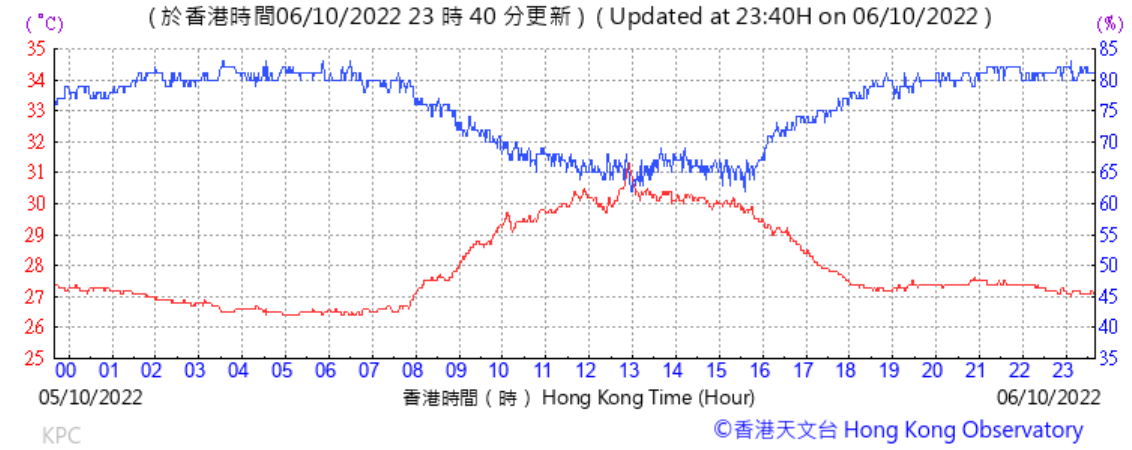
Graphical Presentation of Noise Monitoring Result at Station NM5A



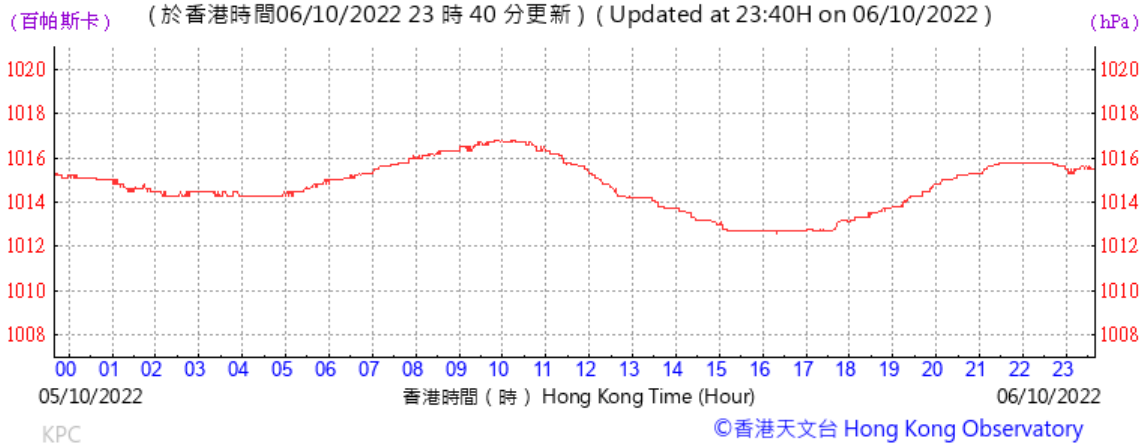
H. Meteorological Data Extracted from Hong Kong Observatory

Extract of Meteorological Observations for King's Park Automatic Weather Station, October 2022

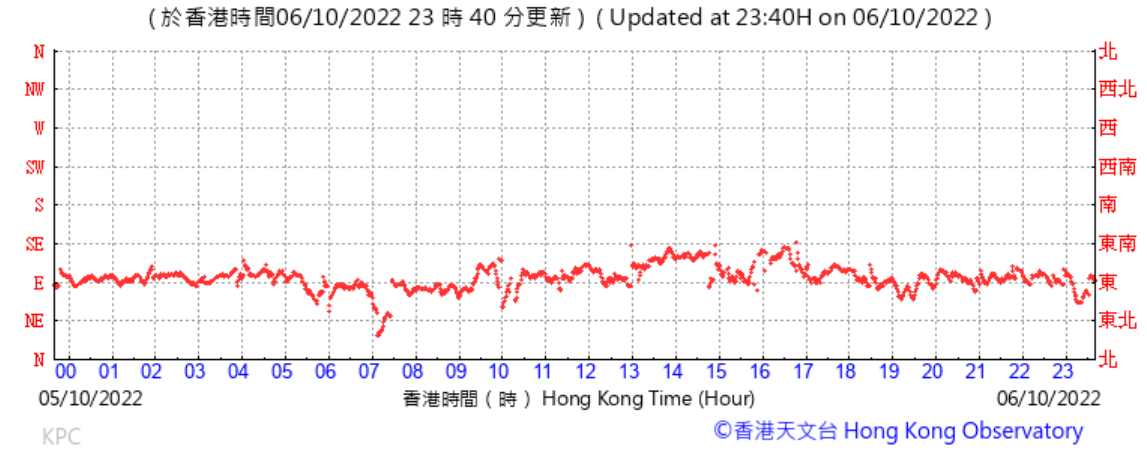
Tempearture/Humidity:



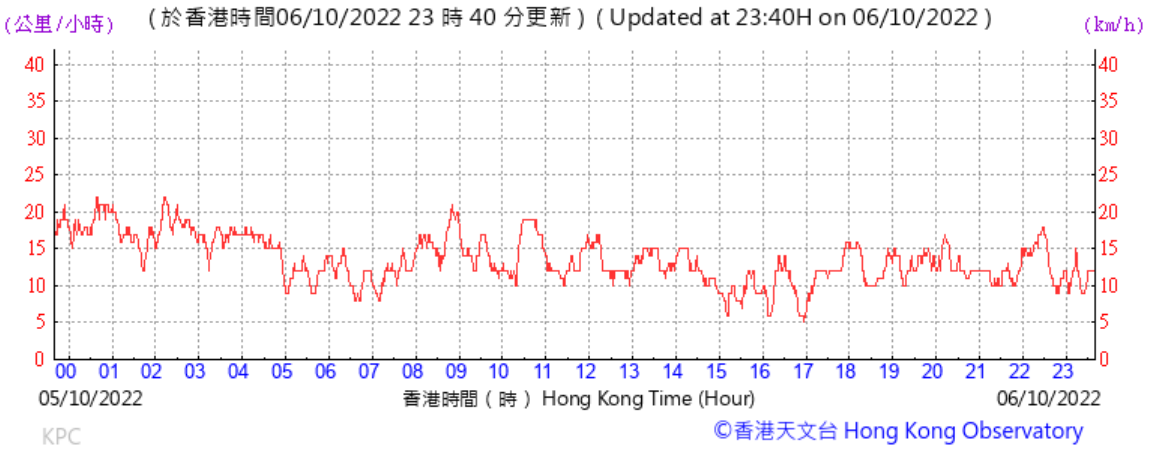
Pressure:



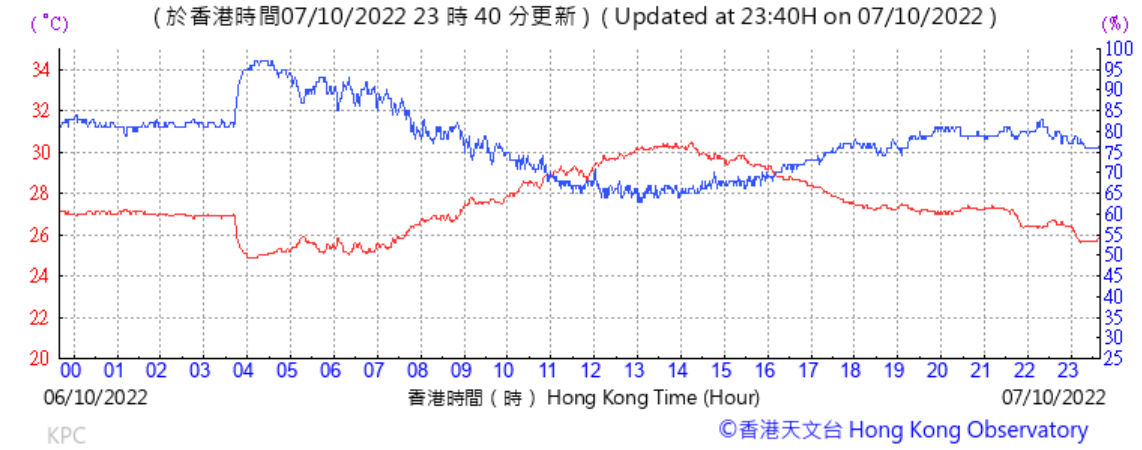
Wind Direction:



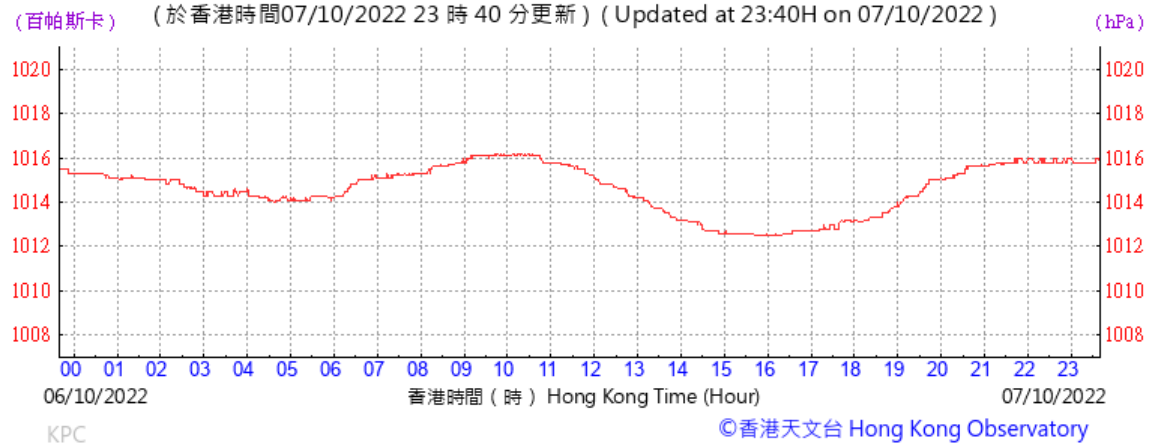
Wind Speed:



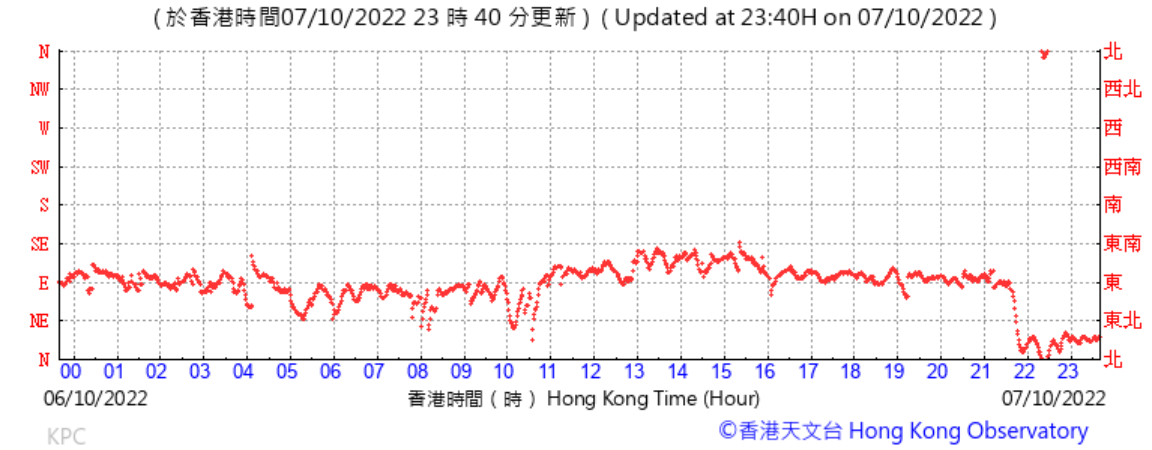
Tempearture/Humidity:



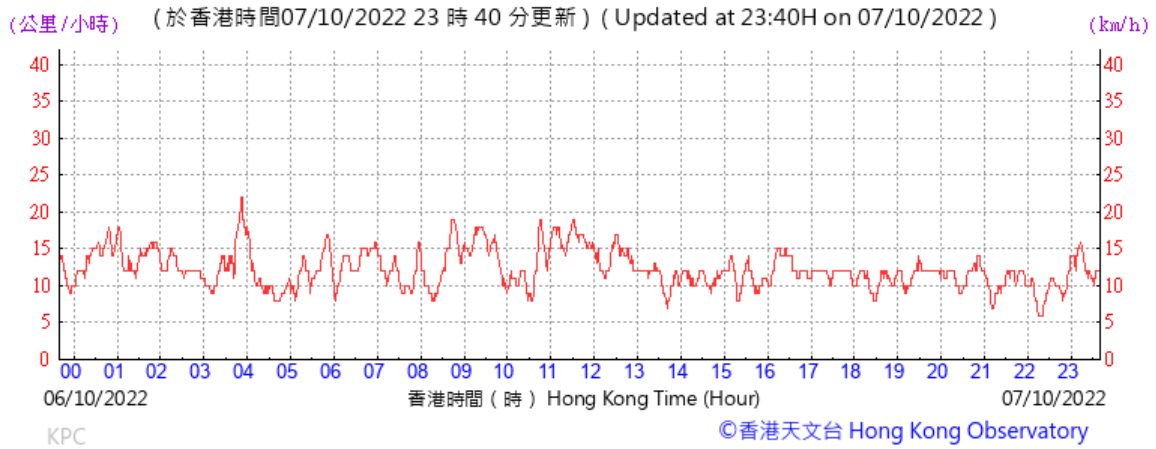
Pressure:



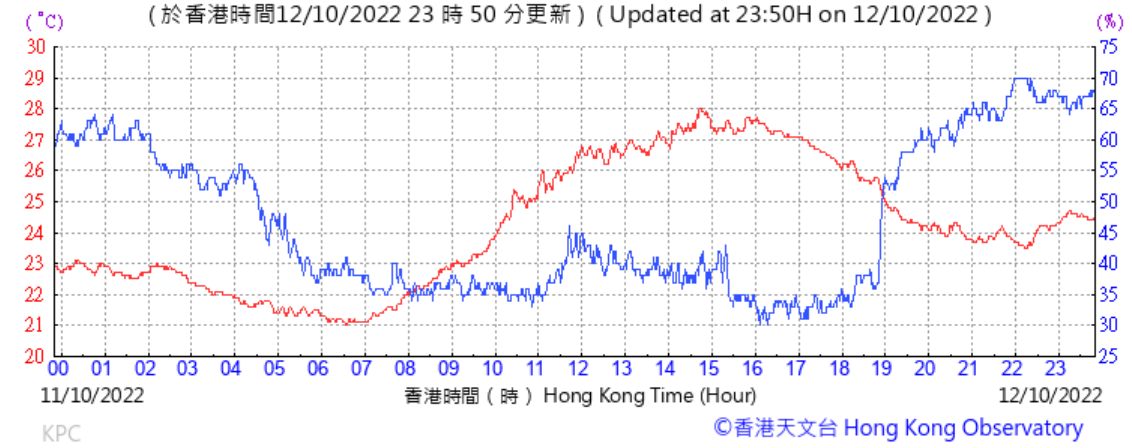
Wind Direction:



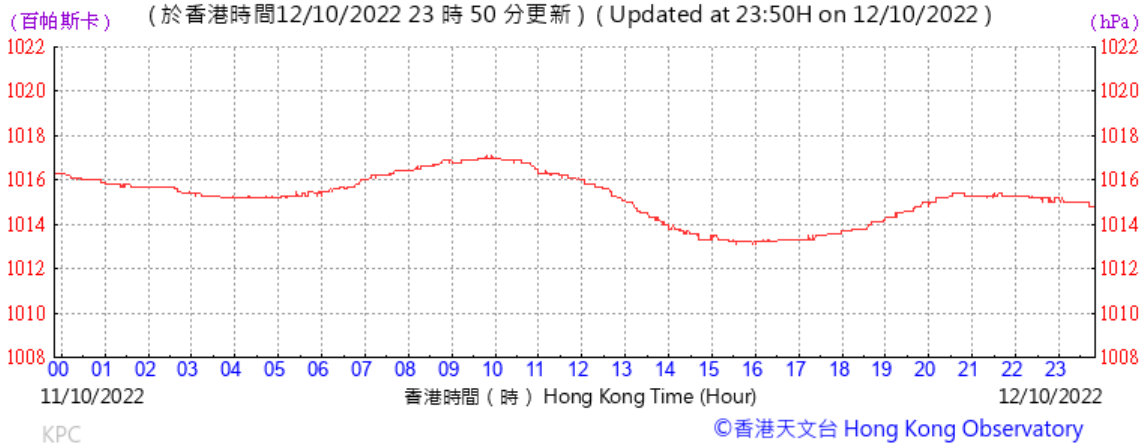
Wind Speed:



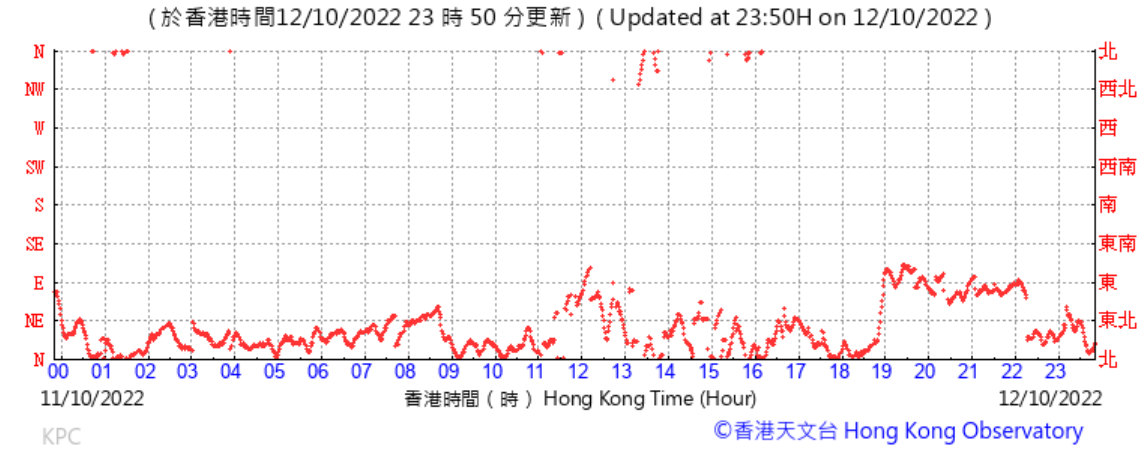
Tempearture/Humidity:



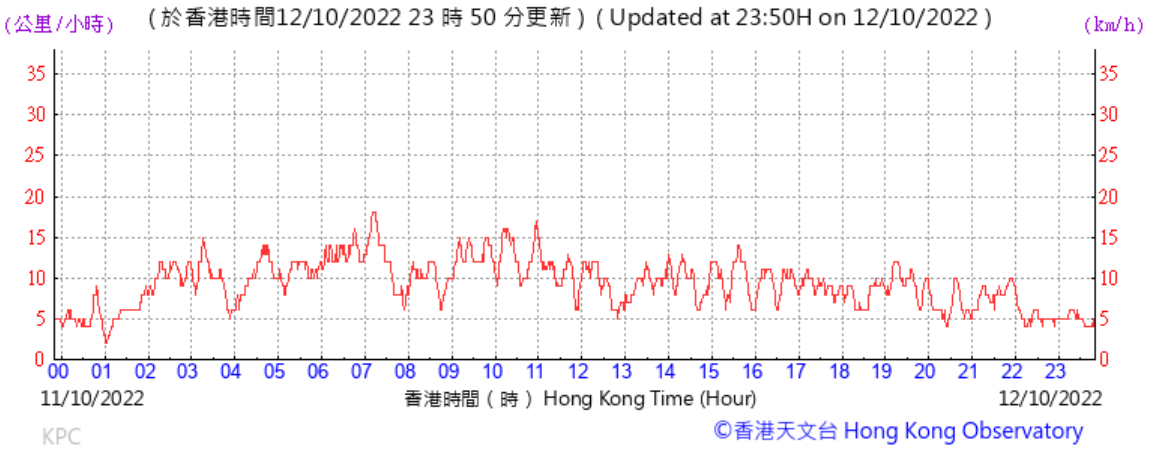
Pressure:



Wind Direction:



Wind Speed:



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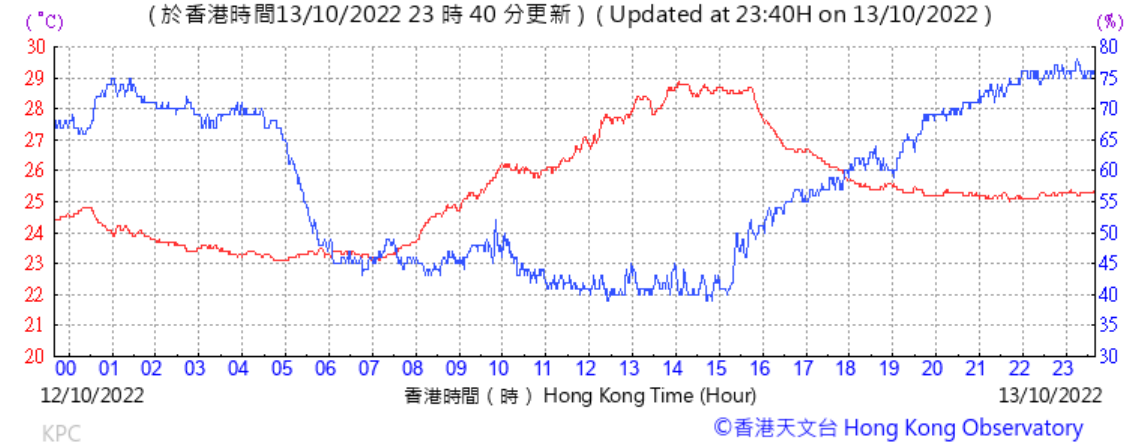

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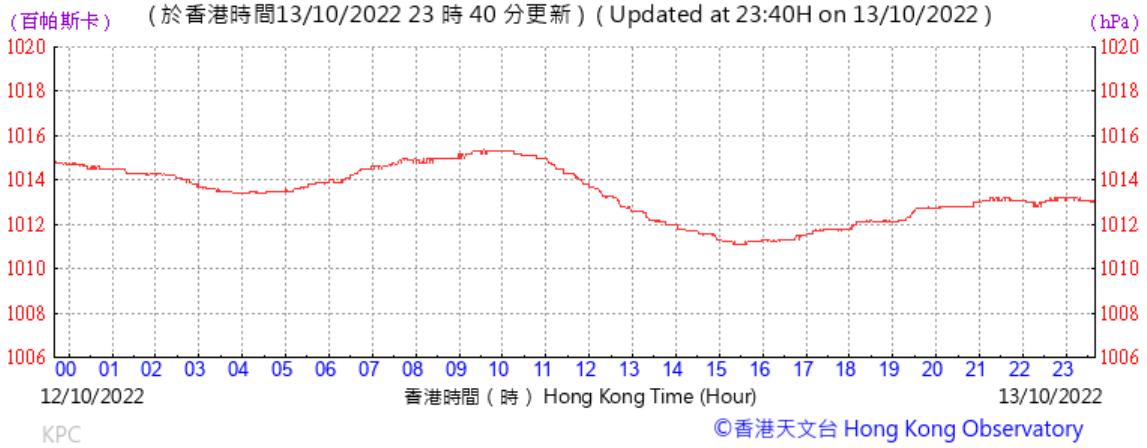

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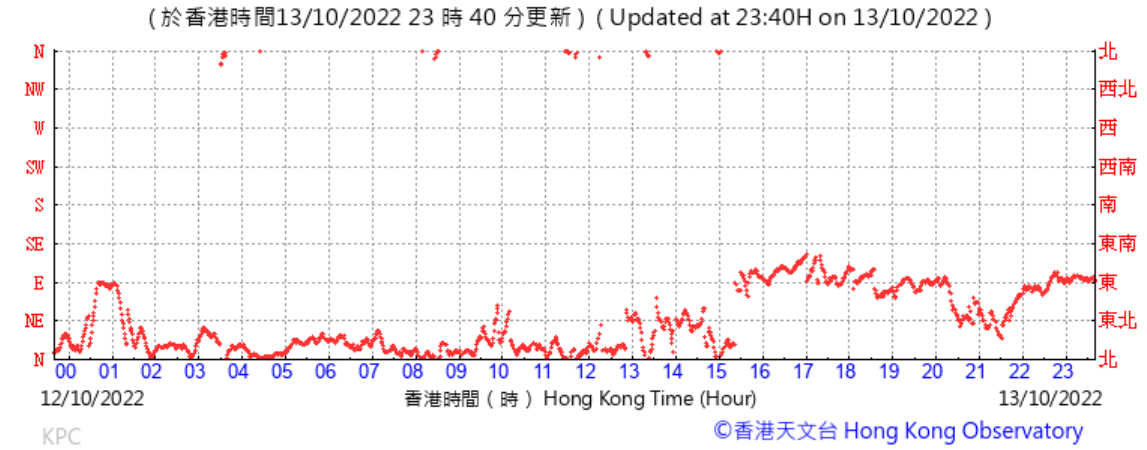
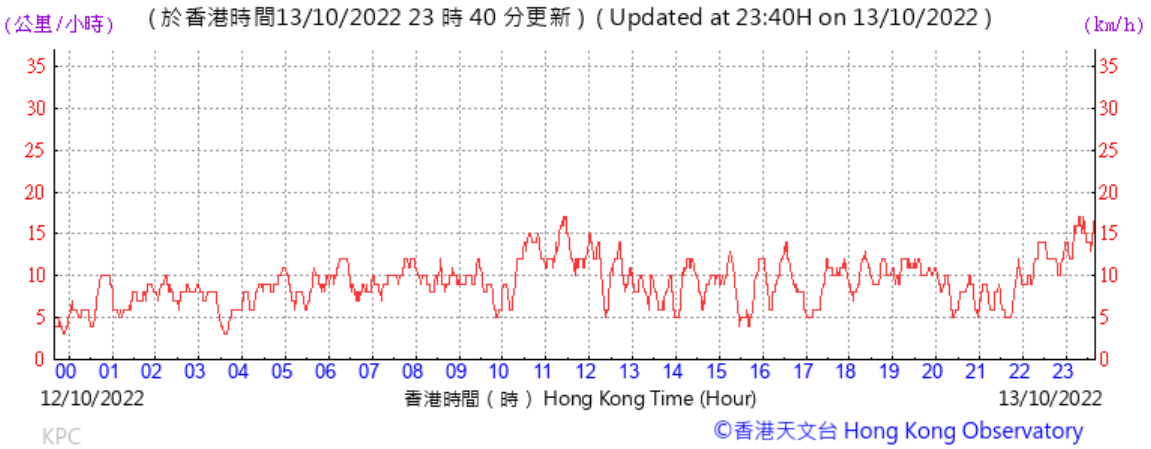
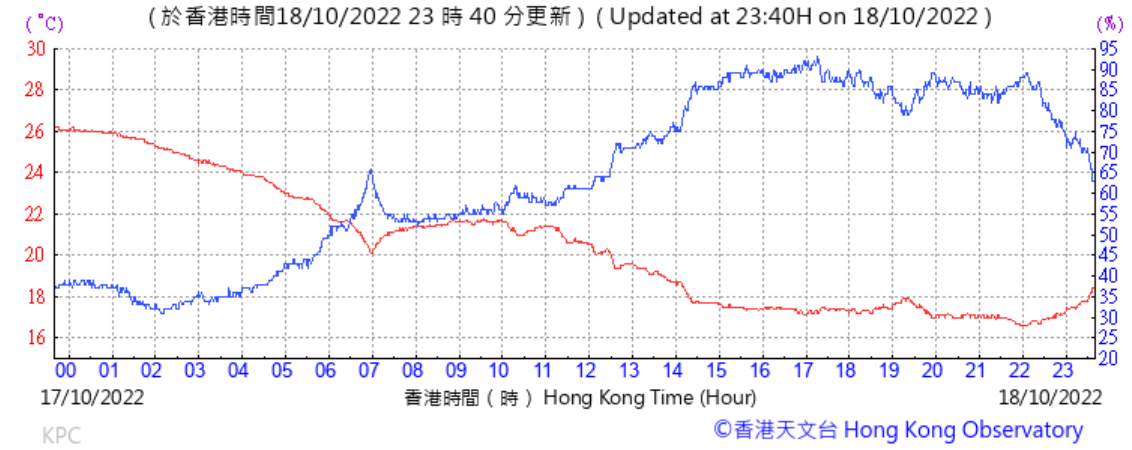


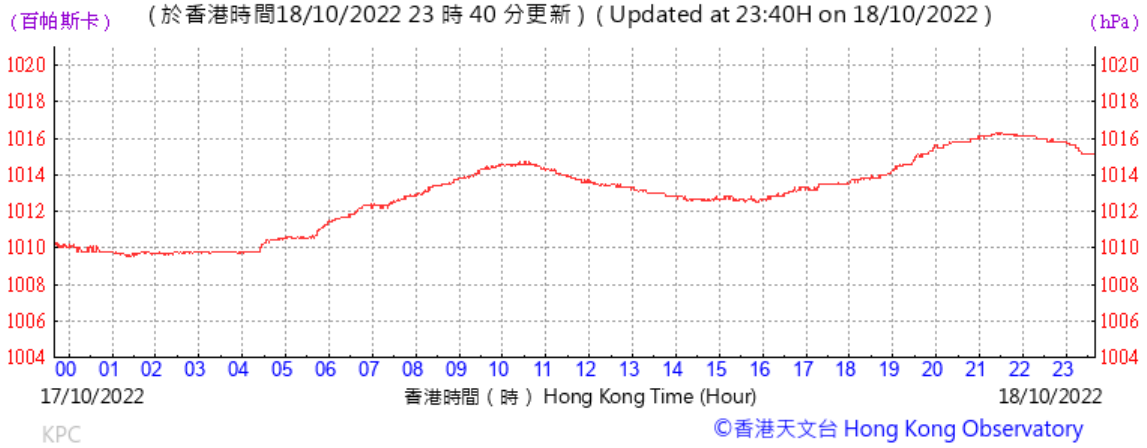
Wind Speed:



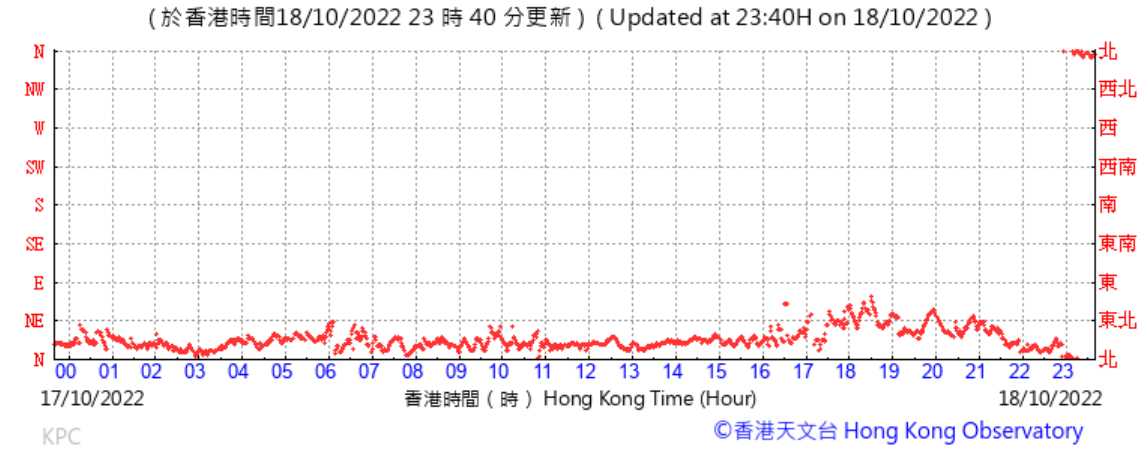
Tempearture/Humidity:



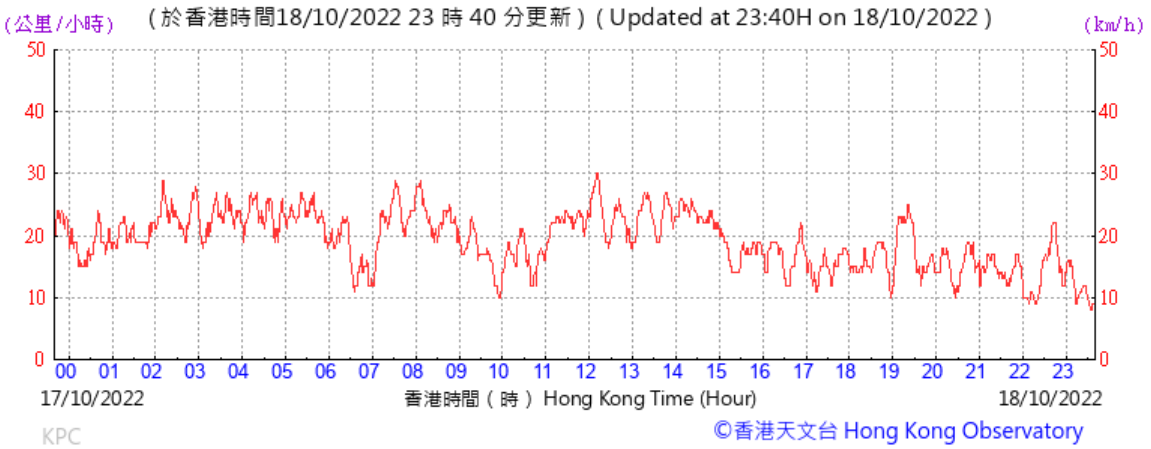
Pressure:



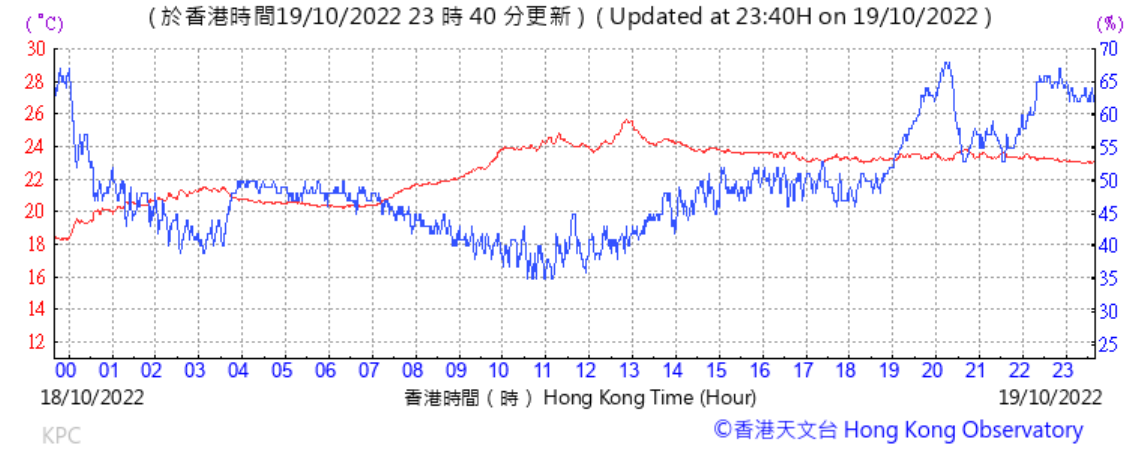
Wind Direction:



Wind Speed:



Tempearture/Humidity:



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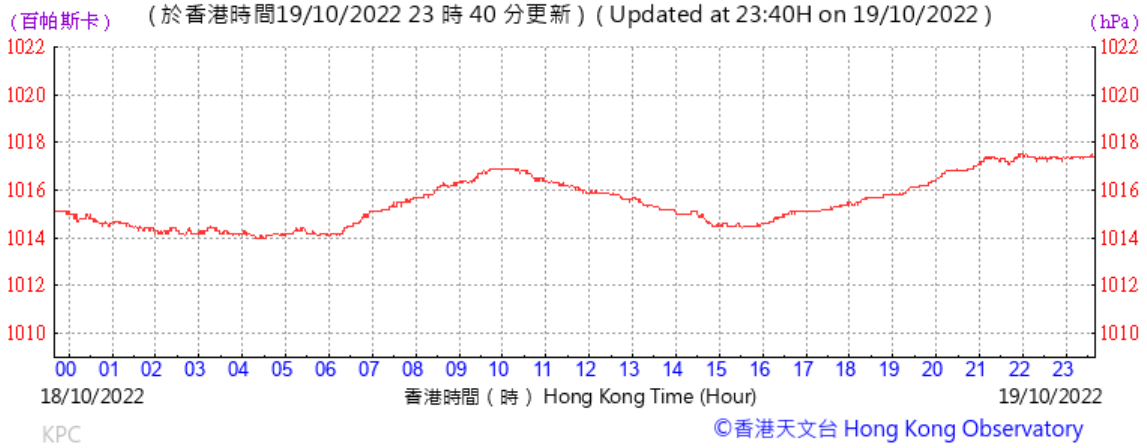

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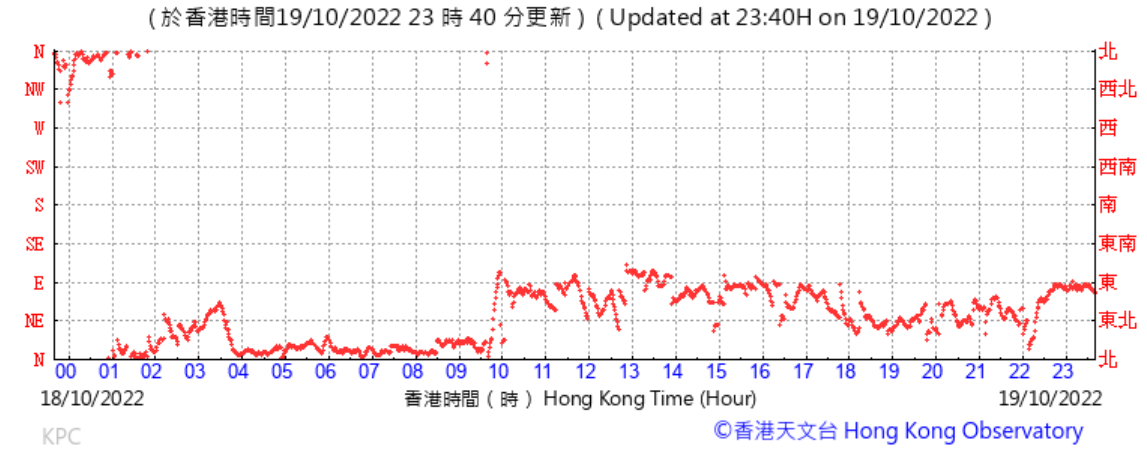

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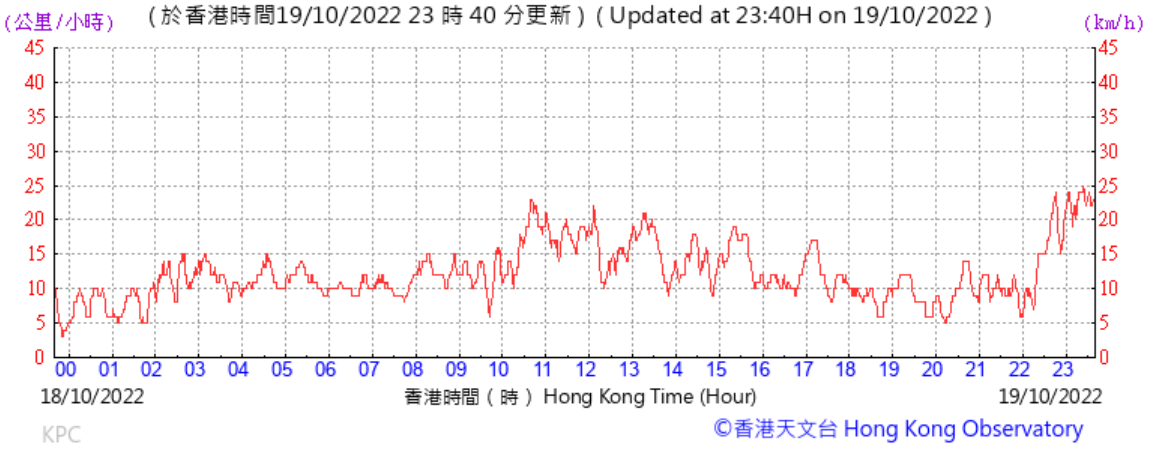
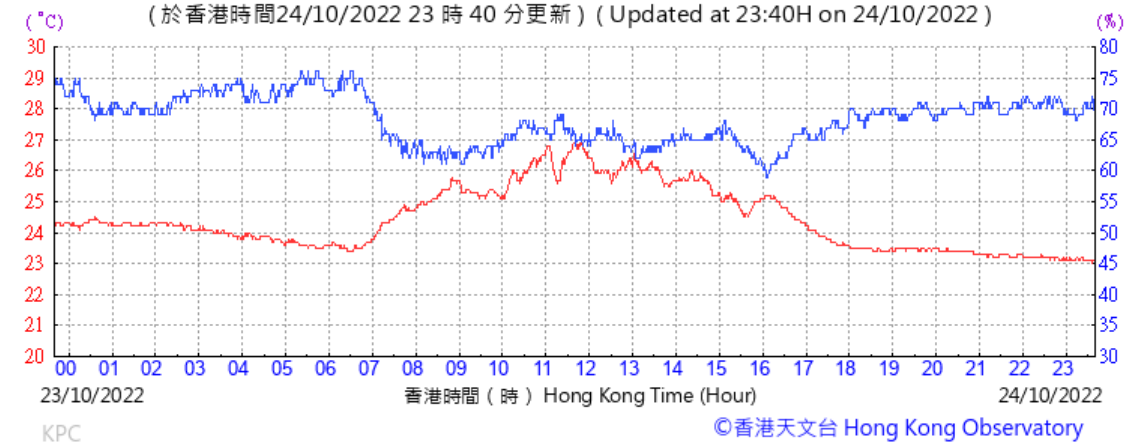


Tempearture/Humidity:



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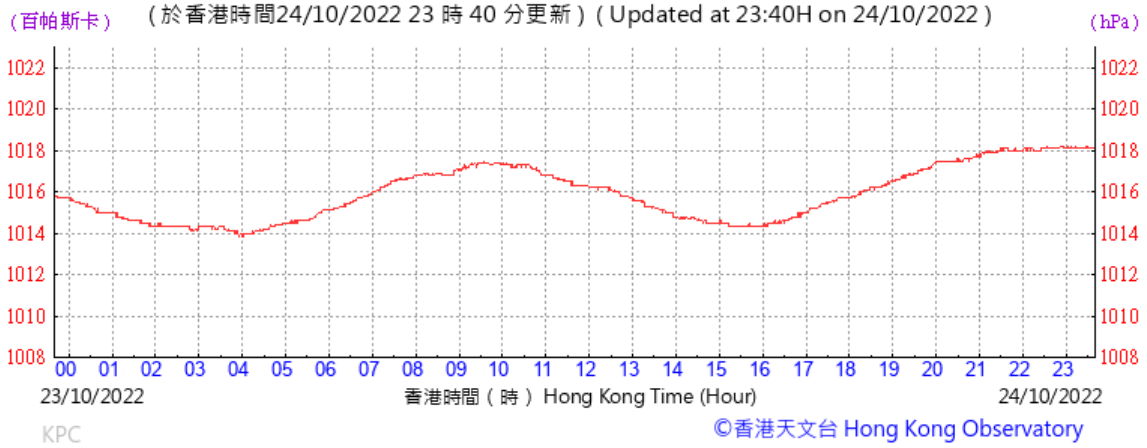

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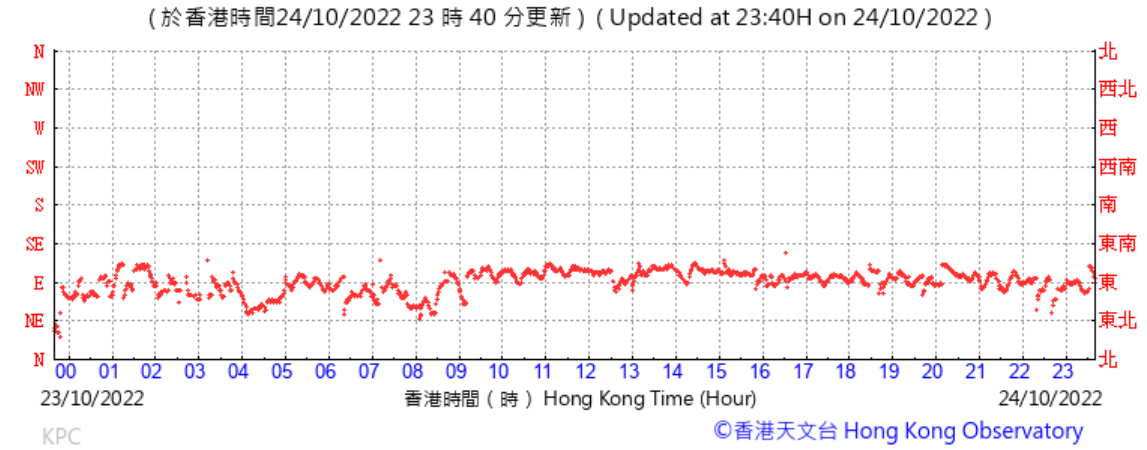

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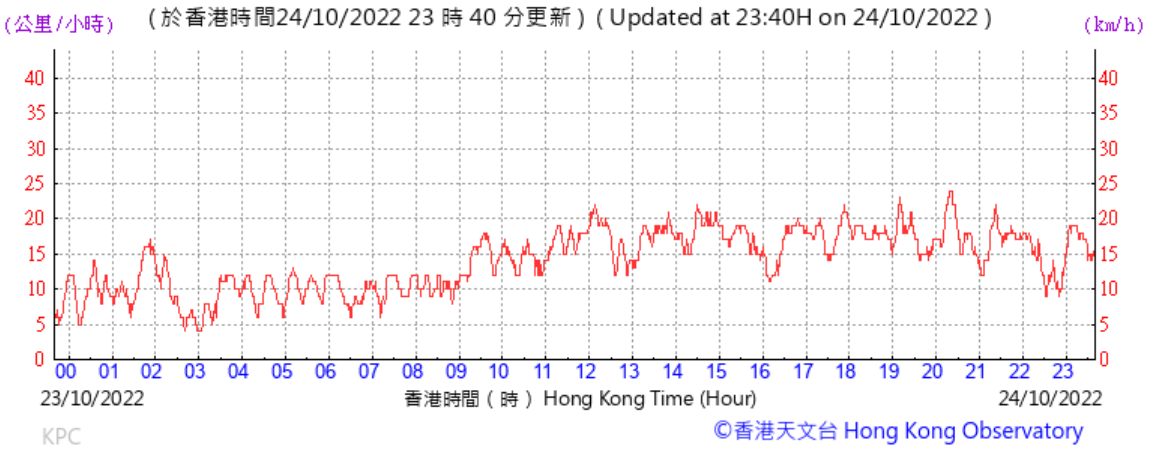

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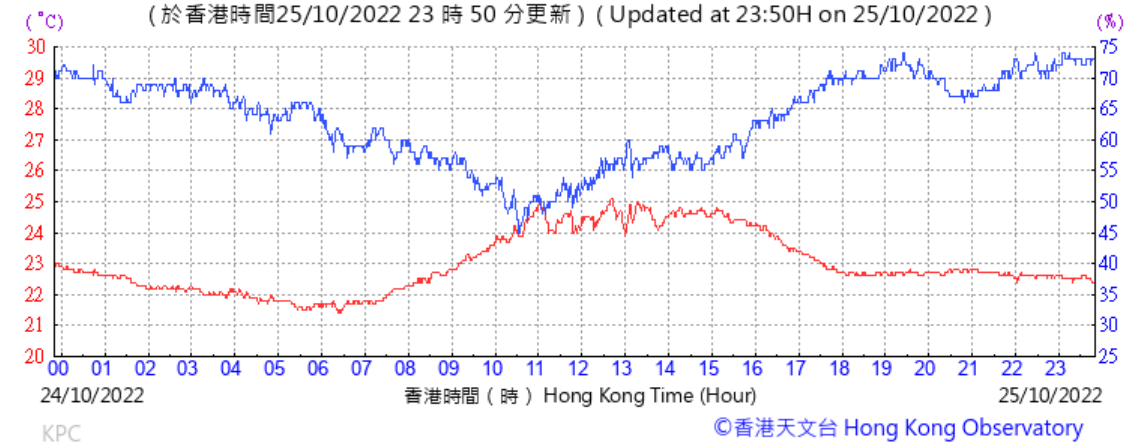

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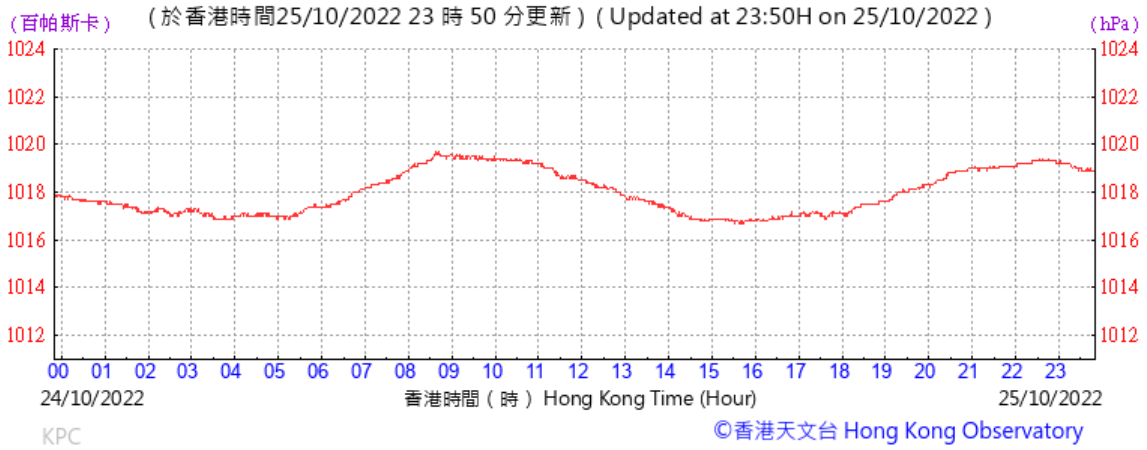
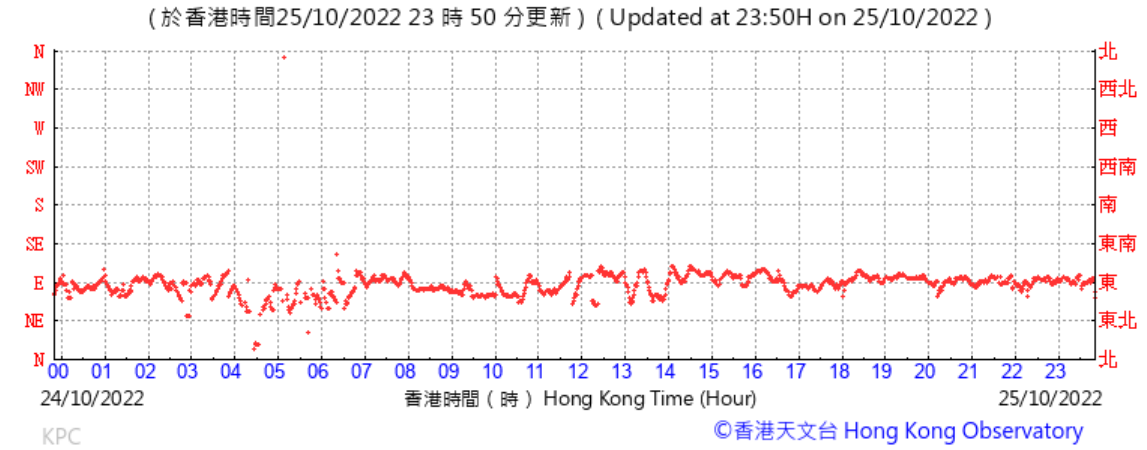
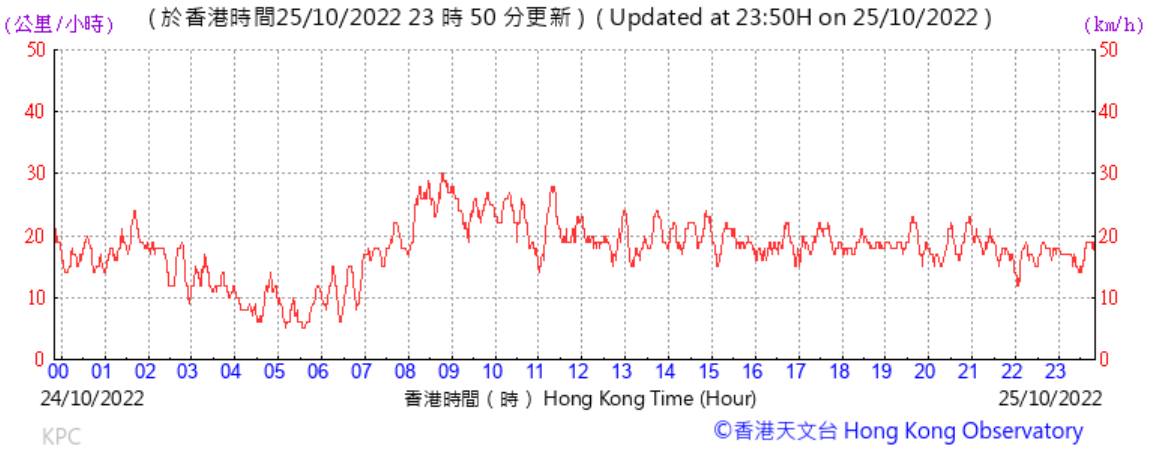


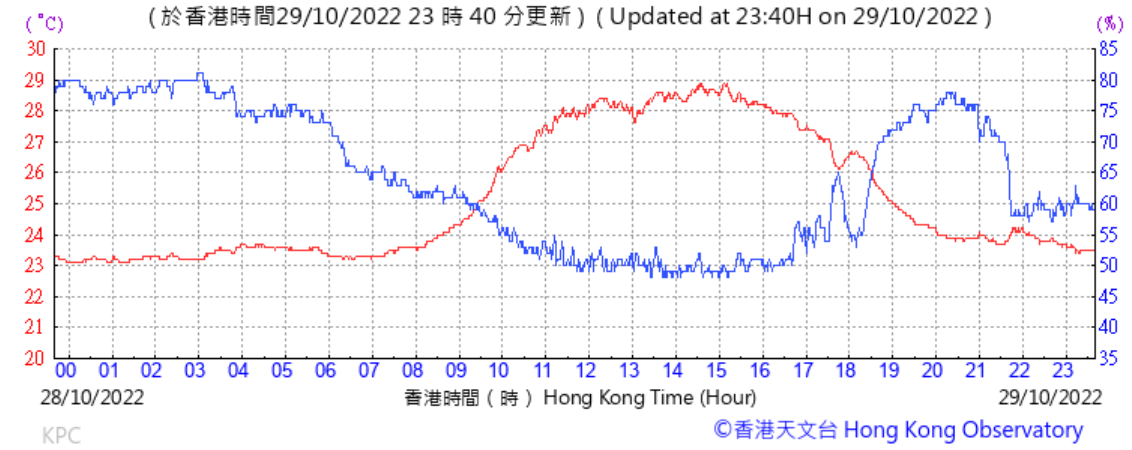
Wind Direction:



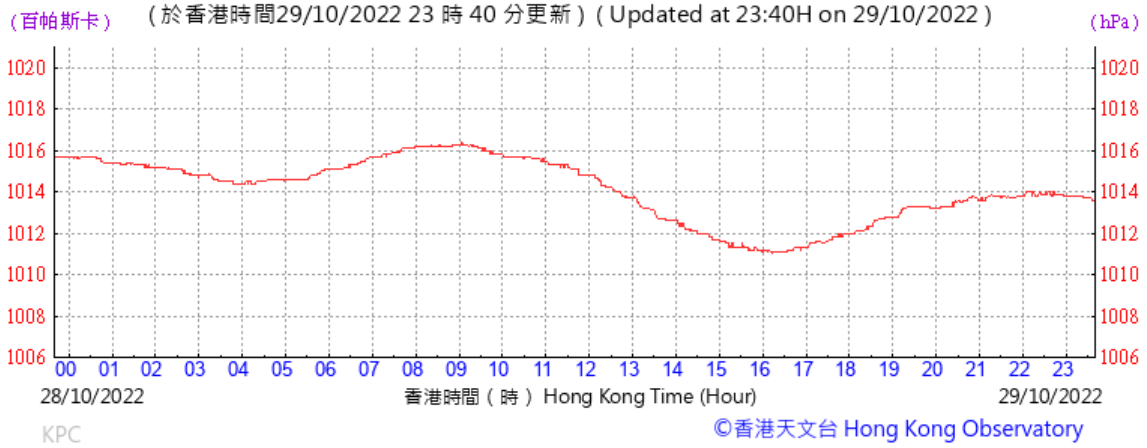
Wind Speed:



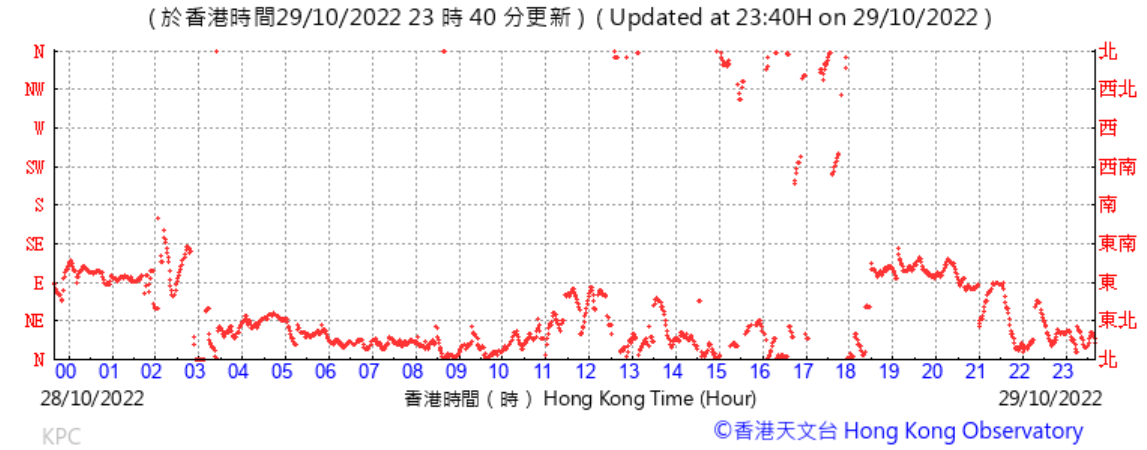
Tempearture/Humidity:



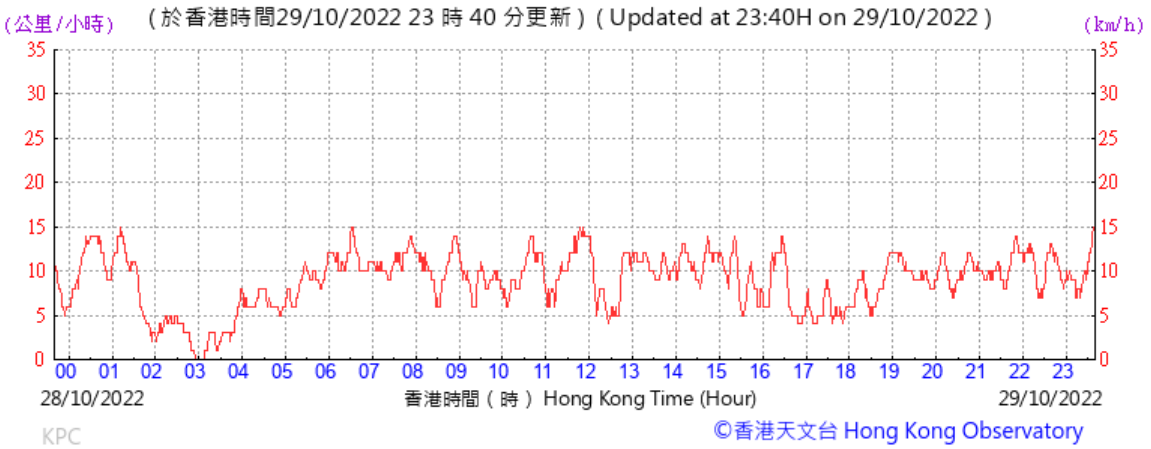
Pressure:



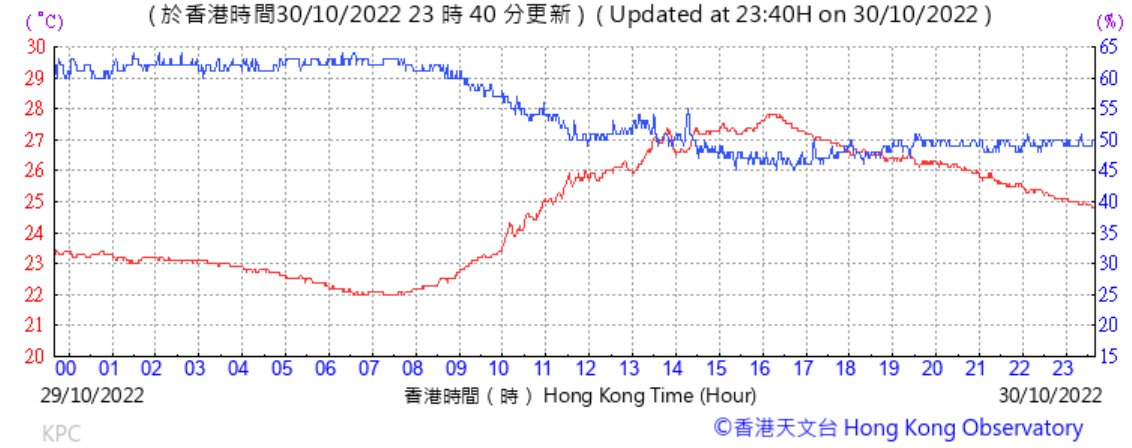
Wind Direction:



Wind Speed:



Tempearture/Humidity:



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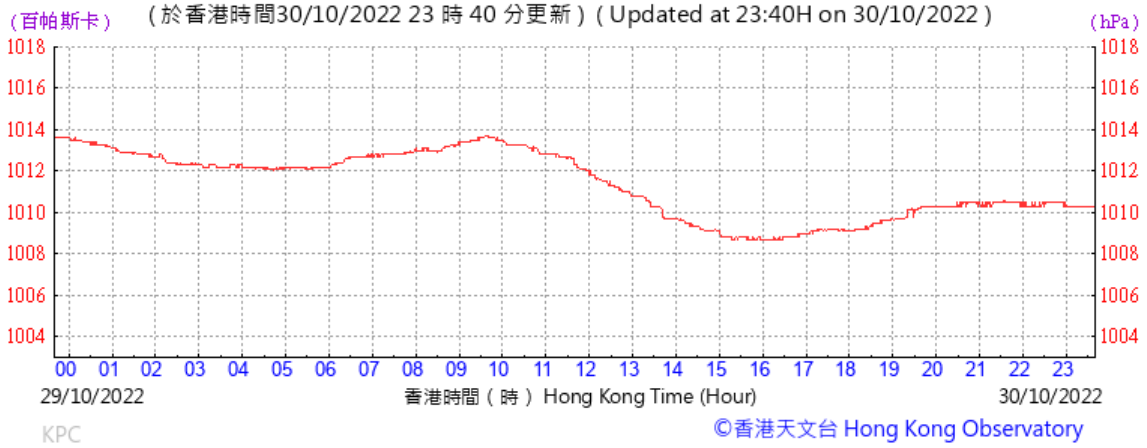
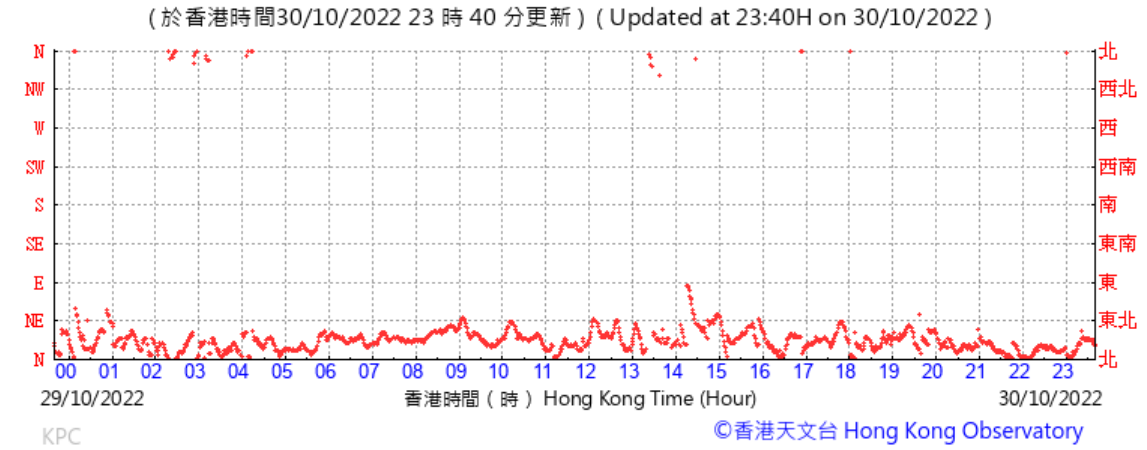
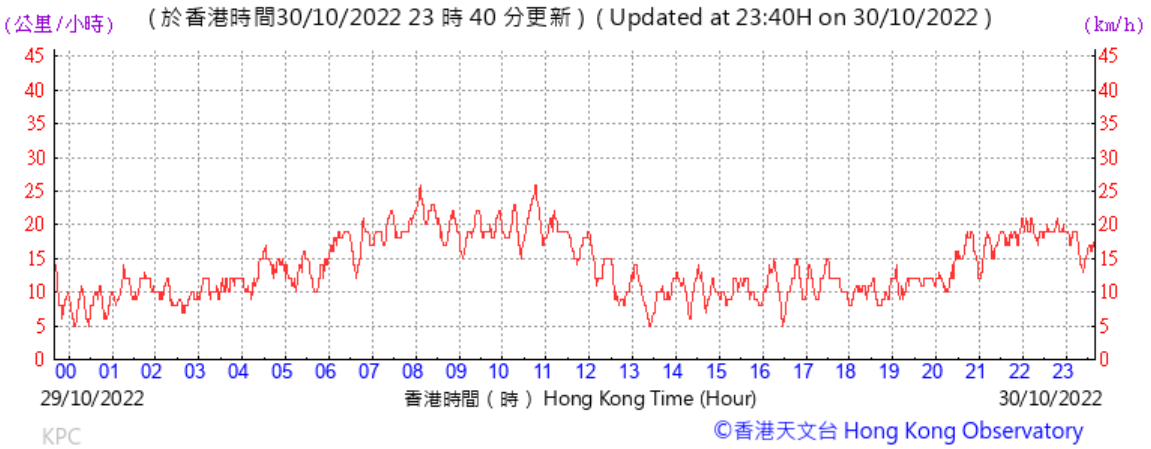


Wind Direction:



Wind Speed:



I. Waste Flow table

Zone 2A

Table I-1: Monthly Waste Flow Table for Zone 2A

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Materials Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sroting Facility	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2020													
Oct	2623.48	0.00	0.00	0.00	2623.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.94
Nov	8838.69	0.00	685.23	1198.56	6954.90	0.00	1194.93	0.00	0.00	0.00	0.00	0.00	17.49
Dec	8890.70	0.00	510.59	1675.21	6704.90	0.00	51.51	0.00	0.00	0.00	0.00	0.00	11.75
Sub-total (2020)	20352.87	0.00	1195.82	2873.77	16283.28	0.00	1246.44	0.00	0.00	0.00	0.00	0.00	51.18
2021													
Jan	6849.66	0.00	52.90	0.00	6796.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.94
Feb	4591.95	0.00	0.00	0.00	4591.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.11
Mar	7318.44	0.00	0.00	339.94	6978.50	0.00	0.00	75.57	0.00	0.00	0.00	0.20	15.79
Apr	7208.22	0.00	0.00	1109.51	6098.71	0.00	0.00	0.00	0.00	0.00	0.00	0.40	19.29
May	7976.23	0.00	0.00	1853.51	6122.72	0.00	0.00	125.49	0.00	0.00	0.00	0.20	18.43
Jun	7741.45	0.00	0.00	1989.41	5752.04	0.00	0.00	4.53	0.00	0.00	0.00	0.00	18.65
Jul	8067.17	0.00	0.00	1289.08	6778.09	0.00	0.00	4.11	0.00	0.00	0.00	0.20	147.95
Aug	6530.27	0.00	0.00	1082.63	5447.64	0.00	0.00	10.70	0.00	0.00	0.00	0.40	18.85
Sep	3645.12	0.00	0.00	192.81	3452.31	0.00	0.00	0.00	0.00	0.00	0.00	0.40	16.81
Oct	2158.48	0.00	0.00	0.32	2158.16	0.00	0.00	0.00	0.00	0.00	0.00	0.20	13.30
Nov	3682.03	0.00	0.00	0.00	3682.03	0.00	0.00	0.00	0.00	0.00	0.00	0.20	20.87
Dec	2434.31	0.00	24.00	0.00	2410.31	0.00	0.00	0.00	0.00	0.00	0.00	0.40	12.35
Sub-total (2021)	68203.33	0.00	76.90	7857.21	60269.22	0.00	0.00	220.40	0.00	0.00	0.00	2.60	338.34
2022													
Jan	1868.21	0.00	120.00	0.00	1748.21	0.00	0.00	0.00	0.00	0.00	0.00	0.40	16.33
Feb	1594.19	0.00	0.00	395.98	1198.21	0.00	0.00	13.41	0.00	0.00	0.00	0.00	6.41
Mar	2369.83	0.00	0.00	487.20	1882.63	0.00	0.00	4.47	0.00	0.00	0.00	0.00	10.92
Apr	874.03	0.00	0.00	194.65	679.38	0.00	0.00	2.00	0.00	0.00	0.00	0.40	7.69
May	421.38	0.00	0.00	0.00	421.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.04
Jun	403.76	0.00	0.00	0.00	403.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.76
Jul	25.99	0.00	0.00	0.00	25.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.84

Table I-1: Monthly Waste Flow Table for Zone 2A

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Materials Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sroting Facility	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
Aug	113.62	0.00	0.00	0.00	113.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.20
Sep	142.39	0.00	37.09	0.00	99.55	5.75	0.00	0.00	0.00	0.00	0.00	0.00	13.82
Oct	67.20	0.00	67.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.68
Nov													
Dec													
Sub-total (2022)	7880.60	0.00	224.29	1077.83	6572.73	5.75	0.00	19.88	0.00	0.00	0.00	0.80	98.69
Total	**96436.80**	**0.00**	**1497.01**	**11808.81**	**83125.23**	**5.75**	**1246.44**	**240.28**	**0.00**	**0.00**	**0.00**	**3.40**	**488.21**

Note:

- 0 tonne and 0 tonne of inert C&D material were disposed of as public fill to Tseung Kwan O Area 137 Public Fill, and Tuen Mun Area 38 respectively in the reporting month.

Zone 2B & 2C

Table I-1: Monthly Waste Flow Table for Zone 2B & 2C

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Materials Generated Monthly					
	Total Quantity Generated	Hard Rocks and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Disposed to Sroting Facility	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)	(in tonnes)
2021													
Sep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct	22.58	22.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.19
Nov	9265.04	10.45	125.93	0.00	9128.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.12
Dec	13462.30	62.94	1041.17	0.00	12358.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.62
Sub-total (2021)	22749.92	95.97	1167.10	0.00	21486.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.93
2022													
Jan	17427.64	0.00	2091.32	100.04	15236.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.60
Feb	18230.98	0.00	991.53	1719.99	15519.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.90
Mar	24777.12	0.00	2176.32	11721.21	10879.59	0.00	0.00	0.00	0.00	0.00	0.00	1.40	16.15
Apr	32749.58	0.00	2409.00	22393.87	7946.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.79
May	31115.05	0.00	3141.32	15121.57	12852.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.31
Jun	30747.96	0.00	3120.62	14645.87	12981.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.84
Jul	34017.48	0.00	3444.43	10214.91	20358.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.43
Aug	38065.92	0.00	3272.46	3610.61	31182.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.99
Sep	38896.62	0.00	3664.45	2790.24	32441.93	0.00	0.00	15.80	0.00	0.00	0.00	0.00	29.88
Oct	41174.38	0.00	4340.02	2447.22	34387.14	0.00	0.00	86.63	0.00	0.00	0.00	0.00	28.50
Nov													
Sub-total (2022)	307202.72	0.00	28651.46	84765.53	193785.73	0.00	0.00	102.43	0.00	0.00	0.00	1.40	182.39
Total	**329952.63**	**95.97**	**29818.55**	**84765.53**	**215272.58**	**0.00**	**0.00**	**102.43**	**0.00**	**0.00**	**0.00**	**1.40**	**226.32**

Note:

-20.40 tonnes, 9195.83 tonnes and 25170.91 tonnes of inert C&D material were disposed of as public fill to Chai Wan Public Fill Barging Point, Tseung Kwan O Area 137 Public Fill and Tuen Mun Area 38 respectively in the reporting month.

-For inert C&D material reused in other projects, the projects refer to (1)Sai Sha(Site B) and (2)Poly U.

J. Environmental Mitigation Measures – Implementation Status

Table J-1: Environmental Mitigation Measures Implementation Status (October 2022)

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
Air Quality Impact (Construction)			
2.1	**General Dust Control Measures** Frequent water spraying for active construction areas (12 times a day or once every one hour), including Heavy construction activities such as construction of buildings or roads, drilling, ground excavation, cut and fill operations (i.e., earth moving)	✓	Obs
2.1	**Best Practice For Dust Control** The relevant best practices for dust control as stipulated in the Air Pollution Control (construction Dust) Regulation should be adopted to further reduce the construction dust impacts from the Project. These best practices include:		
	Good Site Management • Good site management is important to help reducing potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning.	✓	Obs
	Disturbed Parts of the Roads • Each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or	✓	✓
	• Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.	✓	✓
	Exposed Earth • Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction	N/A No exposed earth in this project.	N/A No exposed earth in this project.

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	activity on the site or part of the site where the exposed earth lies.		
	Loading, Unloading or Transfer of Dusty Materials	✓	✓
	• All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.		
	Debris Handling	✓	✓
	• Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides.		
	• Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.	N/A No debris chute on-site	N/A No debris chute on-site
	Transport of Dusty Materials	✓	✓
	• Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards.		
	Wheel washing	✓	✓
	• Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.		
	Use of vehicles	✓	✓
	• The speed of the trucks within the site should be controlled to about 10km/hour in order to reduce adverse dust impacts and secure the safe movement around the site.		
	• Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.	✓	✓
	• Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	✓	✓
	Site hoarding	✓	✓
	• Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit.		

EM&A Ref.	Recommendation Measures	Implementation Stage Zone 2A	 Zone 2B & 2C
2.1	**Best Practicable Means for Cement Works (Concrete Batching Plant)** The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93) should be followed and implemented to further reduce the construction dust impacts of the Project. These best practices include:		
	Exhaust from Dust Arrestment Plant	N/A	N/A
	• Wherever possible the final discharge point from particulate matter arrestment plant, where is not necessary to achieve dispersion from residual pollutants, should be at low level to minimise the effect on the local community in the case of abnormal emissions and to facilitate maintenance and inspection	No concrete batching plant in this project.	No concrete batching plant in in this project.
	Emission Limits	N/A	N/A
	• All emissions to air, other than steam or water vapour, shall be colourless and free from persistent mist or smoke	No concrete batching plant in this project.	No concrete batching plant in in this project.
	Engineering Design/Technical Requirements	N/A	N/A
	• As a general guidance, the loading, unloading, handling and storage of fuel, raw materials, products, wastes or by-products should be carried out in a manner so as to prevent the release of visible dust and/or other noxious or offensive emissions	No concrete batching plant in this project.	No concrete batching plant in in this project.
	Non-Road Mobile Machinery (NRMM): All NRMMs operating on-site which are subject to emission control of Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation are approved/exempted (as the case may be) and affixed with the requisite approval/exemption labels.	✓	Obs
Noise Impact (Construction)			

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
3.1	**Good Site Practice** Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during each phase of construction:		
	• only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works;	✓	✓
	• machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum	✓	✓
	• plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs;	✓	✓
	• mobile plant should be sited as far away from NSRs as possible; and	✓	✓
	• material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.	✓	✓
3.1	**Adoption of Quieter PME** The recommended quieter PME adopted in the assessment were taken from the EPD's QPME Inventory and "*Sound Power Levels of Other Commonly Used PME*" are presented in **Table 4.26** in the EIA report. It should be noted that the silenced PME selected for assessment can be found in Hong Kong.	✓	✓
3.1	**Use of Movable Noise Barriers** Movable noise barriers can be very effective in screening noise from particular items of plant when constructing the Project. Noise barriers located along the active works area close to the noise generating component of a PME could produce at least 10 dB(A) screening for stationary	Obs	Obs

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	plant and 5 dB(A) for mobile plant provided the direct line of sight between the PME and the NSRs is blocked.		
3.1	**Use of Noise Enclosure/ Acoustic Shed** The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and concrete pump. With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 15 dB(A) can be achieved according to the EIAO Guidance Note No. 9/2010.	✓	Obs,Rem
3.1	**Use of Noise Insulating Fabric** Noise insulating fabric can also be adopted for certain PME (e.g. drill rig, pilling machine etc). The fabric should be lapped such that there are no openings or gaps on the joints. According to the approved Tsim Sha Tsui Station Northern Subway EIA report (AEIAR-127/2008), a noise reduction of 10 dB(A) can be achieved for the PME lapped with the noise insulating fabric.	✓	✓
3.1	**Scheduling of Construction Works outside School Examination Periods** During construction phase, the contractor should liaise with the educational institutions (including NSRs LCS and CRGPS) to obtain the examination schedule and avoid the noisy construction activities during school examination periods.	✓	✓
Water Quality Impact (Construction)			
4.1	**Construction site runoff and drainage** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended to protect water quality and sensitive uses of the coastal area, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water		

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	quality impacts:		
	• At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the WKCDA's Contractor prior to the commencement of construction;	✓	✓
	• Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the WKCDA's Contractor prior to the commencement of construction.	✓	✓
	• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	✓	Obs
	• Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities.	✓	✓
	• All vehicles and plant should be cleaned before leaving a construction site to ensure no	✓	✓

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.		
	• Open stockpiles of construction materials or construction wastes onsite should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	✓	Obs
	• Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers.	✓	Obs
	• Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Obs	✓
	• Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	N/A No bentonite slurries are used in this project.	N/A No bentonite slurries are used in this project.

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
4.1	**Barging facilities and activities** Recommendations for good site practices during operation of the proposed barging point include:		
	• All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;	N/A No barging facilities in this project at this stage.	N/A No barging facilities in this project at this stage.
	• Loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation;	N/A No barging facilities in this project at this stage.	N/A No barging facilities in this project at this stage.
	• All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; and	N/A No barging facilities in this project at this stage.	N/A No barging facilities in this project at this stage.
	• Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site.	N/A No barging facilities in this project at this stage.	N/A No barging facilities in this project at this stage.
4.1	**Sewage effluent from construction workforce** Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	✓	✓
4.1	**General construction activities**		
	• Construction solid waste, debris and refuse generated on-site should be collected,	✓	✓

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	handled and disposed of properly to avoid entering any nearby storm water drain. Stockpiles of cement and other construction materials should be kept covered when not being used.		
	• Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.	✓	Obs
Waste Management Implications (Construction)			
6.1	**Good Site Practices**		
	Recommendations for good site practices during the construction activities include:		
	• Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site	Obs	Obs
	• Training of site personnel in proper waste management and chemical handling procedures	✓	✓
	• Provision of sufficient waste disposal points and regular collection of waste	✓	✓
	• Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers	✓	✓
	• Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads	✓	✓
	• Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the inert or non-inert C&D materials is not anticipated	✓	✓

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
6.1	**Waste Reduction Measures**		
	Recommendations to achieve waste reduction include:		
	• Sort inert C&D material to recover any recyclable portions such as metals	✓	✓
	• Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of materials and their proper disposal	✓	✓
	• Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force	✓	✓
	• Proper site practices to minimise the potential for damage or contamination of inert C&D materials	✓	✓
	• Plan the use of construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of wastes	✓	✓
6.1	**Inert and Non-inert C&D Materials**		
	In order to minimise impacts resulting from collection and transportation of inert C&D material for off-site disposal, the excavated materials should be reused on-site as fill material as far as practicable. In addition, inert C&D material generated from excavation works could be reused as fill materials in local projects that require public fill for reclamation.		
	• The surplus inert C&D material will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.	✓	✓
	• Liaison with the CEDD Public Fill Committee (PFC) on the allocation of space for disposal of the inert C&D materials at PFRF is underway. No construction work is allowed to proceed until all issues on management of inert C&D materials have been resolved and all relevant arrangements have been endorsed by the relevant authorities including PFC and	✓	✓

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	EPD.		
	• The C&D materials generated from general site clearance should be sorted on site to segregate any inert materials for reuse or disposal of at PFRFs whereas the non-inert materials will be disposed of at the designated landfill site.	✓	✓
	• In order to monitor the disposal of inert and non-inert C&D materials at respectively PFRFs and the designated landfill site, and to control fly-tipping, it is recommended that the Contractor should follow the Technical Circular (Works) No. 6/2010 for Trip Ticket System for Disposal of Construction & Demolition Materials issued by Development Bureau. In addition, it is also recommended that the Contractor should prepare and implement a Waste Management Plan detailing their various waste arising and waste management practices in accordance with the relevant requirements of the Technical Circular (Works) No. 19/2005 Environmental Management on Construction Site.	✓	✓
6.1	**Chemical Waste**		
	• If chemical wastes are produced at the construction site, the Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes". Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General)	✓	✓

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	Regulation.		
	• Potential environmental impacts arising from the handling activities (including storage, collection, transportation and disposal of chemical waste) are expected to be minimal with the implementation of appropriate mitigation measures as recommended.	✓	✓
6.1	**General Refuse** General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from inert C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	✓	Obs
Land Contamination (Construction)			
7.1	The potential for land contamination issues at the TST Fire Station due to its future relocation will be confirmed by site investigation after land acquisition. Where necessary, mitigation measures for minimising potential exposure to contaminated materials (if any) or remediation measures will be identified. If contaminated land is identified (e.g., during decommissioning of fuel oil storage tanks) after the commencement of works, mitigation measures are proposed in order to minimise the potentially adverse effects on the health and safety of construction workers and impacts arising from the disposal of potentially contaminated materials. The following measures are proposed for excavation and transportation of contaminated material:		
	• To minimize the chance for construction workers to come into contact with any contaminated materials, bulk earth-moving excavation equipment should be employed;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	• Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when interacting directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Stockpiling of contaminated excavated materials on site should be avoided as far as possible;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• The use of contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Vehicles containing any contaminated excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Truck bodies and tailgates should be sealed to stop any discharge;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly tipping;	N/A TST Fire Station is out of this project boundary, no mitigation	N/A TST Fire Station is out of this project boundary, no mitigation

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
		measure is required.	measure is required.
	• Speed control for trucks carrying contaminated materials should be exercised;	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap. 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354) and obtain all necessary permits where required; and	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
	• Maintain records of waste generation and disposal quantities and disposal arrangements.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.	N/A TST Fire Station is out of this project boundary, no mitigation measure is required.
Ecological Impact (Construction)			
	No mitigation measure is required.		
Landscape and Visual Impact (Construction)			
Table 9.1 (CM1)	Trees should be retained in situ on site as far as possible. Should tree removal be unavoidable due to construction impacts, trees will be transplanted or felled with reference to the stated criteria in the Tree Removal Applications to be submitted to relevant government departments for approval in accordance to ETWB TCW No. 29/2004 and 3/2006.	✓	✓
Table 9.1 (CM2)	Compensatory tree planting shall be incorporated to the proposed project and maximize the new tree, shrubs and other vegetation planting to compensate tree felled and vegetation	N/A Compensatory tree planting is	N/A Compensatory tree planting is

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
	removed. Also, implementation of compensatory planting should be of a ratio not less than 1:1 in terms of quality and quantity within the site.	being reviewed.	being reviewed.
Table 9.1 (CM3)	Buffer trees for screening purposes to soften the hard architectural and engineering structures and facilities.	N/A Roof garden is designed to be built, but it has not been completed yet.	N/A Roof garden is designed to be built, but it has not been completed yet.
Table 9.1 (CM4)	Softscape treatments such as vertical green wall panel /planting of climbing and/or weeping plants, etc, to maximize the green coverage and soften the hard architectural and engineering structures and facilities.	N/A Climbing or weeping plants are designed to be planted, but proposal is being reviewed for the planting location.	N/A Climbing or weeping plants are designed to be planted, but proposal is being reviewed for the planting location.
Table 9.1 (CM5)	Roof greening by means of intensive and extensive green roof to maximize the green coverage and improve aesthetic appeal and visual quality of the building/structure.	N/A Roof garden is designed to be built, but it has not been completed yet.	N/A Roof garden is designed to be built, but it has not been completed yet.
Table 9.1 (CM6)	Sensitive streetscape design should be incorporated along all new roads and streets.	N/A Greening along the seafront is proposed, and under review.	N/A Greening along the seafront is proposed, and under review.
Table 9.1 (CM7)	Structure, ornamental planting shall be provided along amenity strips to enhance the landscape quality.	N/A Gardens are designed to be built, and under review.	N/A Gardens are designed to be built, and under review.
Table 9.1	Landscape design shall be incorporated to architectural and engineering structures in order to	N/A	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage	
		Zone 2A	Zone 2B & 2C
(CM8)	provide aesthetically pleasing designs.	Roof garden is designed to be built, and under review.	Roof garden is designed to be built, and under review.
Table 9.1 (CM9)	Minimize the structure of marine facilities to be built on the seabed and foreshore in order to minimize the affected extent to the waterbody	N/A No marine facilities for this project.	N/A No marine facilities for this project.
Table 9.2 (MCP1)	Use of decorative screen hoarding/boards	✓	✓
Table 9.2 (MCP2)	Early introduction of landscape treatments	N/A No landscape treatments during this stage.	N/A No landscape treatments during this stage.
Table 9.2 (MCP3)	Adoption of light colour for the temporary ventilation shafts for the basement during the transition period.	N/A No ventilation shafts for this project.	N/A No ventilation shafts for this project.
Table 9.2 (MCP4)	Control of night time lighting	✓	✓
Table 9.2 (MCP5)	Use of greenery such as grass cover for the temporary open areas will help achieve the visual balance and soften the hard edges of the structures.	N/A No temporary open areas for this project.	N/A No temporary open areas for this project.

N/A - Not Applicable
✓ - Implemented
Obs - Observed
Rem - Reminder

K. Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative statistics for complaints, notifications of summons and successful prosecutions for the Project account for period starting from the date of commencement of construction works (i.e. 3 October 2020 for Zone 2A Foundation, Excavation and Lateral Support Works; 30 September 2021 for Zone 2B & 2C Piling Works) to the end of the reporting month and are summarised in the Table K-1 and Table K-2 below respectively.

Table K-1: Statistics for complaints, notifications of summons and successful prosecutions for Zone 2A Foundation, Excavation and Lateral Support Works

Reporting Period	Cumulative Statistics		
	Complaints	**Notifications of summons**	**Successful prosecutions**
This reporting month (October 2022)	2	0	0
From 03 October 2020 to end of the reporting month	41	0	0

Table K-2: Statistics for complaints, notifications of summons and successful prosecutions for Zone 2B & 2C Piling Works

Reporting Period	Cumulative Statistics		
	Complaints	**Notifications of summons**	**Successful prosecutions**
This reporting month (October 2022)	2	0	0
From 30 September 2021 to end of the reporting month	26	0	0

END OF THE REPORT