



Development at West Kowloon Cultural District

Monthly Environmental Monitoring and Audit
(EM&A) Report for August 2017

September 2017

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14 Sep 2017

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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 Foundation Works (Contract No.: CC/2015/3A/014) 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 and Lyric Theatre Complex commenced on 31 October 2015 and 1 March 2016 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 3 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 both the main works of M+ Museum and foundation works of Lyric Theatre Complex conducted from 1 August to 31 August 2017.

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 3, 10, 17, 24 and 31 August 2017 for M+ Museum and 2, 9, 16, 25 and 30 August 2017 for Lyric Theatre Complex 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.

EPD site inspection with Contractor was conducted on 18 August 2017 at M+ Museum. No adverse comment was recorded.

EPD site inspection with Contractor was conducted on 25 August 2017 at Lyric Theatre Complex. No adverse comment was received.

Record of Complaints

No environmental complaints were recorded in the reporting month.

Record of Notification of Summons and Successful Prosecutions

No notification of summons and successful prosecution were recorded in the reporting month.

Future Key Issues

The major site works at M+ Museum scheduled to be commissioned in the coming month include:

- Construction of 3/F, 2/F, 1M/F, 1/F, G/F and LG/F;
- Construction of column from LGF to GF, G/F to 1/F, 1/F to 1M/F, 1M/F to 2/F, 2/F to 3/F;
- Encasement of Mega Trusses;
- ABWF work at DCS;
- E&M work at B2/F and SPS;
- Construction of B1 slab and beam and Roof Beam and slab at ICP
- Sheet Pile Installation for seawater outfall pipe between Ch0+66 to Ch0+108
- Storm Drainage at Portion M45
- Sewerage work at Portion L08
- West core wall up to 4/F

The major site works at Lyric Theatre Complex scheduled to be commissioned in the coming month include:

- Bulk Excavation
- Preparation works for ELS
- Steel Struct ELS Installation
- Pre-grouting adjacent to Seawall

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 Foundation Works (Contract No.: CC/2015/3A/014) 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 and Lyric Theatre Complex commenced on 31 October 2015 and 1 March 2016 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 3 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 both the main works of M+ Museum and foundation works of Lyric Theatre Complex conducted from 1 August to 31 August 2017. 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 Environmental Status in the Reporting Period

During the reporting period, construction works at M+ Museum undertaken include:

- Construction of 3/F, 2/F, 1M/F, 1/F, G/F, LG/F, B1 slab;

- Construction of column from B1 to LGF, LGF to GF, G/F to 1/F, 1/F to 1M/F, 1M/F to 2/F, 2/F to 3/F;
- Installation and encasement of Mega Trusses;
- ABWF work at DCS;
- E&M work at B2/F and SPS;
- Construction of B1 slab and beam and Roof Beam and slab at ICP
- Tam Grouting of dewatering wells
- Sheet Pile Installation for seawater outfall pipe between Ch0+66 to Ch0+108
- Storm Drainage at Portion M45
- Sewerage work at Portion L08
- West core wall up to 4/F
- East core wall up to 4/F

During the reporting period, construction works at Lyric Theatre Complex undertaken include:

- Pumping Test
- Bulk Excavation
- Preparation works for ELS
- Steel Struct ELS Installation
- Pre-grouting adjacent to Seawall

The Construction Works Programmes of M+ Museum and Lyric Theatre Complex are provided in **Appendix B**. A layout plan of the Project is provided in **Figure 1**. Please refer to **Table 4.3** on the status of the environmental licenses.

1.4 Summary of 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-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	AM2A – Austin Road West opposite to The Harbourside Tower 1	At least once every 6 days
	1-Hour TSP	AM2A – Austin Road West opposite to The Harbourside Tower 1	At least 3 times every 6 days
Noise	Leq, 30 minutes	NM1A- Podium level of 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

Given that the Project covers only a small part of the whole WKCD area (i.e. M+ Museum, Lyric Theatre Complex and respective portions of underpass road), it was proposed that the EM&A programme for the Project should only require 1 noise monitoring station and 2 air quality monitoring stations located closest to the Project area. Currently, the works under the captioned project are confined in the western part of the WKCD site. Therefore, only the monitoring stations AM1, AM2 and NM1 were set up. Other monitoring locations are too far away (i.e. AM3 to AM5 and NM2 to NM5) are not included in this EM&A programme until the construction of the corresponding area commences.

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. 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. Nevertheless, 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 at the ground floor for conducting the air monitoring. However, the electricity supply at AM2 was suspended from 31 August 2016 and was no longer available. 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. Noise monitoring at G/F of Harbourside will not be representative. 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. Therefore, 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, 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 audit 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 AM2A 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)
AM2A	Austin Road West opposite to The Harbourside Tower 1

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.: 0767 and 8919)
Calibrator	TE-5025A (Orifice I.D.: 2454)
1-hour TSP monitoring	
Portable direct reading dust meter	Sibata LD-3B (Serial No.: 276020 and 2Z6240)

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 m³/min. The range specified in the EM&A Manual was between 0.6-1.7 m³/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

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 at the proposed location in accordance with updated EM&A Manual. 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	Podium floor of 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 Equipments

Monitoring Station	Equipment Model	
	Integrating Sound Level Meter	Calibrator
NM1A	Rion NL-52 (Serial No.00131627)	Rion NC-73 (Serial No.10486660)

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 AM2A 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 ($\mu\text{g}/\text{m}^3$)			Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1st Result	2nd Result	3rd Result			
AM1	02-Aug-17	10:42	39	49	41	39-91	273.7	500
	08-Aug-17	10:50	49	52	55			
	14-Aug-17	10:40	56	51	50			
	18-Aug-17	8:02	59	64	69			
	24-Aug-17	10:40	72	82	91			
	30-Aug-17	10:38	48	62	55			
AM2A	02-Aug-17	10:54	47	58	46	44-99	274.2	500
	08-Aug-17	11:02	44	53	60			
	14-Aug-17	10:52	59	54	52			
	18-Aug-17	8:14	65	72	61			
	24-Aug-17	10:54	78	90	99			
	30-Aug-17	10:52	71	59	66			

3.2.2 24-hour TSP

Results of 24-hour TSP at the monitoring location AM1 and AM2A 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 ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM1	02-Aug-17	10:40	26	26-49	143.6	260
	08-Aug-17	10:48	33			
	14-Aug-17	10:38	49			
	18-Aug-17	08:00	46			
	24-Aug-17	10:42	40			
	30-Aug-17	10:40	36			
AM2A	02-Aug-17	10:52	41	35-49	151.1	260
	08-Aug-17	11:00	35			
	14-Aug-17	10:50	45			

Monitoring Station	Monitoring Date	Start Time	Monitoring Results ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
	18-Aug-17	08:12	42			
	24-Aug-17	10:52	49			
	30-Aug-17	10:50	45			

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	Leq (30 mins), dB(A)	Limit Level for Leq (dB(A))
02-Aug-17	16:00	16:30	69	
08-Aug-17	14:00	14:30	68	
14-Aug-17	14:00	14:30	69	75
24-Aug-17	14:00	14:30	69	
30-Aug-17	14:00	14:30	69	

Remarks:

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

No exceedance (Action/Limit Level) of construction noise was recorded in the reporting period as no noise related environmental complaint was received during the reporting period and noise levels recorded during the monitoring period were below 75 dB(A).

Construction works were extended to holidays on 6, 13 and 20 August 2017. In accordance with the EM&A Manual, additional monitoring was carried out during the restricted hours on 6, 13 and 20 August 2017. The L_{eq} (5 mins) is in the range of 67-69 dB(A). Major noise source includes traffic. Construction Noise Permits for the works carried out during restricted hours were obtained and listed in **Table 4.3**.

3.4 Landscape and Visual Impact

Landscape and visual impact inspections were conducted as part of the weekly site inspections on 3, 17 and 31 August 2017 for M+ Museum and 2, 16 and 30 August 2017 for Lyric Theatre Complex 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 are provided in **Appendix J**.

4 Environmental Site Inspection

4.1 Site Inspection

4.1.1 M+ Museum

Construction phase weekly site inspections were carried out on 3, 10, 17, 24 and 31 August 2017. The joint site inspection with IEC, ET, ER and Contractor was held on 17 August 2017. 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**.

EPD site inspection was conducted on 18 August 2017. Some general reminders were given including maintaining of the temporary drainage system in good condition on site; adequate water spraying should be maintained for the haul roads due to sunny and dry weather; and works during restricted hours shall be conducted in compliance with the condition of the valid Construction Noise Permit and Noise Control Ordinance. No adverse comment was recorded.

Table 4.1: Summary of Site Inspections and Recommendations for M+ Museum

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
30 Jun 2017	Water quality	The contractor was reminded to provide pits and 4" pumps near the seafront.	<p>On 6 Jul, the contractor has still not provided 4" pumps and pits near seafront. The contractor was reminded to rectify it as soon as possible.</p> <p>On 13 Jul, insufficient pits were observed near the seafront and 4" pumps were still not yet provided. The contractor was reminded to provide more pits and 4" pumps as prevention measures against rainstorm events.</p> <p>On 20 Jul, the contractor has still not yet provided the 4" pumps and pits. The contractor was reminded to provide them as soon as possible.</p> <p>On 27 Jul, one 4" pump and pit were provided. The contractor was reminded to replace the other two 2" pumps with 4" pumps.</p> <p>On 3 Aug, it is noted that under the hoisting of red rainstorm this morning, the existing pump arrangement, together with earth bund and pit in place, has enough capacity to handle the site runoff without any overflow of runoff. It is therefore considered that the replacing of 2" pumps by 4" pumps are not necessary.</p>	3 Aug 2017
30 Jun 2017	Water quality	As requested by EPD, the contractor is required to further enhance the bund at the seafront	On 6 Jul, bund at seashore has not been enhanced yet. The contractor was reminded to provide a higher	10 Aug 2017

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
		as it is considered not high enough. According to site observation, the contractor has not enhanced the bund yet. The contractor was reminded to provide a higher bund near the seafront.	<p>bund as soon as possible.</p> <p>On 13 Jul, some parts of the bund were enhanced. The contractor was reminded to provide a higher bund for the remaining parts.</p> <p>On 20 Jul, the contractor has made the bund higher using sand bags and they are finishing off the bund with a layer of cement.</p> <p>On 27 Jul, the contractor has finished off most parts of the bund with a layer of cement. The contractor was reminded to finish off the remaining parts of the bund with a layer of cement.</p> <p>On 3 Aug, parts of the bund at seafront were still not yet finished off with a layer of cement. The contractor was reminded to follow up this as soon as possible.</p> <p>On 10 Aug, the contractor has finished off the remaining part of the bund near the seafront with a layer of cement.</p>	
20 Jul 2017	Water quality	The contractor was reminded to provide an updated drainage layout plan to clearly indicate the drainage arrangement of the site.	<p>On 27 Jul, the contractor was reminded to provide an updated drainage layout plan once available.</p> <p>On 3 Aug, the contractor was reminded to provide an updated drainage layout plan as soon as possible.</p> <p>On 10 Aug, the contractor was reminded again to update the drainage layout plan as soon as possible and provide markings on the pipes for easy checking.</p> <p>On 17 Aug, the contractor has provided an updated drainage plan. However, pipes were not yet marked to indicate the pipe flow. The contractor was reminded to provide proper markings on the pipe.</p> <p>The contractor is aware of the pipe flow and drainage arrangement of the site, so markings on the pipe are deemed not necessary.</p>	24 Aug 2017
27 Jul 2017	Air quality	Cement bags at various area at B2 were found uncovered. The contractor was reminded to cover them with impervious sheeting to reduce dust impact or remove them off site.	The contractor has either covered the cement bags with impervious sheeting or removed them off site.	3 Aug 2017
27 Jul 2017	Waste management	Chemicals without drip tray were found at B2. The contractor was reminded to provide drip tray for the chemicals or remove them off	The contractor has removed the chemicals off site.	3 Aug 2017

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
		site.		
3 Aug 2017	Air quality	No wheel-washing was observed at the site entrances. The contractor was reminded to arrange workers for wheel-washing at Gate 1 and 3.	On 10 Aug, Gates 1 and 3 were still observed without wheel-washing workers. The contractor was reminded to provide workers for wheel-washing all the time at site entrances. On 11 Aug, the contractor has provided workers for wheel-washing at Gates 1 and 3.	11 Aug 2017
3 Aug 2017	Waste management	Mixture of chemical wastes were found in drip trays of two air compressors. The contractor was reminded to clean up the drip trays regularly.	On 10 Aug, mixture of chemical wastes were still observed at the drip trays of the air compressors. The contractor was reminded to rectify it as soon as possible. On 16 Aug, the contractor has cleaned the drip tray of one of the air compressors and the other air compressor has been removed off site.	16 Aug 2017
3 Aug 2017	Waste management	Chemical drum was observed without drip tray. The contractor was reminded to provide drip tray for the chemical drum.	On 10 Aug, chemical drums were still found without drip trays. The contractor was reminded to rectify it. On 14 Aug, the contractor has provided drip tray for the chemical drums	14 Aug 2017
3 Aug 2017	Water Quality	Effluent quality at ICP sampling point was checked. They were found visually clear when comparing with standard solution and within proper pH range. The contractor was reminded to provide a set of sampling bottles at wetsep no.5 for water sampling.	A set of sampling bottles was provided at wetsep no.5.	10 Aug 2017
10 Aug 2017	Air quality	Grouting station was observed without proper enclosure at B2. The contractor was reminded to properly enclose the station to reduce dust impact.	Grouting station has been removed off site.	15 Aug 2017
10 Aug 2017	Waste management	Refuse and stagnant water were observed at B2. The contractor was reminded to maintain proper housekeeping and clear the refuse and stagnant water.	The contractor has removed the refuse and stagnant water at B2.	12 Aug 2017
10 Aug 2017	Air quality	Generator and mobile crane were found without NRMM labels and there was also no QPME label for the generator. The contractor was reminded to provide the labels for the plants.	The contractor has provided proper labels for the plants.	14 Aug 2017
10 Aug 2017	Waste management	Oil mixture was observed at the drip tray of the generator in front of Gate 5. The contractor was reminded to clear it and also plug the dip tray to prevent leakage.	The contractor has cleaned the drip tray of the generator in front of Gate 5.	12 Aug 2017
10 Aug 2017	Water quality	Effluent quality at ICP sampling point and wetsep no.5 was checked. They were found visually clear and within proper pH range.	N/A	N/A

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
10 Aug 2017	Air quality	Exposed soil was observed in front of Gate 3. The contractor was reminded to clear it to prevent surface runoff and carrying out of the site by vehicles.	The contractor has paved the area in front of Gate 3.	14 Aug 2017
17 Aug 2017	Air quality	The contractor was reminded to provide water spraying during breaking works.	The contractor has provided water spraying during breaking works.	21 Aug 2017
17 Aug 2017	Air quality	The haul road near DCS was observed dry and dusty. The contractor was reminded to enhance water spraying to reduce dust impact.	The contractor has arranged water spraying to the haul road.	22 Aug 2017
17 Aug 2017	Air quality	NRMM label of a breaker was observed weathering. The contractor was reminded to replace the label.	<p>On 24 Aug, the contractor was reminded to provide NRMM label for the plant as soon as possible.</p> <p>On 31 Aug, the contractor has not yet provided NRMM label for the machinery, nevertheless they have idled the machinery (not in use).</p> <p>Follow-up status will be provided in the next reporting month</p>	On-going
17 Aug 2017	Waste management	Chemicals near wetsep no.4 was observed without drip tray. The contractor was reminded to provide drip trays for the chemicals or remove them off site if not in use.	The contractor has properly stored the chemicals near wetsep no.4.	22 Aug 2017
17 Aug 2017	Waste management	Oil mixture was found in the drip tray. The contractor was reminded to clean the drip tray.	The contractor has cleaned the oil mixture accumulated in the drip tray.	22 Aug 2017
17 Aug 2017	Water quality	A section of the bund at seafront near DCS was observed not yet finished off with a layer of cement. The contractor was reminded to rectify it.	The contractor has finished off the section of the bund with a layer of cement.	22 Aug 2017
17 Aug 2017	Water quality	Effluent quality at ICP sampling point and wetsep no.5 was checked. They were found visually clear when comparing with standard solution and within proper pH range.	N/A	N/A
24 Aug 2017	Air quality	Cement bags without proper cover were found at RDE B1. The contractor was reminded to cover them with impervious sheeting to reduce dust impact.	The contractor has covered the cement bags with impervious sheeting.	25 Aug 2017
24 Aug 2017	Waste management	Chemical waste store was found broken. The contractor was reminded to repair it.	The contractor has repaired the chemical waste store.	25 Aug 2017
24 Aug 2017	Air quality	A few mobile machineries were found without NRMM labels, and one of the plant was observed not properly enclosed. An oil drum was also found without drip tray. The contractor was reminded to provide NRMM labels, properly cover the plant and provide drip tray for the oil drum.	The contractor has provided NRMM label for the machinery and drip tray for the oil drum. The excavator without cover was removed off site.	29 Aug 2017
24 Aug 2017	Water quality	Effluent quality at ICP sampling point and M+ wetsep no.5 was checked. They were visually clear when comparing with standard	N/A	N/A

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
		solution and within proper pH range.		
31 Aug 2017	Air quality	The haul road near DCS was observed dry and dusty. The contractor was reminded to enhance water spraying for dust suppression.	Follow-up status will be provided in the next reporting month	On-going
31 Aug 2017	Air quality	The colour of the NRMM label for the excavator was observed faded. The contractor was reminded to replace the NRMM label.	Follow-up status will be provided in the next reporting month	On-going
31 Aug 2017	Waste management	The drip tray of the air compressor near seafront was found not large enough. The contractor was reminded to provide a drip tray with proper size. The lubricant next to the air compressor and oil drum near RDE were found without drip tray. The contractor was reminded to provide drip trays for the lubricant and oil drum.	Follow-up status will be provided in the next reporting month	On-going
31 Aug 2017	Waste management	Construction waste was found accumulated at B1. The contractor was reminded to remove the construction waste regularly.	Follow-up status will be provided in the next reporting month	On-going
31 Aug 2017	Air quality	The forklift at RDE B1 was observed without NRMM label. The contractor was reminded to provide NRMM label for the forklift.	Follow-up status will be provided in the next reporting month	On-going
31 Aug 2017	Water quality	Effluent quality at ICP sampling point and M+ wetsep was checked. They were found visually clear and within proper pH range.	N/A	N/A

4.1.2 Lyric Theatre Complex

Construction phase weekly site inspections were carried out on 2, 9, 16, 25 and 30 August 2017. The joint site inspection with IEC, ET, ER and Contractor was held on 9 August 2017. 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 4.2**.

EPD site inspection was conducted on 25 August 2017. EPD conducted a general inspection and took photo on discharge points and seafront area. No adverse comments were received.

Table 4.2: Summary of Site Inspections and Recommendations for Lyric Theatre Complex

Inspection Date	Parameter	Observation / Recommendation	Contractor's Responses / Action(s) Undertaken	Close-out (Date)
2 Aug 2017	Noise	The contractor was reminded to provide noise mitigation measure such as noise barrier for the breaker in Area L06 during operation.	Temporary noise barriers were provided as noise mitigation measures for breaker in Area L06.	4 Aug 2017
2 Aug 2017	Air quality	NRMM label or exceptional label was missing at a generator. The contractor was reminded to check and provide suitable label for the construction plant.	NRMM label for generator in Area L07 was provided.	4 Aug 2017
9 Aug 2017	Waste	Two drip trays in Area L06/L07 did not appear to be properly	Two drip trays in Area L06/L07 were properly plugged / sealed	15 Aug 2017

	management	plugged. The contractor was asked to ensure proper plugging of the drip trays to contain any adverse chemical leakage.	off.	
9 Aug 2017	Air quality	The colour of a NRMM label for a generator in Area L07 had faded. The contractor was asked to provide a new NRMM label showing the correct colour.	The NRMM label for a generator in Area L07 was reprinted and displayed.	15 Aug 2017
9 Aug 2017	Water quality	A C&D material stockpile next to the sea-front was observed. The contractor was asked to implement suitable mitigation measures (e.g. tarpaulin cover) to prevent spillage into the open waters.	The stockpile next to the sea-front was removed and backfilled with compaction.	15 Aug 2017
16 Aug 2017	Air quality	Dry haul road was observed at Area L04. The contractor was reminded to increase water spraying frequency to avoid dust impact.	Regular spraying of water on concerned haul road was conducted.	21 Aug 2017
25 Aug 2017	Air quality	The contractor was reminded to enclose 3-side and top of the grouting platform to avoid dust impact.	The grouting platform was enclosed.	29 Aug 2017
30 Aug 2017	Noise	NRMM label was missing at a generator at Area L06. The Contractor was reminded to place the NRMM label on the generator.	NRMM label was replaced at a generator at Area L06.	31 Aug 2017

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 M+ Museum

As advised by the Contractor, 36.36 tonnes, 125.95 tonnes and 705.18 tonnes of inert C&D material were disposed of as public fill to Chai Wan Public Fill Barging Point, Tuen Mun Area 38 and Tseung Kwan O Area 137 Public Fill respectively, while 186.9 tonnes of general refuse were disposed of at SENT landfill. 50.9 tonnes of metals, 1.2 tonnes of paper/cardboard packaging, 0 tonne of plastic and 263.0 tonnes of timber were collected by recycling contractors in the reporting month. 0 tonne of inert C&D materials was reused on site. 0 tonne of inert C&D materials were reused in other projects and 364.0 tonnes of inert C&D materials were disposed to sorting facility. 0 tonne of chemical waste was collected by licensed contractors in the reporting period.

The actual amounts of different types of waste generated by the activities of construction works at M+ Museum in the reporting month are shown in **Appendix I**.

4.2.2 Lyric Theatre Complex

As advised by the Contractor, 1,728.51 and 624.89 tonnes of inert C&D material were disposed of as public fill to Tseung Kwan O Area 137 and Tuen Mun Area 38 respectively, while 4.4 tonnes of general refuse were disposed of at SENT landfill. 0 tonne of metals, 0 tonne of paper/cardboard packaging, 0 tonne of plastic and 0 tonne of timber were collected by recycling contractors in the reporting month. 0 tonne of inert C&D materials was reused on site. 1,377.5 tonnes of inert C&D materials were reused in other projects. 0 tonne of chemical waste was 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 4.3** and **Table 4.4**.

4.3.1 M+ Museum

Table 4.3: Status of Environmental Submissions, Licenses and Permits for M+ Museum

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Chemical Waste Producer Registration				
5213-217-H2913-45	05-Nov-15	--	Valid	--
Billing Account Construction Waste Disposal				
7023393	13-Oct-15	--	Account Active	--
Construction Noise Permit				
GW-RE0348-17	4-May 17	3-Nov-17	Valid	
Wastewater Discharge License				
WT00023633-2016	4-Mar-16	31-Mar-21	Valid	--
Notification under Air Pollution Control (Construction Dust) Regulation				
394083	7-Oct-15	--	Notified	--

4.3.2 Lyric Theatre Complex

Table 4.4: Status of Environmental Submissions, Licenses and Permits for Lyric Theatre Complex

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Chemical Waste Producer Registration				
5213-217-G2347-39	17-Feb-16	--	Valid	--
Billing Account Construction Waste Disposal				
7024189	25-Jan-16	--	Account Active	--
Construction Noise Permit				
GW-RE0214-17	20-Mar-17	19-Sep-17	Valid	
Wastewater Discharge License				
WT00023648-2016	24-Jul-17	31-Mar-21	Valid	
Notification under Air Pollution Control (Construction Dust) Regulation				
398075	18-Jan-16	--	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 M+ Museum

Chemical and Waste Management

- All chemical drum/ containers stored on site should be provided with drip trays of proper size.
- Drip trays should be regularly cleaned up to avoid accumulation of chemical waste.

- Regular removal of refuse/ construction waste on site.
- Chemical waste store should be properly maintained.

Air Quality

- Maintain high standard of housekeeping to prevent emission of fugitive dust.
- Properly enclose grouting station for dust suppression.
- Cement bags should be well covered by impervious sheeting to reduce dust impact.
- Wheel-washing should be provided at site entrances.
- Proper NRMM labels should be displayed on the non-road mobile machineries.
- Site entrances should be properly paved after excavation for dust suppression.
- Provide regular water spraying for haul roads for reducing dust impact.
- Water spraying should be provided for dusty construction activities.

Water Quality

- Preventive measures, such as earth bund, pumps, sand bags, storage pits, should be in place near the seafront area to prevent overflow of any site runoff into the sea in case of rainstorms.
- Water sampling equipment should be provided for water sampling.

4.4.2 Lyric Theatre Complex

Air Quality

- Enhance water spraying for haul roads to reduce dust impact.
- NRMM labels should be provided for non-road mobile machinery.
- Properly enclose grouting station for dust suppression.

Noise

- Noise mitigation measures should be provided to noisy works.

Chemical and Waste Management

- All drip trays should be plugged or sealed to prevent leakage of chemical waste.

Water Quality

- Idled stockpile near seafront should be properly covered with impervious sheeting to prevent spillage into open waters.

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 July 2017	14 August 2017

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

No environmental complaints were recorded in the reporting month. 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 prosecution 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)

7.1.1 M+ Museum

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

- Construction of 3/F, 2/F, 1M/F, 1/F, G/F and LG/F;
- Construction of column from LGF to GF, G/F to 1/F, 1/F to 1M/F, 1M/F to 2/F, 2/F to 3/F;
- Encasement of Mega Trusses;
- ABWF work at DCS;
- E&M work at B2/F and SPS;
- Construction of B1 slab and beam and Roof Beam and slab at ICP
- Sheet Pile Installation for seawater outfall pipe between Ch0+66 to Ch0+108
- Storm Drainage at Portion M45
- Sewerage work at Portion L08
- West core wall up to 4/F

7.1.2 Lyric Theatre Complex

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

- Bulk Excavation
- Preparation works for ELS
- Steel Struct ELS Installation
- Pre-grouting adjacent to Seawall

7.2 Key Issues for the Coming Month

7.2.1 M+ Museum

Key issues to be considered 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; and
- Management of chemicals and avoidance of oil spillage on-site.

7.2.2 Lyric Theatre Complex

Key issues to be considered 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; 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 in accordance with the approved EM&A Manual has commenced since 31 October 2015 and 5 March 2016 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 since the construction of M+ Museum main works commenced on 31 October 2015, and the construction of Lyric Theatre Complex foundation works commenced on 1 March 2016.

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 Leq, 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.

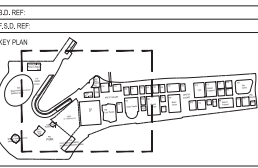
No environmental complaints were recorded in the reporting month. No notifications of summons or successful prosecution were received during the reporting month.

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



- NOTES:
- WKCD BOUNDARY
 - M+ MUSEUM BOUNDARY
 - LYRIC THEATRE BOUNDARY
 - BOUNDARY OF UNDERPASS ROAD SERVING THE PLANNED WKCD
 - CONSTRUCTION AIR/NOISE MONITORING STATION

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**

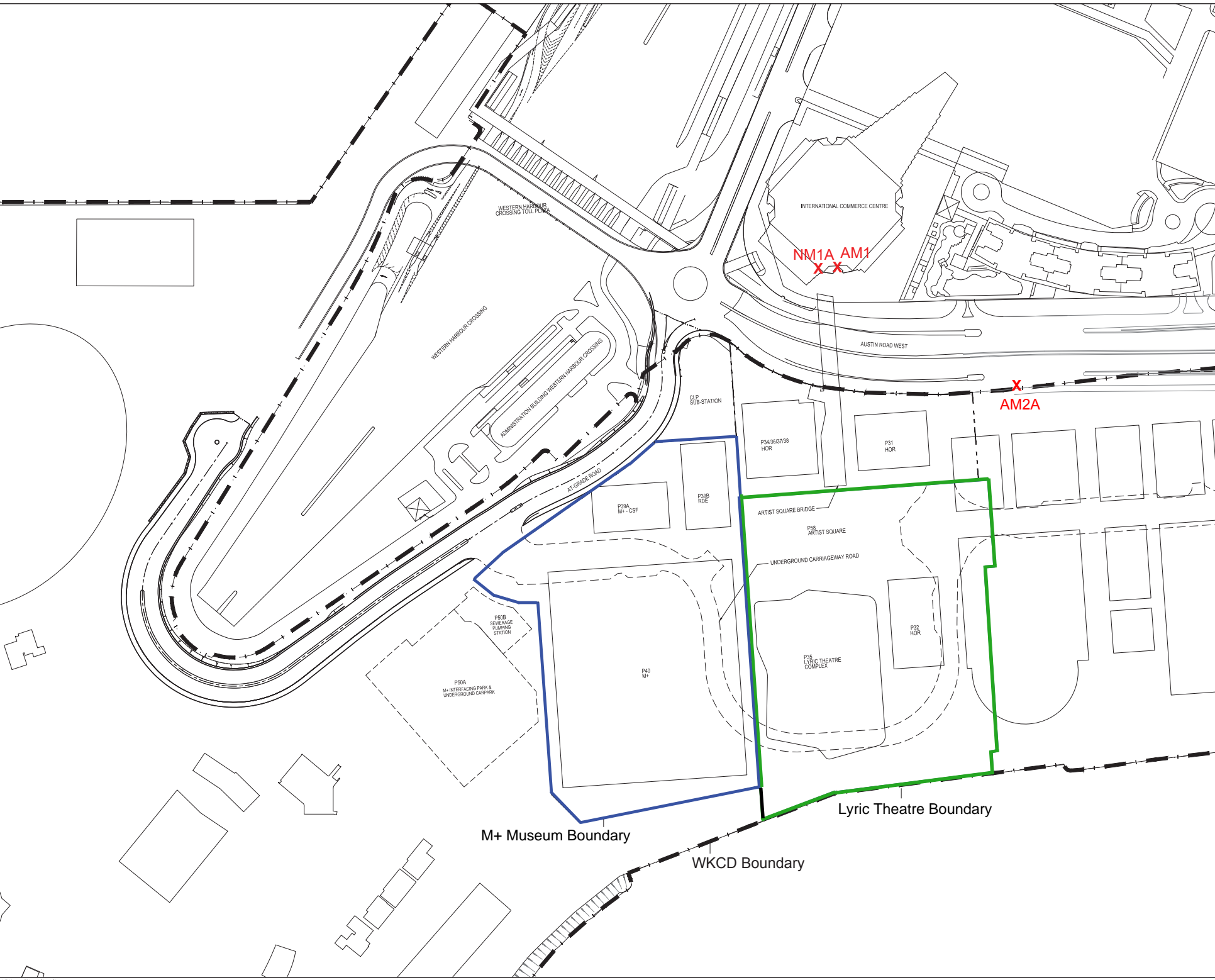
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CHECKED		DATE	
APPROVED		DATE	
DRAWN	TY	DATE	16-10-2015

CONTRACT NO.

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

CAD REF NAME: XXXXX\AUT-PMS-DWG-POU\000000-XXX.dwg

AUTHORITY



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

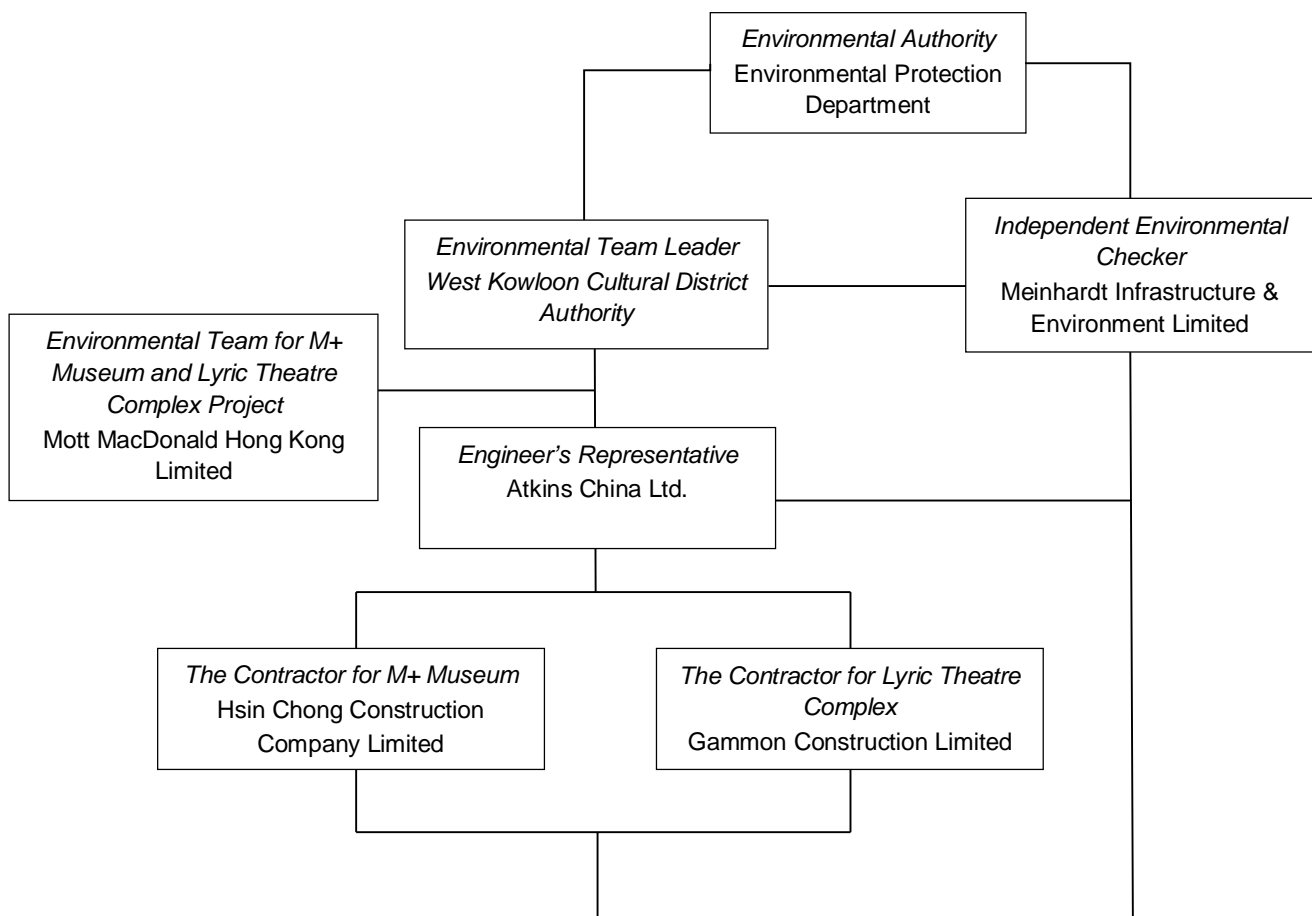


Table A-1: Contact information

Company Name	Role	Name	Telephone
Atkins China Ltd.	Resident Engineer	Mr. Benny Ip	9379 5614
Meinhardt Infrastructure & Environment Limited	Independent Environmental Checker	Mr. Fredrick Leong	2859 1739
Hsin Chong Construction Company Limited	Environmental Manager	Mr. Andy Leung	9016 2503
Gammon Construction Limited	Environmental Manager	Ms. Michelle Tang	9267 8866
Mott MacDonald Hong Kong Ltd.	Contractor's Environmental Team Leader	Mr Brandon Wong	2828 5875
West Kowloon Cultural District Authority	Senior Environmental Specialist	Mr. Brian Tam	2200 0059

B. Tentative Construction Programme

M+ Museum

Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

Activity ID	Activity Name	CMWP Dur.	CMWP - R0.D5 Start	CMWP - R0.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	July		August			September			October			November	
											22		23			24			25			26	
											02	09	16	23	30	06	13	20	27	03	10	17	24
A18300	Remove PERI Tower Jack head	2	22-Sep-17	23-Sep-17	06-Oct-17	07-Oct-17	0%	0%	-10														
A18310	Remove PERI Tower (12 nos.)	4	25-Sep-17	28-Sep-17	09-Oct-17	12-Oct-17	0%	0%	-10														
A57710	Lower down 18M truss (6 nos.)	1	29-Sep-17	29-Sep-17	13-Oct-17	13-Oct-17	0%	0%	-10														
A57720	Disconnect strand jack system at T1 & T2	1	29-Sep-17	29-Sep-17	13-Oct-17	13-Oct-17	0%	0%	-10														
A57730	Remove T1 & T2 working platform	3	30-Sep-17	04-Oct-17	14-Oct-17	17-Oct-17	0%	0%	-10														
A57740	Remove 18M truss (6 nos.)	4	06-Oct-17	10-Oct-17	18-Oct-17	21-Oct-17	0%	0%	-10														
A57750	Remove 9M truss (12 nos.)	4	11-Oct-17	14-Oct-17	23-Oct-17	26-Oct-17	0%	0%	-10														
A57760	Remove Non-Typical truss	4	16-Oct-17	19-Oct-17	27-Oct-17	01-Nov-17	0%	0%	-10														
A57770	Remove Spreader Beam	3	18-Oct-17	20-Oct-17	31-Oct-17	02-Nov-17	0%	0%	-10														
Removal of T3 Falseworks																							
Pre-setup Works																							
A18410	Install additional beam for strengthening T3 9M trusses	6	30-Aug-17	05-Sep-17	11-Sep-17	16-Sep-17	0%	0%	-10														
A18420	Remove Strand Jack on Strand Jack Support at T1 & T2	5	23-Sep-17	28-Sep-17	18-Sep-17	22-Sep-17	0%	0%	5														
A18430	Set up Strand Jack Support System at T3	4	29-Sep-17	04-Oct-17	23-Sep-17	27-Sep-17	0%	0%	5														
Removal Works for T3 Falseworks																							
A57990	Install Strand Jack on Strand Jack Support at T3	5	06-Oct-17	11-Oct-17	06-Sep-17	12-Sep-17	0%	0%	24														
A58000	Lift up 100mm	1	12-Oct-17	12-Oct-17	12-Sep-17	13-Sep-17	0%	0%	24														
A58010	Remove PERI Tower Jack head	2	13-Oct-17	14-Oct-17	13-Sep-17	15-Sep-17	0%	0%	24														
A58020	Remove PERI Tower (12 nos.)	3	16-Oct-17	18-Oct-17	15-Sep-17	19-Sep-17	0%	0%	24														
A58030	Lower down 9M truss (6 nos.)	1	19-Oct-17	19-Oct-17	19-Sep-17	20-Sep-17	0%	0%	24														
A58040	Disconnect strand jack system at T3	1	20-Oct-17	20-Oct-17	20-Sep-17	21-Sep-17	0%	0%	24														
A58050	Remove T3 working platform	3	21-Oct-17	24-Oct-17	21-Sep-17	25-Sep-17	0%	0%	24														
A58070	Remove 9M truss (12 nos.)	4	25-Oct-17	30-Oct-17	25-Sep-17	29-Sep-17	0%	0%	24														
A58080	Remove Non-Typical truss	4	25-Oct-17	30-Oct-17	25-Sep-17	29-Sep-17	0%	0%	24														
A58090	Remove Spreader Beam	2	31-Oct-17	01-Nov-17	29-Sep-17	03-Oct-17	0%	0%	24														
Removal of T4 Falseworks																							
Pre-setup Works																							
A18470	Install additional beam for strengthening T4 9M trusses	6	06-Oct-17	12-Oct-17	28-Sep-17	06-Oct-17	0%	0%	5														
A18480	Remove Strand Jack on Strand Jack Support at T3	5	21-Oct-17	26-Oct-17	07-Oct-17	12-Oct-17	0%	0%	12														
A18490	Set up Strand Jack Support System at T4	4	27-Oct-17	01-Nov-17	13-Oct-17	17-Oct-17	0%	0%	12														
Removal Works for T4 Falseworks																							
A58100	Installation of Strand Jack on Strand Jack Support at T4	5	02-Nov-17	07-Nov-17	18-Oct-17	23-Oct-17	0%	0%	12														
A58110	Lift up 100mm	1	08-Nov-17	08-Nov-17	24-Oct-17	24-Oct-17	0%	0%	12														
A58120	Remove PERI Tower Jack head	2	09-Nov-17	10-Nov-17	25-Oct-17	26-Oct-17	0%	0%	12														
A58130	Remove PERI Tower (12 nos.)	3	11-Nov-17	14-Nov-17	27-Oct-17	31-Oct-17	0%	0%	12														
RC Works for T1 & T2 In-fill Slabs																							
RC Works for 4/F In-fill Slab																							
Area Between Modular Towers																							
A18000	Scaffolding for 4/F Slab RC Works @GL L-H	4	12-Aug-17	16-Aug-17	24-Aug-17	28-Aug-17	0%	0%	-10														
A18005	Rebar fixing of 4/F Slab @GL L-H	3	18-Aug-17	21-Aug-17	30-Aug-17	01-Sep-17	0%	0%	-10														
A18015	Formworks of 4/F Slab @GL L-H	1	17-Aug-17	17-Aug-17	29-Aug-17	29-Aug-17	0%	0%	-10														
A18030	Concreting 4/F Slab @GL L-H	1	22-Aug-17	22-Aug-17	02-Sep-17	02-Sep-17	0%	0%	-10														
A18035	Concrete Curing 4/F Slab @GL L-H	3	23-Aug-17	25-Aug-17	03-Sep-17	05-Sep-17	0%	0%	-11														
A18040	Scaffolding for 4/F Slab RC Works @GL H-E	4	16-Aug-17	19-Aug-17	28-Aug-17	31-Aug-17	0%	0%	-10														
A18050	Rebar fixing of 4/F Slab @GL H-E	3	22-Aug-17	24-Aug-17	02-Sep-17	05-Sep-17	0%	0%	-10														
A18160	Formworks of 4/F Slab @GL H-E	1	21-Aug-17	21-Aug-17	01-Sep-17	01-Sep-17	0%	0%	-10														
A18165	Concreting 4/F Slab @GL H-E	1	25-Aug-17	25-Aug-17	06-Sep-17	06-Sep-17	0%	0%	-10														
A18175	Concrete Curing 4/F Slab @GL H-E	3	26-Aug-17	28-Aug-17	07-Sep-17	09-Sep-17	0%	0%	-12														
Area of Modular Towers																							
A57480	Scaffolding for 4/F Slab RC Works @GL L-H	4	30-Aug-17	02-Sep-17	09-Sep-17	13-Sep-17	0%	0%	-9														
A57490	Rebar fixing of 4/F Slab @GL L-H	3	02-Sep-17	05-Sep-17	13-Sep-17	15-Sep-17	0%	0%	-9														
A57500	Formworks of 4/F Slab @GL L-H	1	06-Sep-17	06-Sep-17	16-Sep-17	16-Sep-17	0%	0%	-9														
A57510	Concreting 4/F Slab @GL L-H	1	07-Sep-17	07-Sep-17	18-Sep-17	18-Sep-17	0%	0%	-9														
A57520	Concrete Curing 4/F Slab @GL L-H	3	08-Sep-17	10-Sep-17	19-Sep-17	21-Sep-17	0%	0%	-11														
A57530	Scaffolding for 4/F Slab RC Works @GL H-E	4	01-Sep-17	05-Sep-17	14-Sep-17	18-Sep-17	0%	0%	-11														
A57540	Rebar fixing of 4/F Slab @GL H-E	3	06-Sep-17	08-Sep-17	19-Sep-17	21-Sep-17	0%	0%	-11														
A57550	Formworks of 4/F Slab @GL H-E	1	09-Sep-17	09-Sep-17	22-Sep-17	22-Sep-17	0%	0%	-11														
A57560	Concreting 4/F Slab @GL H-E	1	11-Sep-17	11-Sep-17	23-Sep-17	23-Sep-17	0%	0%	-11														
A57570	Concrete Curing 4/F Slab @GL H-E	3	12-Sep-17	14-Sep-17	24-Sep-17	26-Sep-17	0%	0%	-12														
RC Works for 2/F Slab & Beams (6 nos. of Beam)																							
Area Between Modular Towers																							

Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

Activity ID	Activity Name	CMWP Dur.	CMWP - R.O.D5 Start	CMWP - R.O.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	Gantt Chart															
											July				August				September				October		November	
											02	09	16	23	30	06	13	20	27	03	10	17	24	01	08	15
M+ Sprinkler Water Tank																										
AB13590	Waterproofing & water test	12	20-May-17	01-Jun-17	29-Jul-17	09-Aug-17	100%	0%	-68	concrete defect being rectified																
AB13600	Plastering work (inside tank)	10	02-Jun-17	11-Jun-17	10-Aug-17	19-Aug-17	100%	0%	-68																	
AB13610	Wall & floor tiling	14	12-Jun-17	25-Jun-17	20-Aug-17	02-Sep-17	100%	0%	-68																	
AB13620	Application of sealer on soffit (outside tank)	7	26-Jun-17	03-Jul-17	03-Sep-17	09-Sep-17	100%	0%	-68																	
AB13630	Cat ladder	7	04-Jul-17	10-Jul-17	10-Sep-17	16-Sep-17	100%	0%	-68																	
AB13640	Hatch cover	7	11-Jul-17	17-Jul-17	17-Sep-17	23-Sep-17	100%	0%	-68																	
M+ FS Water Tank																										
AB13660	Waterproofing & water test	12	12-Jun-17	23-Jun-17	20-Aug-17	31-Aug-17	100%	0%	-68																	
AB13670	Plastering work (inside tank)	10	24-Jun-17	04-Jul-17	01-Sep-17	10-Sep-17	100%	0%	-68																	
AB13680	Wall & floor tiling	14	05-Jul-17	18-Jul-17	11-Sep-17	24-Sep-17	100%	0%	-68																	
AB13690	Application of sealer on soffit (outside tank)	7	19-Jul-17	25-Jul-17	25-Sep-17	01-Oct-17	100%	0%	-68																	
AB13700	Cat ladder	7	26-Jul-17	01-Aug-17	03-Oct-17	10-Oct-17	42.86%	0%	-68																	
AB13710	Hatch cover	7	02-Aug-17	08-Aug-17	11-Oct-17	17-Oct-17	0%	0%	-68																	
M+ IR Tank																										
AB13730	Waterproofing & water test	12	05-Jul-17	16-Jul-17	11-Sep-17	22-Sep-17	100%	0%	-68																	
AB13740	Plastering work (inside tank)	10	17-Jul-17	26-Jul-17	23-Sep-17	03-Oct-17	100%	0%	-68																	
AB13750	Wall & floor tiling	14	27-Jul-17	09-Aug-17	04-Oct-17	18-Oct-17	14.29%	0%	-68																	
AB13760	Application of sealer on soffit (outside tank)	7	10-Aug-17	16-Aug-17	19-Oct-17	25-Oct-17	0%	0%	-68																	
AB13770	Cat ladder	7	17-Aug-17	23-Aug-17	26-Oct-17	02-Nov-17	0%	0%	-68																	
AB13780	Hatch cover	7	24-Aug-17	30-Aug-17	03-Nov-17	09-Nov-17	0%	0%	-68																	
Rain Water Retention Tank																										
AB13800	Waterproofing & water test	12	27-Jul-17	07-Aug-17	04-Oct-17	16-Oct-17	16.67%	0%	-68																	
AB13810	Plastering work (inside tank)	10	08-Aug-17	17-Aug-17	17-Oct-17	26-Oct-17	0%	0%	-68																	
AB13820	Wall & floor tiling	14	18-Aug-17	31-Aug-17	27-Oct-17	10-Nov-17	0%	0%	-68																	
AB13830	Application of sealer on soffit (outside tank)	7	01-Sep-17	07-Sep-17	11-Nov-17	17-Nov-17	0%	0%	-68																	
AB13840	Cat ladder	7	08-Sep-17	14-Sep-17	18-Nov-17	24-Nov-17	0%	0%	-68																	
AB13850	Hatch cover	7	15-Sep-17	21-Sep-17	25-Nov-17	01-Dec-17	0%	0%	-68																	
Plantrooms																										
FS Pump Room																										
Builders' Work																										
AB13370	Concrete plinth	5	30-Aug-17	03-Sep-17	20-Oct-17	24-Oct-17	0%	0%	-49																	
AB13380	Wall rendering	7	04-Sep-17	10-Sep-17	25-Oct-17	01-Nov-17	0%	0%	-49																	
AB13390	Floor Screeding	7	11-Sep-17	17-Sep-17	02-Nov-17	08-Nov-17	0%	0%	-49																	
AB13400	Wall Epoxy Paint	7	18-Sep-17	24-Sep-17	09-Nov-17	15-Nov-17	0%	0%	-49																	
AB13410	Sealer on ceiling soffit & application of epoxy paint on w	14	25-Sep-17	10-Oct-17	16-Nov-17	29-Nov-17	0%	0%	-49																	
Electrical Systems																										
BS10000	FS Pump Room - MEP 2nd Fix	14	11-Oct-17	24-Oct-17	30-Nov-17	13-Dec-17	0%	0%	-49																	
FS & Plumbing Systems																										
BS10010	FS Pump Room - Install FS Pump	45	25-Oct-17	09-Dec-17	14-Dec-17	30-Jan-18	0%	0%	-49																	
IR/ RW/ ACC Condensate Pump Room & Water Meter Room																										
Builders' Work																										
AB13450	Concrete plinth	5	04-Sep-17	08-Sep-17	25-Oct-17	30-Oct-17	0%	0%	-49																	
AB13460	Wall rendering	7	09-Sep-17	15-Sep-17	31-Oct-17	06-Nov-17	0%	0%	-49																	
AB13470	Floor Screeding	7	16-Sep-17	22-Sep-17	07-Nov-17	13-Nov-17	0%	0%	-49																	
AB13480	Wall Epoxy Paint	7	23-Sep-17	29-Sep-17	14-Nov-17	20-Nov-17	0%	0%	-49																	
AB13490	Sealer on ceiling soffit & application of epoxy paint on w	14	30-Sep-17	15-Oct-17	21-Nov-17	04-Dec-17	0%	0%	-49																	
Electrical Systems																										
BS10020	IR/ RW/ ACC Pump Room - MEP 2nd Fix	14	16-Oct-17	30-Oct-17	05-Dec-17	18-Dec-17	0%	0%	-49																	
General Builders' Work																										
AB13320	Steel Post	14	20-May-17	03-Jun-17	29-Jul-17	11-Aug-17	100%	0%	-68																	
AB13330	Blockwall	20	04-Jun-17	23-Jun-17	12-Aug-17	31-Aug-17	100%	0%	-68																	
AB13340	Wall Plastering	14	23-Jun-17	08-Jul-17	31-Aug-17	14-Sep-17	100%	0%	-68																	
AB13350	Floor Screeding	7	08-Jul-17	15-Jul-17	14-Sep-17	21-Sep-17	100%	0%	-68																	
AB13360	Drywall (MEP concealed items, close up panel)	14	16-Aug-17	29-Aug-17	06-Oct-17	19-Oct-17	0%	0%	-49																	
General BS Installation																										
Electrical Systems																										
AB13925	MEP 1st fix - B2F Sector A	30	30-Aug-17	28-Sep-17	20-Oct-17	19-Nov-17	0%	0%	-49																	
AB13930	MEP 2nd fix - B2F Sector A	45	09-Oct-17	23-Nov-17	17-Dec-17	02-Feb-18	0%	0%	-68																	
Plumbing & Drainage																										
ABS2060	P&D 1st fix - B2F Sector A	30	30-Aug-17	28-Sep-17	20-Oct-17	19-Nov-17	0%	0%	-49																	
ABS2070	P&D 2nd fix - B2F Sector A	45	29-Sep-17	15-Nov-17	20-Nov-17	06-Jan-18	0%	0%	-49																	

Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

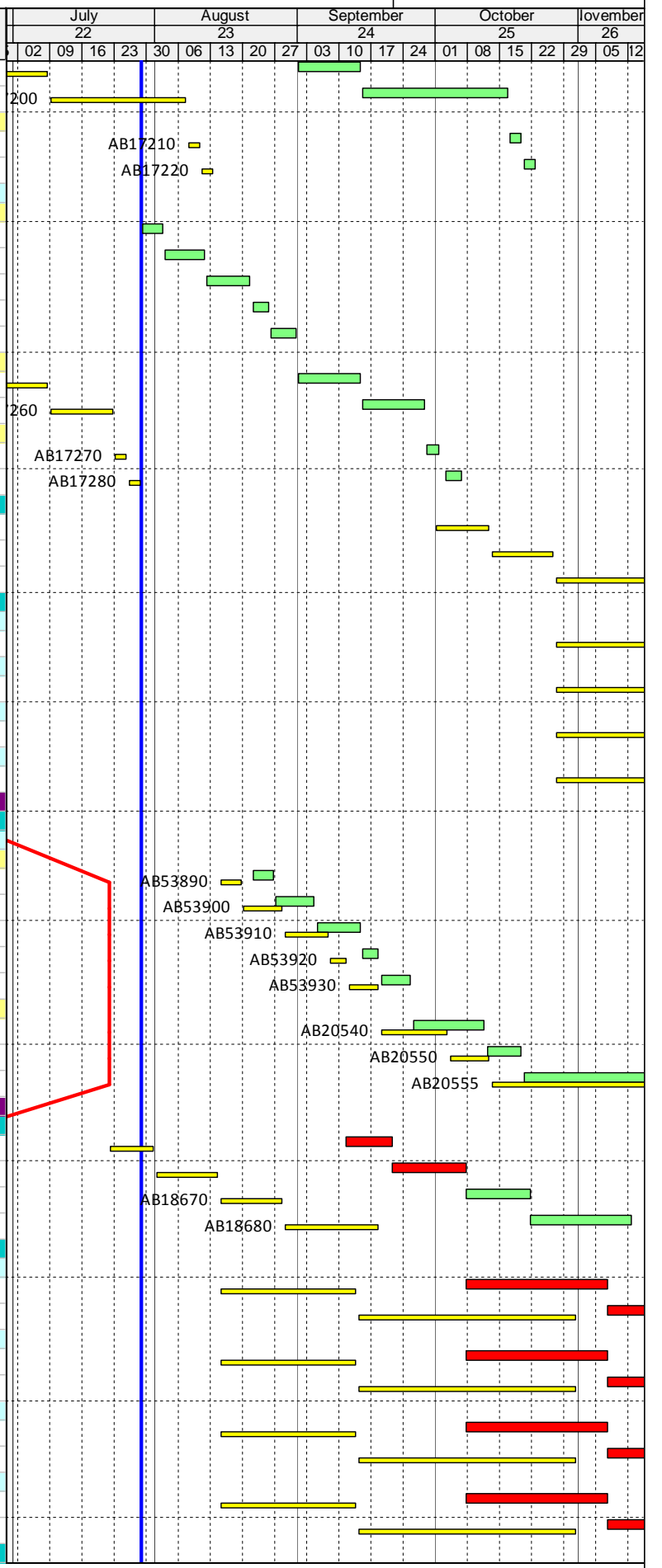
Activity ID	Activity Name	CMWP Dur.	CMWP - R.O.D5 Start	CMWP - R.O.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	Gantt Chart															
											July				August				September				October			
											02	09	16	23	30	06	13	20	27	03	10	17	24	01	08	15
AB52330	P&D Final fix - B2F Sector C	30	03-Jul-17	01-Aug-17	07-Sep-17	09-Oct-17	86.67%	0%	-67																	
FS System																										
AB52340	FS 1st fix - B2F Sector C	30	15-Mar-17	16-Apr-17	15-Mar-17 A	20-Aug-17	100%	24%	-121	MEP work shared with wall finishing work																
AB52350	FS 2nd fix - B2F Sector C	45	10-Apr-17	29-May-17	10-Apr-17 A	05-Sep-17	100%	14%	-97	Pending for RCP submission and confirmation																
AB52360	FS Final fix - B2F Sector C	30	03-Jul-17	01-Aug-17	05-Sep-17	07-Oct-17	86.67%	0%	-65																	
HVAC System																										
AB52370	HVAC 1st fix - B2F Sector C	60	06-Feb-17	07-Apr-17	06-Feb-17 A	12-Sep-17	100%	24%	-151	MEP work shared with wall finishing work																
AB52380	HVAC 2nd fix - B2F Sector C	69	16-Jul-17	22-Sep-17	20-Jun-17 A	30-Sep-17	18.84%	8%	-7																	
AB52390	HVAC Final fix - B2F Sector C	30	23-Sep-17	24-Oct-17	30-Sep-17	02-Nov-17	0%	0%	-7																	
Workshops, Storages & Offices																										
Bulk Supply Storage, Museum Workshops, ICT Riser, Display Case -Plinth-Vitrine, Exhibit Workshops																										
AB12240	Construction of maintenance platform	48	23-Sep-17	12-Nov-17	03-Dec-17	22-Jan-18	0%	0%	-68																	
AB12250	Fire shutters/ security shutters installation	28	22-Oct-17	19-Nov-17	02-Jan-18	29-Jan-18	0%	0%	-68																	
Non-Art Loading Dock, Non-Art Holding/ Shipping/ Receiving Lock-up 1, Mail Room 1																										
AB12420	Ceiling framework	21	03-Jul-17	23-Jul-17	03-Sep-17	24-Sep-17	100%	0%	-62																	
AB12430	MEP dropper	7	17-Jul-17	23-Jul-17	17-Sep-17	24-Sep-17	100%	0%	-62																	
AB12440	Ceiling close-up	14	24-Jul-17	06-Aug-17	24-Sep-17	10-Oct-17	35.71%	0%	-62																	
AB12450	Skim coat, application of sealer on wall, soffit and floor	14	07-Aug-17	20-Aug-17	10-Oct-17	24-Oct-17	0%	0%	-62																	
AB12460	Wall protection & corner guards installation	14	21-Aug-17	03-Sep-17	24-Oct-17	08-Nov-17	0%	0%	-62																	
AB12470	Door & ironmongeries installation	7	04-Sep-17	10-Sep-17	08-Nov-17	15-Nov-17	0%	0%	-62																	
Uniforms & Equipment Storage, RDE Storage, General Maintenance																										
AB12480	Application of epoxy paint on wall and sealer on floor	21	21-Aug-17	10-Sep-17	24-Oct-17	15-Nov-17	0%	0%	-62																	
Security Briefing Room, Security Office, Security Locker Room																										
AB12290	Acoustic ceiling framework	21	03-Jul-17	23-Jul-17	03-Sep-17	24-Sep-17	100%	0%	-62																	
AB12300	MEP dropper	7	17-Jul-17	23-Jul-17	17-Sep-17	24-Sep-17	100%	0%	-62																	
AB12310	Acoustic ceiling close up	14	24-Jul-17	06-Aug-17	24-Sep-17	10-Oct-17	35.71%	0%	-62																	
AB12320	Application of epoxy paint on wall	14	07-Aug-17	20-Aug-17	10-Oct-17	24-Oct-17	0%	0%	-62																	
Toilets																										
Public Toilets & Toilet Lobby (Benchmark Toilet)																										
Toilet Block																										
AB50980	Waterproofing & water test complete	0		15-Aug-17		07-Oct-17	0%	0%	-51																	
AB50990	Protective floor screeding	2	16-Aug-17	17-Aug-17	07-Oct-17	09-Oct-17	0%	0%	-51																	
AB51000	Gypsum ceiling framework	7	18-Aug-17	24-Aug-17	09-Oct-17	16-Oct-17	0%	0%	-51																	
AB51010	Wall tiling	14	26-Aug-17	08-Sep-17	17-Oct-17	01-Nov-17	0%	0%	-51																	
AB51020	Polished concrete floor (by others)	3	09-Sep-17	11-Sep-17	01-Nov-17	04-Nov-17	0%	0%	-51																	
AB51030	Gypsum ceiling close-up	5	17-Sep-17	21-Sep-17	09-Nov-17	14-Nov-17	0%	0%	-51																	
AB51040	Taping & jointing and painting on ceiling	7	22-Sep-17	28-Sep-17	14-Nov-17	21-Nov-17	0%	0%	-51																	
AB51050	Emulsion paint to wall gypsum board (Baby Room only)	7	29-Sep-17	07-Oct-17	21-Nov-17	28-Nov-17	0%	0%	-51																	
AB51060	Cubicle partition installation	7	08-Oct-17	14-Oct-17	28-Nov-17	05-Dec-17	0%	0%	-51																	
AB51070	Terrazo countertop	5	15-Oct-17	19-Oct-17	05-Dec-17	10-Dec-17	0%	0%	-51																	
AB51080	Door & ironmongeries installation	3	20-Oct-17	22-Oct-17	10-Dec-17	13-Dec-17	0%	0%	-51																	
AB51090	Sanitary wares & fitting (by others)	5	23-Oct-17	27-Oct-17	13-Dec-17	18-Dec-17	0%	0%	-51																	
AB51100	Steel frame for vanity counter	7	19-Aug-17	25-Aug-17	10-Oct-17	17-Oct-17	0%	0%	-51																	
AB51110	MEP dropper	5	12-Sep-17	16-Sep-17	04-Nov-17	09-Nov-17	0%	0%	-51																	
Toilet Lobby																										
AB51130	Ceiling framework	7	19-Sep-17	25-Sep-17	11-Nov-17	18-Nov-17	0%	0%	-51																	
AB51140	Subframe & plywood furring for timber wall	6	26-Sep-17	01-Oct-17	18-Nov-17	24-Nov-17	0%	0%	-51																	
AB51150	MEP dropper	5	03-Oct-17	08-Oct-17	24-Nov-17	29-Nov-17	0%	0%	-51																	
AB51160	Smoked oak ceiling planks	4	09-Oct-17	12-Oct-17	29-Nov-17	03-Dec-17	0%	0%	-51																	
AB51170	Resilient layer application	3	13-Oct-17	15-Oct-17	03-Dec-17	06-Dec-17	0%	0%	-51																	
AB51180	2 layer plywood installation	2	16-Oct-17	17-Oct-17	06-Dec-17	08-Dec-17	0%	0%	-51																	
AB51190	Oak end-grain blockwood flooring	7	18-Oct-17	24-Oct-17	08-Dec-17	15-Dec-17	0%	0%	-51																	
AB51200	White oak timber wall plants	5	25-Oct-17	30-Oct-17	15-Dec-17	20-Dec-17	0%	0%	-51																	
AB51210	Floor screeding to receive resilient	2	17-Sep-17	18-Sep-17	09-Nov-17	11-Nov-17	0%	0%	-51																	
Lobby/ Lift Lobby																										
LT-01,LT-02, LT-03, LT-04, LT-11 & LT-12 Lift Lobby																										
AB12630	MEP 1st / 2nd fix complete (high level)	0		24-Oct-17		02-Nov-17	0%	0%	-7																	
AB12640	Fire rated metal ceiling framework	21	25-Oct-17	15-Nov-17	02-Nov-17	23-Nov-17	0%	0%	-7																	
B2/F - Zone D, Zone B & Zone A (Sector D)																										
MEP Plantrooms																										
ELV (First Access Areas)																										
Builders' Works																										

Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

Activity ID	Activity Name	CMWP Dur.	CMWP - R0.D5 Start	CMWP - R0.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	Gantt Chart												
											July		August		September		October		November				
											02	09	16	23	30	06	13	20	27	03	10	17	24
AB53540	CLP Installation for TX Room A	90	24-Jul-17	23-Oct-17	21-Aug-17	22-Nov-17	5.56%	0%	-29		[Gantt bar: July 24 to Oct 23]												
AB53550	TX Room A Power ON	0		23-Oct-17		30-Nov-17	0%	0%	-37		[Gantt bar: Oct 23 to Nov 30]												
Final Finishes																							
AB16860	Final coat of paint on ceiling & wall	3	24-Oct-17	26-Oct-17	01-Dec-17	03-Dec-17	0%	0%	-37		[Gantt bar: Oct 24 to Dec 3]												
AB16870	Door & ironmongeries installation	3	27-Oct-17	30-Oct-17	07-Dec-17	09-Dec-17	0%	0%	-40		[Gantt bar: Oct 27 to Dec 7]												
LV Switch Room 1 & 2																							
Builders' Work																							
AB16890	Wall rendering	9	20-May-17	28-May-17	11-May-17 A	17-Jul-17 A	100%	100%	-47		[Gantt bar: May 20 to Jul 17]												
AB16900	Wall tiling (1.5m high)	10	29-May-17	08-Jun-17	29-Jul-17	07-Aug-17	100%	0%	-59		[Gantt bar: May 29 to Aug 7]												
AB16910	Floor screeding	4	09-Jun-17	12-Jun-17	25-Jul-17 A	30-Jul-17	100%	50%	-47		[Gantt bar: Jun 9 to Jul 30]												
AB16920	Sealer on ceiling soffit & application of epoxy paint on w	6	13-Jun-17	18-Jun-17	26-Jun-17 A	19-Jul-17 A	100%	100%	-29		[Gantt bar: Jun 13 to Jul 19]												
BS Installation																							
AB16930	LV Switch Room 1 & 2 - MEP 2nd fix	14	19-Jun-17	03-Jul-17	29-Jul-17	11-Aug-17	100%	0%	-39		[Gantt bar: Jun 19 to Aug 11]												
AB16940	LV Switch Room 1 & 2 - Main Switch Board 1 & 2 Site Tes	8	04-Jul-17	11-Jul-17	12-Aug-17	19-Aug-17	100%	0%	-39		[Gantt bar: Jul 4 to Aug 19]												
AB53560	LV Switch Room 1 & 2 - Install Main Switch Board 1 & 2	60	12-Jul-17	09-Sep-17	20-Aug-17	20-Oct-17	28.33%	0%	-39		[Gantt bar: Jul 12 to Oct 20]												
Final Finishes																							
AB16950	Final coat of paint on ceiling & wall	3	10-Sep-17	12-Sep-17	21-Oct-17	23-Oct-17	0%	0%	-39		[Gantt bar: Sep 10 to Oct 23]												
CBS Room																							
Builder's Work																							
AB16970	Construct plinth	5	20-May-17	24-May-17	29-Jul-17	02-Aug-17	100%	0%	-68		[Gantt bar: May 20 to Aug 2]												
AB16980	Wall rendering	9	25-May-17	03-Jun-17	03-Aug-17	11-Aug-17	100%	0%	-68		[Gantt bar: May 25 to Aug 11]												
AB16990	Wall tiling (1.5m high)	10	04-Jun-17	13-Jun-17	12-Aug-17	21-Aug-17	100%	0%	-68		[Gantt bar: Jun 4 to Aug 21]												
AB17000	Floor screeding	4	14-Jun-17	17-Jun-17	22-Aug-17	25-Aug-17	100%	0%	-68		[Gantt bar: Jun 14 to Aug 25]												
AB17010	Sealer on ceiling soffit & application of epoxy paint on w	6	18-Jun-17	23-Jun-17	26-Aug-17	31-Aug-17	100%	0%	-68		[Gantt bar: Jun 18 to Aug 31]												
BS Installation																							
AB17020	CBS Room - MEP 2nd fix	14	24-Jun-17	08-Jul-17	01-Sep-17	14-Sep-17	100%	0%	-68		[Gantt bar: Jun 24 to Sep 14]												
AB17030	CBS Room - CBS Installation & Termination	60	09-Jul-17	06-Sep-17	15-Sep-17	16-Nov-17	33.33%	0%	-68		[Gantt bar: Jul 9 to Nov 16]												
AB17035	CBS Room - T & C for CBS System	14	07-Sep-17	20-Sep-17	17-Nov-17	30-Nov-17	0%	0%	-68		[Gantt bar: Sep 7 to Nov 30]												
Final Finishes																							
AB17040	Final coat of paint on ceiling & wall	3	21-Sep-17	23-Sep-17	01-Dec-17	03-Dec-17	0%	0%	-68		[Gantt bar: Sep 21 to Dec 3]												
Main I.T. Room																							
Builder's Work																							
AB53570	Construct plinth	5	20-May-17	24-May-17	29-Jul-17	02-Aug-17	100%	0%	-68		[Gantt bar: May 20 to Aug 2]												
AB53580	Wall rendering	9	25-May-17	03-Jun-17	03-Aug-17	11-Aug-17	100%	0%	-68		[Gantt bar: May 25 to Aug 11]												
AB53590	Wall tiling (1.5m high)	10	04-Jun-17	13-Jun-17	12-Aug-17	21-Aug-17	100%	0%	-68		[Gantt bar: Jun 4 to Aug 21]												
AB53600	Floor screeding	4	14-Jun-17	17-Jun-17	22-Aug-17	25-Aug-17	100%	0%	-68		[Gantt bar: Jun 14 to Aug 25]												
AB53610	Sealer on ceiling soffit & application of epoxy paint on w	6	18-Jun-17	23-Jun-17	26-Aug-17	31-Aug-17	100%	0%	-68		[Gantt bar: Jun 18 to Aug 31]												
BS Installation																							
AB17070	Main I.T. Room - MEP 2nd fix	14	24-Jun-17	08-Jul-17	01-Sep-17	14-Sep-17	100%	0%	-68		[Gantt bar: Jun 24 to Sep 14]												
AB17080	Main I.T. Room - MEP Final fix	14	09-Jul-17	22-Jul-17	15-Sep-17	28-Sep-17	100%	0%	-68		[Gantt bar: Jul 9 to Sep 28]												
Final Finishes																							
AB17090	Final coat of paint on wall	3	23-Jul-17	25-Jul-17	29-Sep-17	01-Oct-17	100%	0%	-68		[Gantt bar: Jul 23 to Oct 1]												
TBE																							
Builder's Work																							
AB53620	Construct plinth	5	20-May-17	24-May-17	29-Jul-17	02-Aug-17	100%	0%	-68		[Gantt bar: May 20 to Aug 2]												
AB53630	Wall rendering	9	25-May-17	03-Jun-17	03-Aug-17	11-Aug-17	100%	0%	-68		[Gantt bar: May 25 to Aug 11]												
AB53640	Wall tiling (1.5m high)	10	04-Jun-17	13-Jun-17	12-Aug-17	21-Aug-17	100%	0%	-68		[Gantt bar: Jun 4 to Aug 21]												
AB53650	Floor screeding	4	14-Jun-17	17-Jun-17	22-Aug-17	25-Aug-17	100%	0%	-68		[Gantt bar: Jun 14 to Aug 25]												
AB53660	Sealer on ceiling soffit & application of epoxy paint on w	6	18-Jun-17	23-Jun-17	26-Aug-17	31-Aug-17	100%	0%	-68		[Gantt bar: Jun 18 to Aug 31]												
BS Installation																							
AB17130	TBE Room - MEP 2nd fix	14	24-Jun-17	08-Jul-17	01-Sep-17	14-Sep-17	100%	0%	-68		[Gantt bar: Jun 24 to Sep 14]												
AB17140	TBE Room - MEP final fix	14	09-Jul-17	22-Jul-17	15-Sep-17	28-Sep-17	100%	0%	-68		[Gantt bar: Jul 9 to Sep 28]												
Final Finishes																							
AB17150	Final coat of paint on wall	3	23-Jul-17	25-Jul-17	29-Sep-17	01-Oct-17	100%	0%	-68		[Gantt bar: Jul 23 to Oct 1]												
AB17160	Sealer on floor	3	26-Jul-17	28-Jul-17	03-Oct-17	06-Oct-17	100%	0%	-68		[Gantt bar: Jul 26 to Oct 6]												
ELV																							
Builder's Work																							
AB53670	Construct plinth	5	20-May-17	24-May-17	29-Jul-17	02-Aug-17	100%	0%	-68		[Gantt bar: May 20 to Aug 2]												
AB53680	Wall rendering	9	25-May-17	03-Jun-17	03-Aug-17	11-Aug-17	100%	0%	-68		[Gantt bar: May 25 to Aug 11]												
AB53690	Wall tiling (1.5m high)	10	04-Jun-17	13-Jun-17	12-Aug-17	21-Aug-17	100%	0%	-68		[Gantt bar: Jun 4 to Aug 21]												
AB53700	Floor screeding	4	14-Jun-17	17-Jun-17	22-Aug-17	25-Aug-17	100%	0%	-68		[Gantt bar: Jun 14 to Aug 25]												
AB53710	Sealer on ceiling soffit & application of epoxy paint on w	6	18-Jun-17	23-Jun-17	26-Aug-17	31-Aug-17	100%	0%	-68		[Gantt bar: Jun 18 to Aug 31]												
BS Installation																							

Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

Activity ID	Activity Name	CMWP Dur.	CMWP - R0.D5 Start	CMWP - R0.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	July		August			September			October		November				
											22	23	23	20	27	03	10	17	24	01	08	15	22	29	26
											02	09	16	23	30	06	13	20	27	03	10	17	24	01	08
AB17190	ELV Room - MEP 2nd fix	14	24-Jun-17	08-Jul-17	01-Sep-17	14-Sep-17	100%	0%	-68																
AB17200	ELV Room - Install ELV system	30	09-Jul-17	07-Aug-17	15-Sep-17	16-Oct-17	66.67%	0%	-68																
Final Finishes																									
AB17210	Final coat of paint on ceiling & wall	3	08-Aug-17	10-Aug-17	17-Oct-17	19-Oct-17	0%	0%	-68																
AB17220	Sealer on floor	3	11-Aug-17	13-Aug-17	20-Oct-17	22-Oct-17	0%	0%	-68																
ICT Riser																									
Builders' Work																									
AB53720	Construct plinth	5	20-May-17	24-May-17	29-Jul-17	02-Aug-17	100%	0%	-68																
AB53730	Wall rendering	9	25-May-17	03-Jun-17	03-Aug-17	11-Aug-17	100%	0%	-68																
AB53740	Wall tiling (1.5m high)	10	04-Jun-17	13-Jun-17	12-Aug-17	21-Aug-17	100%	0%	-68																
AB53750	Floor screeding	4	14-Jun-17	17-Jun-17	22-Aug-17	25-Aug-17	100%	0%	-68																
AB53760	Sealer on ceiling soffit & application of epoxy paint on w	6	18-Jun-17	23-Jun-17	26-Aug-17	31-Aug-17	100%	0%	-68																
BS Installation																									
AB17250	ICT Riser - MEP 2nd fix	14	24-Jun-17	08-Jul-17	01-Sep-17	14-Sep-17	100%	0%	-68																
AB17260	ICT Riser - MEP final fix	14	09-Jul-17	22-Jul-17	15-Sep-17	28-Sep-17	100%	0%	-68																
Final Finishes																									
AB17270	Final coat of paint on wall	3	23-Jul-17	25-Jul-17	29-Sep-17	01-Oct-17	100%	0%	-68																
AB17280	Sealer on floor	3	26-Jul-17	28-Jul-17	03-Oct-17	06-Oct-17	100%	0%	-68																
General Builders' Work																									
AB16620	Steel Post	10	01-Oct-17	12-Oct-17	04-Dec-17	14-Dec-17	0%	0%	-61																
AB16630	Blockwall	14	13-Oct-17	26-Oct-17	14-Dec-17	30-Dec-17	0%	0%	-61																
AB16640	Wall Plastering	21	27-Oct-17	17-Nov-17	30-Dec-17	21-Jan-18	0%	0%	-61																
General BS Installation																									
Electrical System																									
AB53380	MEP 1st fix - B1F Sector C	30	27-Oct-17	26-Nov-17	30-Dec-17	30-Jan-18	0%	0%	-61																
Plumbing & Drainage																									
AB53410	P&D 1st fix - B1F Sector C	30	27-Oct-17	26-Nov-17	30-Dec-17	30-Jan-18	0%	0%	-61																
FS System																									
AB53440	FS 1st fix - B1F Sector C	30	27-Oct-17	26-Nov-17	30-Dec-17	30-Jan-18	0%	0%	-61																
HVAC System																									
AB53470	HVAC 1st fix - B1F Sector C	30	27-Oct-17	26-Nov-17	30-Dec-17	30-Jan-18	0%	0%	-61																
B1/F - Zone D2 & Zone N (Sector D)																									
Plantrooms																									
Carriageway LV Switch Room (Concern Area 13)																									
Builders' Work																									
AB53890	Construct plinth	5	15-Aug-17	19-Aug-17	22-Aug-17	26-Aug-17	0%	0%	-7																
AB53900	Wall rendering	9	20-Aug-17	28-Aug-17	27-Aug-17	04-Sep-17	0%	0%	-7																
AB53910	Wall tiling (1.5m high)	10	29-Aug-17	07-Sep-17	05-Sep-17	14-Sep-17	0%	0%	-7																
AB53920	Floor screeding	4	08-Sep-17	11-Sep-17	15-Sep-17	18-Sep-17	0%	0%	-7																
AB53930	Sealer on ceiling soffit & application of epoxy paint on w	7	12-Sep-17	18-Sep-17	19-Sep-17	25-Sep-17	0%	0%	-7																
BS Installation																									
AB20540	Carriageway LV Switch Room - MEP 2nd fix	14	19-Sep-17	03-Oct-17	26-Sep-17	11-Oct-17	0%	0%	-7																
AB20550	Carriageway LV Switch Room - Site test for LV Switchboa	8	04-Oct-17	12-Oct-17	12-Oct-17	19-Oct-17	0%	0%	-7																
AB20555	Carriageway LV Switch Room - Install Carriageway LV Swi	60	13-Oct-17	12-Dec-17	20-Oct-17	19-Dec-17	0%	0%	-7																
B1/F - Zone GFT5 (Sector F)																									
General Builders' Work																									
AB18650	Steel Post	10	22-Jul-17	31-Jul-17	11-Sep-17	21-Sep-17	70%	0%	-52																
AB18660	Blockwall	14	01-Aug-17	14-Aug-17	21-Sep-17	07-Oct-17	0%	0%	-52																
AB18670	Wall Plastering	14	15-Aug-17	28-Aug-17	07-Oct-17	21-Oct-17	0%	0%	-52																
AB18680	Floor Screeding	21	29-Aug-17	18-Sep-17	21-Oct-17	12-Nov-17	0%	0%	-52																
General BS Installation																									
Electrical System																									
AB53940	MEP 1st fix - B1F Sector F	30	15-Aug-17	13-Sep-17	07-Oct-17	07-Nov-17	0%	0%	-52																
AB53950	MEP 2nd fix - B1F Sector F	45	14-Sep-17	31-Oct-17	07-Nov-17	22-Dec-17	0%	0%	-52																
Plumbing & Drainage																									
AB53970	P&D 1st fix - B1F Sector F	30	15-Aug-17	13-Sep-17	07-Oct-17	07-Nov-17	0%	0%	-52																
AB53980	P&D 2nd fix - B1F Sector F	45	14-Sep-17	31-Oct-17	07-Nov-17	22-Dec-17	0%	0%	-52																
FS System																									
AB54000	FS 1st fix - B1F Sector F	30	15-Aug-17	13-Sep-17	07-Oct-17	07-Nov-17	0%	0%	-52																
AB54010	FS 2nd fix - B1F Sector F	45	14-Sep-17	31-Oct-17	07-Nov-17	22-Dec-17	0%	0%	-52																
HVAC System																									
AB54030	HVAC 1st fix - B1F Sector F	30	15-Aug-17	13-Sep-17	07-Oct-17	07-Nov-17	0%	0%	-52																
AB54040	HVAC 2nd fix - B1F Sector F	45	14-Sep-17	31-Oct-17	07-Nov-17	22-Dec-17	0%	0%	-52																
Plantrooms																									



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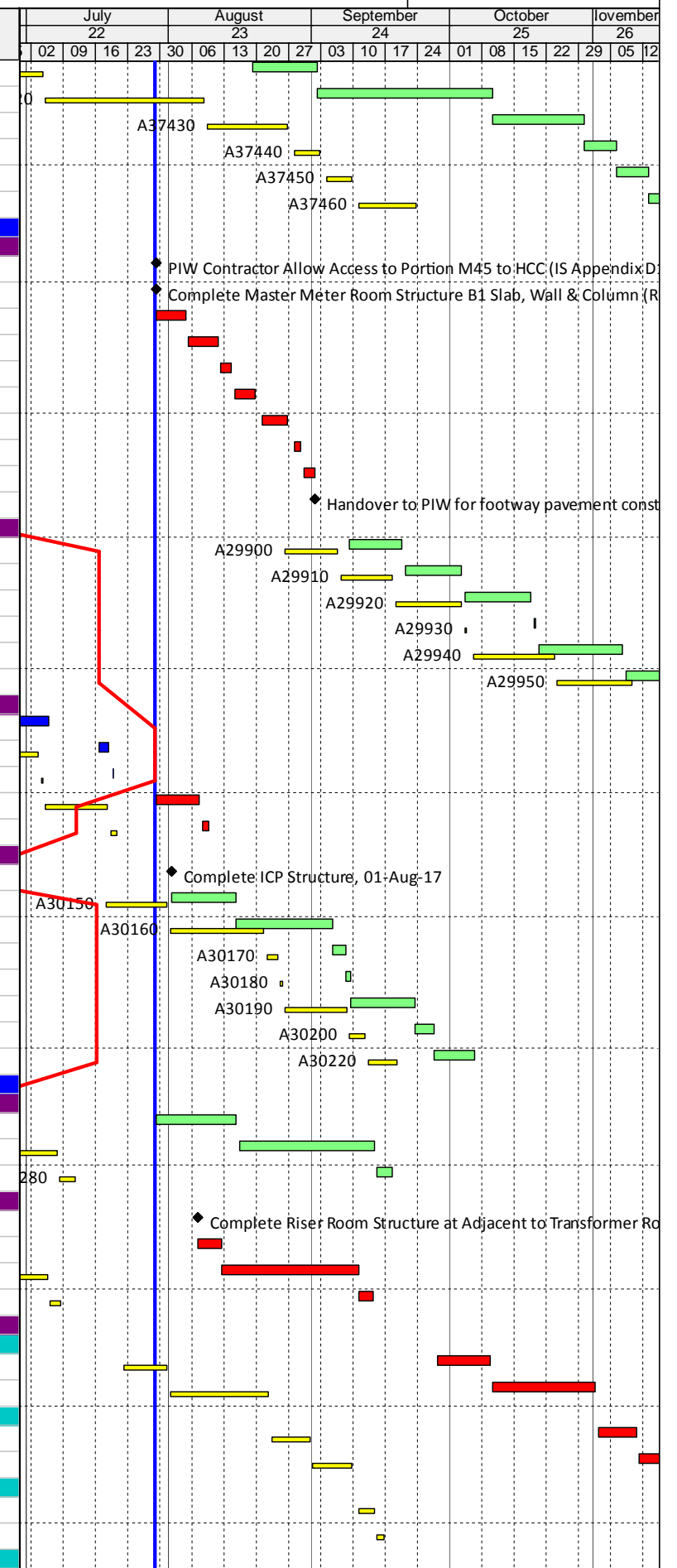
Activity ID	Activity Name	CMWP Dur.	CMWP - R0.D5 Start	CMWP - R0.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	July					August			September			October		November						
											22					23			24			25		26						
											02	09	16	23	30	06	13	20	27	03	10	17	24	01	08	15	22	29	05	
A55740	Plastering & screeding	10	10-May-17	20-May-17	10-May-17 A	31-Jul-17	100%	80%	-59	remark: 20% is screeding & final paint																				
A55750	Channel grating & trench cover installation	7	31-May-17	07-Jun-17	01-Aug-17	08-Aug-17	100%	0%	-52																					
BS Installation																														
A55760	SPS - MEP 2nd Fix for Pump Station Service Yard	14	08-Jun-17	23-Jun-17	29-May-17 A	02-Aug-17	100%	75%	-33																					
Final Finishes																														
A56490	Install roller shutter (for security)	7	17-Jun-17	24-Jun-17	29-Jul-17	05-Aug-17	100%	0%	-35																					
A56500	Apply paint on ceiling & wall	10	26-Jun-17	07-Jul-17	19-Jun-17 A	23-Jun-17 A	100%	100%	12																					
A56510	Apply floor sealer	5	08-Jul-17	13-Jul-17	29-Jul-17	03-Aug-17	100%	0%	-18																					
A56520	Door & ironmongeries installation	3	14-Jul-17	17-Jul-17	26-Jun-17 A	01-Aug-17	100%	10%	-13																					
Cleansing & Flushing Water Tank Room																														
Builders' Work																														
A56190	Plastering & screeding	6	10-May-17	16-May-17	10-May-17 A	29-Jul-17	100%	95%	-61	remark: 20% is screeding & final paint																				
A56200	Install glass-fibre water tank supporting frame	6	25-May-17	01-Jun-17	29-Jul-17	05-Aug-17	100%	0%	-54																					
BS Installation																														
A32160	SPS - Install Pumps, Valves & Equipment	36	25-May-17	07-Jul-17	21-Jun-17 A	03-Aug-17	100%	80%	-23																					
A32170	SPS - Install Water Tank, Pipeworks & Testing	36	02-Jun-17	14-Jul-17	20-Jun-17 A	07-Aug-17	100%	70%	-19																					
Final Finishes																														
A56210	Apply paint coating on ceiling & wall	7	15-Jul-17	22-Jul-17	19-Jun-17 A	23-Jun-17 A	100%	100%	25																					
A56220	Apply floor sealer	3	24-Jul-17	26-Jul-17	05-Aug-17	09-Aug-17	100%	0%	-11																					
A56230	Door & ironmongeries installation	3	24-Jul-17	26-Jul-17	05-Aug-17	09-Aug-17	100%	0%	-11																					
Sprinkler Tank																														
A56240	Waterproofing & water test	12	08-May-17	20-May-17	08-May-17 A	11-Jul-17 A	100%	100%	-41																					
A56250	Plaster work (inside tank)	8	03-Jun-17	12-Jun-17	22-May-17 A	07-Aug-17	100%	0%	-47																					
A56270	Install Cat ladder & hatch cover	4	19-Jun-17	22-Jun-17	21-Jul-17 A	22-Aug-17 A	100%	100%	-50																					
FS Tank																														
A56280	Waterproofing & water test	12	10-May-17	23-May-17	10-May-17 A	11-Jul-17 A	100%	100%	-39																					
A56290	Plaster work (inside tank)	8	03-Jun-17	12-Jun-17	22-May-17 A	07-Aug-17	100%	0%	-47																					
A56310	Install Cat ladder & hatch cover	4	19-Jun-17	22-Jun-17	21-Jul-17 A	25-Jul-17 A	100%	100%	-26																					
Accessible Unisex Toilet																														
Builders' Work																														
A56340	Wall & floor tiling	6	29-May-17	05-Jun-17	19-Jun-17 A	08-Jul-17 A	100%	100%	-27																					
A56350	Gypsum/cement board ceiling framework & close-up	6	06-Jun-17	12-Jun-17	22-Jun-17 A	03-Aug-17	100%	30%	-43																					
BS Installation																														
A56360	SPS - MEP 2nd Fix for Accessible Unisex Toilet	14	13-Jun-17	28-Jun-17	10-Jul-17 A	03-Aug-17	100%	50%	-30																					
Final Finishes																														
A56370	Apply Taping joint & painting on ceiling	4	29-Jun-17	04-Jul-17	04-Aug-17	07-Aug-17	100%	0%	-29																					
A56380	Sanitary wares & fitting installation	5	05-Jul-17	10-Jul-17	08-Aug-17	10-Aug-17	100%	0%	-27																					
A56390	Door & ironmongeries installation	3	11-Jul-17	13-Jul-17	08-Aug-17	09-Aug-17	100%	0%	-23																					
A56400	Mirror installation	1	14-Jul-17	14-Jul-17	10-Aug-17	10-Aug-17	100%	0%	-23																					
Corridor																														
Builders' Work																														
A31880	Plastering & screeding	7	02-Jun-17	09-Jun-17	24-Jun-17 A	31-Jul-17	100%	85%	-42																					
A31890	Wall tiling & Install chequered plate on floor	6	10-Jun-17	16-Jun-17	31-Jul-17	07-Aug-17	100%	0%	-42																					
BS Installation																														
A56180	SPS - MEP 2nd Fix for Corridor	14	17-Jun-17	04-Jul-17	26-Jun-17 A	14-Aug-17	100%	5%	-34																					
Final Finishes																														
A31910	FRP ceiling	7	05-Jul-17	12-Jul-17	14-Aug-17	22-Aug-17	100%	0%	-34																					
A56410	Apply paint on ceiling & wall	7	13-Jul-17	20-Jul-17	23-Jun-17 A	31-Jul-17	100%	80%	-8																					
A56420	Door & ironmongeries installation	7	21-Jul-17	28-Jul-17	31-Jul-17	08-Aug-17	100%	0%	-8																					
Staircase																														
Builders' Work																														
A56430	Wall Plastering & screeding	12	12-May-17	25-May-17	12-May-17 A	01-Aug-17	100%	80%	-55																					
A56440	Install handrail / balustrade	7	26-May-17	03-Jun-17	01-Aug-17	09-Aug-17	100%	0%	-55																					
BS Installation																														
A56450	SPS - MEP 2nd Fix for Staircases	14	05-Jun-17	20-Jun-17	26-Jun-17 A	08-Aug-17	100%	40%	-40																					
Final Finishes																														
A56460	Floor tiling	6	21-Jun-17	27-Jun-17	03-Jul-17 A	17-Jul-17 A	100%	100%	-16																					
A56470	Apply paint on ceiling & wall	7	28-Jun-17	06-Jul-17	19-Jun-17 A	23-Jun-17 A	100%	100%	11																					
A56480	Install Door & ironmongeries	3	07-Jul-17	10-Jul-17	29-Jul-17	01-Aug-17	100%	0%	-19																					
SPS - External Envelope																														
A32220	SPS - Install GRC Architectural Louvre & Bracket	7	05-Jun-17	12-Jun-17	21-Jul-17 A	31-Jul-17	100%	75%	-41																					
A32230	SPS - Erect steel frame for perforated corrugated cladding	12	05-Jun-17	17-Jun-17	29-Jul-17	11-Aug-17	100%	0%	-46																					
A56560	SPS - Install perforated corrugated cladding	12	19-Jul-17	01-Aug-17	18-Aug-17	26-Aug-17	75%	0%	-22																					

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Activity ID	Activity Name	CMWP Dur.	CMWP - R.O.D5 Start	CMWP - R.O.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	July		August			September			October			November						
											22	23	23	24	24	25	26	26	27	28	29	30	01	02	03	04	05	06
											02	09	16	23	30	06	13	20	27	03	10	17	24	01	08	15	22	29
A36990	ICP - Install GRC Architectural Louvre & Bracket	40	14-Jun-17	31-Jul-17	01-Aug-17	16-Sep-17	95%	0%	-41																			
A37000	ICP - GRC Facade Final Cleaning	15	01-Aug-17	17-Aug-17	16-Sep-17	06-Oct-17	0%	0%	-41																			
A37010	ICP - Install Facade Louvre Screen	40	14-Jun-17	31-Jul-17	01-Aug-17	16-Sep-17	95%	0%	-41																			
A37020	ICP - Facade Louvre Screen Final Cleaning	15	01-Aug-17	17-Aug-17	16-Sep-17	06-Oct-17	0%	0%	-41																			
ICP - Statutory Inspection																												
WSD (FS Water)																												
A37070	ICP - Submit & Approval of Form WW046 (Part 4) to WS	14	13-Sep-17	26-Sep-17	31-Oct-17	14-Nov-17	0%	0%	-48																			
A37080	ICP - Inspection and Approval by WSD for (FS Pipeworks)	7	27-Sep-17	03-Oct-17	14-Nov-17	21-Nov-17	0%	0%	-48																			
A37085	ICP - Water Sample (2 nos.) & Report Submission	10	04-Oct-17	13-Oct-17	21-Nov-17	01-Dec-17	0%	0%	-48																			
A37090	ICP - Issuance of WW046 (Part 5) by WSD (Water Certifi	14	14-Oct-17	27-Oct-17	01-Dec-17	15-Dec-17	0%	0%	-48																			
A37100	ICP - Water Meter Connection (FS) by WSD	14	28-Oct-17	10-Nov-17	19-Dec-17	02-Jan-18	0%	0%	-52																			
Potable Water / Flushing Water																												
A37110	ICP - Submit & Approval of Form WW046 (Part 4) to WS	14	13-Sep-17	26-Sep-17	31-Oct-17	14-Nov-17	0%	0%	-48																			
A37120	ICP - Inspection and Approval by WSD	7	04-Oct-17	10-Oct-17	21-Nov-17	28-Nov-17	0%	0%	-48																			
A37125	ICP - Water Sample (2 nos.) & Report Submission	10	11-Oct-17	20-Oct-17	28-Nov-17	08-Dec-17	0%	0%	-48																			
A37130	ICP - Issuance of WW046 (Part 5) by WSD (Water Certifi	14	21-Oct-17	03-Nov-17	08-Dec-17	22-Dec-17	0%	0%	-48																			
EPD Submission and Approval																												
A37150	ICP - EPD Submission and Approval for (Genset Installati	30	29-Aug-17	03-Oct-17	31-Oct-17	05-Dec-17	0%	0%	-51																			
External Works																												
SPS																												
SPS - G/F External Utilities & Roadworks																												
Grd Lvl - Watermain / FS Pipes Connection (Outside SPS) to PIW																												
A37240	Watermain Final Connection & Backfill	25	08-May-17	06-Jun-17	08-May-17 A	18-Aug-17	100%	30%	-62																			
Works Above SPS and ICP at Portion A																												
A37320	Portion A - Waterproofing & Backfilling	60	07-Sep-17	18-Nov-17	07-Sep-17	18-Nov-17	0%	0%	0																			
A37330	Portion A - Above Slab Utilities & Fire Hydrant	60	14-Oct-17	23-Dec-17	14-Oct-17	23-Dec-17	0%	0%	0																			
ICP																												
ICP - G/F External Utilities & Roadworks																												
Entrance Portal from At-grade Road																												
A56620	ICP - Final backfilling at Entrance Portal	2	26-Sep-17	27-Sep-17	10-Oct-17	11-Oct-17	0%	0%	-10																			
A56630	ICP - Construct Entrance Carriageway	12	28-Sep-17	13-Oct-17	12-Oct-17	25-Oct-17	0%	0%	-10																			
Works Above ICP at Portion B																												
A37470	Portion B - Waterproofing & Backfilling	30	15-Jun-17	20-Jul-17	03-Aug-17	06-Sep-17	100%	0%	-41																			
A37480	Portion B - Above Slab Utilities & Fire Hydrant	30	21-Jul-17	24-Aug-17	07-Sep-17	13-Oct-17	23.33%	0%	-41																			
A37490	Portion B - Final backfilling	30	25-Aug-17	28-Sep-17	14-Oct-17	18-Nov-17	0%	0%	-41																			
A37500	Portion B - EVA Carriageway / Roadworks	60	09-Oct-17	18-Dec-17	27-Nov-17	07-Feb-18	0%	0%	-41																			
Co-ordinated External Works & Utilities Services Installation																												
Interface Dates																												
Access Dates																												
A24745	M14 - Lyric Interface South, GL 6-12 (2nd access)	0	20-May-17		30-Sep-17*		100%	0%	-133	2nd Access changed to 30/09/2017																		
A25000	M43 - At-grade Road Footpath at ICP / SPS Entrance Port	0	20-May-17		29-Jul-17		100%	0%	-70																			
A25130	M70 - Arts Pavilion Area on M+ side of M+ / Park Interf	0	01-Jun-17		29-Jul-17*		100%	0%	-58																			
Vacation Date																												
A25250	M05 - SPS Frontage At-grade Road (25Jan19)	0		25-Sep-17		16-Oct-17	0%	0%	-21																			
A25480	M26 - M+ Entrance interface with At-grade Road (Practic	0		13-Jul-17		07-Sep-17	100%	0%	-56																			
A25490	M27 - New Temporary Access Road outside Park Bound	0		19-Sep-17		06-Oct-17	0%	0%	-17																			
A25500	M28 - New Temporary Access Road Part in Hotel/OACF	0		19-Sep-17		06-Oct-17	0%	0%	-17																			
A25520	M31 - Existing Temporary Access Road, at M+ Entrance P	0		19-May-17		29-Jul-17	100%	0%	-70																			
A25600	M43 - At-grade Road Footpath at ICP / SPS Entrance Port	0		19-Sep-17		06-Oct-17	0%	0%	-17																			
A25610	M44 - At-grade Road Footpath at ICP / SPS Frontage (H/C	0		09-Oct-17		16-Dec-17	0%	0%	-68																			
A25640	M47 - M+ Promenade Terrace (Practical Completion)	0		25-Oct-17		15-Sep-17	0%	0%	40																			
A25650	M48 - M+ Waterfront Promenade Part incl' KGO Pump C	0		25-Oct-17		15-Sep-17	0%	0%	40																			
A25660	M49 - M+ Waterfront Part for Access Around ESS (H/O tr	0		25-Oct-17		15-Sep-17	0%	0%	40																			
A25670	M50 - Internal Areas of SPS (for Park Opening) (25Jun2	0		15-Sep-17		29-Sep-17	0%	0%	-14																			
A25680	M51 - Entrance to SPS within the ICP (H/O to Park on 2	0		19-Sep-17		06-Oct-17	0%	0%	-17																			
A25730	M57 - Area Around South side of ICP (Practical Completi	0		25-Sep-17		25-Sep-17	0%	0%	0																			
A25750	M59 - ICP Level B2 Roof Top (Practical Completion)	0		08-Jun-17		29-Jul-17	100%	0%	-50																			
A25760	M60 - ICP Level B1 Roof Top (Practical Completion)	0		19-Jul-17		02-Sep-17	100%	0%	-45																			
A25890	M76 - Interfacing Park Landscape Area between M+ Sou	0		25-Sep-17		25-Sep-17	0%	0%	0																			
A25900	M77 - Interfacing Park Landscape Area South of M+ Sou	0		25-Sep-17		25-Sep-17	0%	0%	0																			
Interface Schedule (Appendix D1 - 16 December 2015)																												
Lyric Theatre Complex and Extended Basement (Lyric)																												
Along Interface South of AEL																												

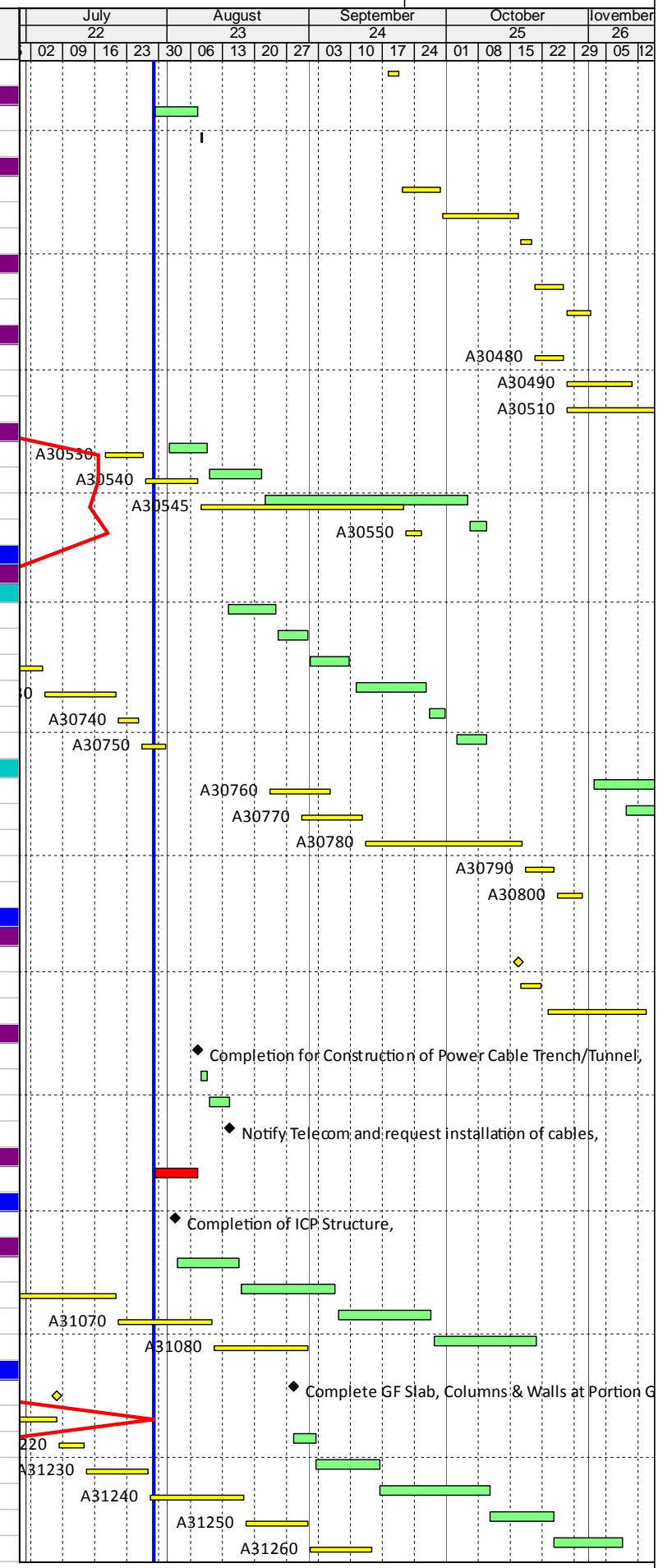
Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

Activity ID	Activity Name	CMWP Dur.	CMWP - R.O.D5 Start	CMWP - R.O.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	July 22		August 23		September 24		October 25		November 26		
											02	09	16	23	30	06	13	20	27	03	10
A37410	Construct Storm Water Manholes (SMH-01 & 02)	12	20-Jun-17	04-Jul-17	19-Aug-17	02-Sep-17	100%	0%	-51												
A37420	Install Storm Drain Pipes & Testing	30	05-Jul-17	08-Aug-17	02-Sep-17	10-Oct-17	70%	0%	-51												
A37430	Connect to Existing Storm Manholes & Backfill	16	09-Aug-17	26-Aug-17	10-Oct-17	30-Oct-17	0%	0%	-51												
A37440	Completed Storm Drain + Report	6	28-Aug-17	02-Sep-17	30-Oct-17	06-Nov-17	0%	0%	-51												
A37450	Inform DSD for Inspection	6	04-Sep-17	09-Sep-17	06-Nov-17	13-Nov-17	0%	0%	-51												
A37460	DSD Inspection & Acceptance Test	12	11-Sep-17	23-Sep-17	13-Nov-17	27-Nov-17	0%	0%	-51												
WSD																					
Water Main Works at Portion M01 (Refer to M+ MEP Programme)																					
A29800	PIW Contractor Allow Access to Portion M45 to HCC (IS /	0	20-May-17		29-Jul-17*		100%	0%	-58												
A29810	Complete Master Meter Room Structure B1 Slab, Wall &	0		19-May-17		29-Jul-17*	100%	0%	-58												
A29820	Remove existing hoarding fixed to Sheet pile	6	20-May-17	26-May-17	29-Jul-17	04-Aug-17	100%	0%	-58												
A29830	Install a new hoarding with 500mm clearance from roac	6	27-May-17	03-Jun-17	05-Aug-17	11-Aug-17	100%	0%	-58												
A29840	Excavate Trench in footway to expose PIW watermains &	2	05-Jun-17	06-Jun-17	12-Aug-17	14-Aug-17	100%	0%	-58												
A29850	Lay 2Nos of DN150 DI Fresh Water Pipe & 1 No of DN10	5	07-Jun-17	12-Jun-17	15-Aug-17	19-Aug-17	100%	0%	-58												
A29860	Pressure test (By PIW Contractor)	6	13-Jun-17	19-Jun-17	21-Aug-17	26-Aug-17	100%	0%	-58												
A29870	Remove the Blank Flanges & Make Final Connection	2	20-Jun-17	21-Jun-17	28-Aug-17	29-Aug-17	100%	0%	-58												
A29880	Backfill & Reinstate to Ground Level	3	22-Jun-17	24-Jun-17	30-Aug-17	01-Sep-17*	100%	0%	-58												
A29890	Handover to PIW for footway pavement construction (IS	0		24-Jun-17		01-Sep-17*	100%	0%	-58												
Water Main Works at Portion M17																					
A29900	Open Cut Excavation for DN200 pipe along gridline G/13	10	26-Aug-17	06-Sep-17	09-Sep-17	20-Sep-17	0%	0%	-12												
A29910	Lay down and install DN200 pipe	10	07-Sep-17	18-Sep-17	21-Sep-17	03-Oct-17	0%	0%	-12												
A29920	Construct M+ Street Fire Hydrant & FS Pipe at gridline E-	12	19-Sep-17	03-Oct-17	04-Oct-17	18-Oct-17	0%	0%	-12												
A29930	Connect DN200 pipe to Street Fire Hydrant	1	04-Oct-17	04-Oct-17	19-Oct-17	19-Oct-17	0%	0%	-12												
A29940	Excavate Trench for DN150 pipe along gridline A-F/14	15	06-Oct-17	23-Oct-17	20-Oct-17	07-Nov-17	0%	0%	-12												
A29950	Lay down and install DN 150 pipe and connect isolation	14	24-Oct-17	09-Nov-17	08-Nov-17	23-Nov-17	0%	0%	-12												
SPS External - Grd Lvl - Watermain (Outside SPS) to PIW																					
A30070	Install Pipeworks (FW, CW & FS Water Main)	16	10-Jun-17	28-Jun-17	19-Jun-17 A	06-Jul-17 A	100%	100%	-5												
A30080	Pressure Test	3	29-Jun-17	03-Jul-17	17-Jul-17 A	19-Jul-17 A	100%	100%	-13												
A30090	Swabbing Test	1	04-Jul-17	04-Jul-17	20-Jul-17 A	20-Jul-17 A	100%	100%	-13												
A30110	Lab Test	12	05-Jul-17	18-Jul-17	29-Jul-17	07-Aug-17	100%	0%	-17												
A30120	Watermain Final Connection	2	19-Jul-17	20-Jul-17	08-Aug-17	09-Aug-17	100%	0%	-17												
ICP External - Grd Lvl - External Watermain Connection to PIW																					
A30140	Complete ICP Structure	0	10-Jun-17		01-Aug-17		100%	0%	-44												
A30150	Pipeworks Excavation at Main Road From ICP Site to PIW	12	18-Jul-17	31-Jul-17	01-Aug-17	15-Aug-17	83.33%	0%	-13												
A30160	Install Pipeworks (FW, CW & FS Water Main) (Approx.18	18	01-Aug-17	21-Aug-17	15-Aug-17	05-Sep-17	0%	0%	-13												
A30170	Pressure Test	3	22-Aug-17	24-Aug-17	05-Sep-17	08-Sep-17	0%	0%	-13												
A30180	Swabbing Test	1	25-Aug-17	25-Aug-17	08-Sep-17	09-Sep-17	0%	0%	-13												
A30190	Lab Test	12	26-Aug-17	08-Sep-17	09-Sep-17	23-Sep-17	0%	0%	-13												
A30200	Watermain Final Connection	3	09-Sep-17	12-Sep-17	23-Sep-17	27-Sep-17	0%	0%	-13												
A30220	Backfill to Ground Level	6	13-Sep-17	19-Sep-17	27-Sep-17	06-Oct-17	0%	0%	-13												
Power																					
Power Cable 11kV at Footpath adjacent to Entrance Portal (Interface with PIW)																					
A30260	Excavate trench in footway for the 11kV direct buried ca	15	20-May-17	07-Jun-17	29-Jul-17*	15-Aug-17	100%	0%	-58												
A30270	Lay Lead-in Cable (by CLP) & Inspection	30	08-Jun-17	07-Jul-17	16-Aug-17	14-Sep-17	100%	0%	-69												
A30280	Backfilling footway to adjacent ground level	3	08-Jul-17	11-Jul-17	15-Sep-17	18-Sep-17	100%	0%	-59												
Power Cable 11Kv at Gridline A / 1-3																					
A30290	Complete Riser Room Structure at Adjacent to Transform	0	31-May-17		07-Aug-17		100%	0%	-57												
A30300	Construct 2600mm x 1500mm cable trench & Install Cab	5	31-May-17	05-Jun-17	07-Aug-17	12-Aug-17	100%	0%	-57												
A30310	Lay Lead-in Cable (by CLP) & connect to district-wide sys	30	06-Jun-17	05-Jul-17	12-Aug-17	11-Sep-17	100%	0%	-67												
A30320	Backfilling	3	06-Jul-17	08-Jul-17	11-Sep-17	14-Sep-17	100%	0%	-57												
Power Cable 11Kv at Gridline A / 3-14																					
Construction at Drawpit E1 to Drawpit E2																					
A30330	Construct Drawpits E1 & E2	8	22-Jul-17	31-Jul-17	28-Sep-17	09-Oct-17	75%	0%	-58												
A30340	Construct Cable Tunnel from Drawpits E1 to E2 & Install	19	01-Aug-17	22-Aug-17	10-Oct-17	01-Nov-17	0%	0%	-58												
Construction at Drawpit E2 to E3 to E4																					
A30350	Construct Drawpit E3 & E4	8	23-Aug-17	31-Aug-17	02-Nov-17	10-Nov-17	0%	0%	-58												
A30360	Construct Cable Tunnel from Drawpits E2 to E4 & Install	8	01-Sep-17	09-Sep-17	11-Nov-17	20-Nov-17	0%	0%	-58												
Construction at Drawpit E4 to E5																					
A30370	Construct Drawpit E5	4	11-Sep-17	14-Sep-17	21-Nov-17	24-Nov-17	0%	0%	-58												
A30380	Construct Cable Trench & Install Cable Ducts (Approx 6m	2	15-Sep-17	16-Sep-17	25-Nov-17	27-Nov-17	0%	0%	-58												
Inspection & Testing																					



Three Months Rolling Programme (3MRP) - Mth 22 - 31 July 2017

Activity ID	Activity Name	CMWP Dur.	CMWP - R0.D5 Start	CMWP - R0.D5 Finish	Actual / Forecast Start	Actual / Forecast Finish	Planned B/L % Complete	Actual % Complete	Finish Variance (+/-d)	Comments / Mitigating Measures	Gantt Chart																						
											July 22			August 23			September 24			October 25			November 26										
											02	09	16	23	30	06	13	20	27	03	10	17	24	01	08	15	22	29	05	12			
A30390	Test & Inspection	3	18-Sep-17	20-Sep-17	28-Nov-17	30-Nov-17	0%	0%	-58																								
Power Cable 11Kv at Gridline A-C / 14																																	
A30400	Construct Cable Trench & Install Cable Ducts (Approx 43)	8	20-May-17	29-May-17	29-Jul-17*	07-Aug-17	100%	0%	-58																								
A30410	Tests & inspection	1	31-May-17	31-May-17	08-Aug-17	08-Aug-17	100%	0%	-58																								
Power Cable 11kv at Gridline C-M / 14																																	
A30420	Construct Drawpits E6 & E7	8	21-Sep-17	29-Sep-17	01-Dec-17	09-Dec-17	0%	0%	-58																								
A30430	Construct Cable Trench / Tunnel & Install Cable Ducts (A)	12	30-Sep-17	16-Oct-17	11-Dec-17	23-Dec-17	0%	0%	-58																								
A30440	Tests & inspection	3	17-Oct-17	19-Oct-17	27-Dec-17	29-Dec-17	0%	0%	-58																								
Power Cable 11Kv at Gridline 13-14 / M																																	
A30450	Construct Draw pit E8	6	20-Oct-17	26-Oct-17	30-Dec-17	06-Jan-18	0%	0%	-58																								
A30460	Construct Cable Trench / Tunnel & Install Cable Ducts (A)	4	27-Oct-17	01-Nov-17	08-Jan-18	11-Jan-18	0%	0%	-58																								
LV Power from DCS to M+ Seawater Pump Cells																																	
A30480	Excavate trench & Install Shoring from DCS to M+ Seawa	6	20-Oct-17	26-Oct-17	30-Dec-17	06-Jan-18	0%	0%	-58																								
A30490	Construct Cable Trench & Lay 4Nos of DN150 & 5Nos of	12	27-Oct-17	10-Nov-17	08-Jan-18	20-Jan-18	0%	0%	-58																								
A30510	Construct 6 Nos of Drawpit	18	27-Oct-17	17-Nov-17	08-Jan-18	27-Jan-18	0%	0%	-58																								
ICP External Power Cable Trench For CLP Lead In																																	
A30530	Construct 2 Nos of Drawpit at the ICP Entrance	8	18-Jul-17	26-Jul-17	01-Aug-17	09-Aug-17	100%	0%	-12																								
A30540	Install 10x200 Dia. GI Duct In 2 Layers & 1x100Dia Duct v	10	27-Jul-17	07-Aug-17	10-Aug-17	21-Aug-17	20%	0%	-12																								
A30545	Lay power Lead-in for ICP & Inspection (by CLP)	45	08-Aug-17	21-Sep-17	22-Aug-17	05-Oct-17	0%	0%	-14																								
A30550	Backfill to Ground Level	3	22-Sep-17	25-Sep-17	06-Oct-17	09-Oct-17	0%	0%	-10																								
Gas																																	
Gas Main at Portion M01																																	
Gas Main RDE connection along Gridline E' - I' / 1'																																	
A30700	Trench for Underground Utilities	10	06-Jun-17	16-Jun-17	14-Aug-17	24-Aug-17	100%	0%	-58																								
A30710	Install support for existing Underground Utilities	6	17-Jun-17	23-Jun-17	25-Aug-17	31-Aug-17	100%	0%	-58																								
A30720	Excavate Trench for Main Gas 100mm and install shoring	8	24-Jun-17	04-Jul-17	01-Sep-17	09-Sep-17	100%	0%	-58																								
A30730	Lay down Main Gas 100mm (by Towngas Specialist Cont	14	05-Jul-17	20-Jul-17	11-Sep-17	26-Sep-17	100%	0%	-58																								
A30740	Backfill Trench to Ground Level	4	21-Jul-17	25-Jul-17	27-Sep-17	30-Sep-17	100%	0%	-58																								
A30750	Testing and Inspection	5	26-Jul-17	31-Jul-17	03-Oct-17	09-Oct-17	60%	0%	-58																								
Gas Main M+ along Gridline 2-9/A																																	
A30760	Excavate Trench for Main Gas and install shoring	12	23-Aug-17	05-Sep-17	02-Nov-17	15-Nov-17	0%	0%	-58																								
A30770	Construct and Lay down 350x350mm concrete pipe ben	12	30-Aug-17	12-Sep-17	09-Nov-17	22-Nov-17	0%	0%	-58																								
A30780	Lay down and install DN100 gas main (by Towngas Speci	28	13-Sep-17	17-Oct-17	23-Nov-17	27-Dec-17	0%	0%	-58																								
A30790	Backfill trench at M+ to adjacent level	6	18-Oct-17	24-Oct-17	28-Dec-17	04-Jan-18	0%	0%	-58																								
A30800	Testing and Inspection	4	25-Oct-17	30-Oct-17	05-Jan-18	09-Jan-18	0%	0%	-58																								
Telecom/ICT/FTNS																																	
Telecom @ Gridline C-M/14																																	
A30810	Completion for Construction of Power Cable Trench/Tun	0		16-Oct-17		23-Dec-17	0%	0%	-58																								
A30820	Lay 28Nos of DN100 Ducting @ A-C/14 (Approx. 100m)	5	17-Oct-17	21-Oct-17	27-Dec-17	02-Jan-18	0%	0%	-58																								
A30830	Construct 5# 28 DN100 FTNS drawpit @ gridline C-M/14	18	23-Oct-17	13-Nov-17	03-Jan-18	23-Jan-18	0%	0%	-58																								
Telecom @ Gridline A-C/14																																	
A30850	Completion for Construction of Power Cable Trench/Tun	0		29-May-17		07-Aug-17	100%	0%	-58																								
A30860	Lay 28Nos of DN100 Ducting @ A-C/14 (Approx. 30m)	2	31-May-17	01-Jun-17	08-Aug-17	09-Aug-17	100%	0%	-58																								
A30870	Construct 1# 28 DN100 FTNS drawpit @ gridline A-C/14	4	02-Jun-17	06-Jun-17	10-Aug-17	14-Aug-17	100%	0%	-58																								
A30880	Notify Telecom and request installation of cables	0		06-Jun-17		14-Aug-17	100%	0%	-58																								
SPS FTNS Lead In																																	
A32075	Installation of FTNS Cables (by Telecom)	8	12-Jun-17	20-Jun-17	29-Jul-17	07-Aug-17	100%	0%	-40																								
Backfilling and EVA																																	
A31040	Completion of ICP Structure	0		14-Jun-17		02-Aug-17	100%	0%	-41																								
Backfilling																																	
A31050	Backfilling to +6.50mPD	12	15-Jun-17	28-Jun-17	03-Aug-17	16-Aug-17	100%	0%	-41																								
A31060	Backfilling to +8.50mPD	18	29-Jun-17	20-Jul-17	17-Aug-17	06-Sep-17	100%	0%	-41																								
A31070	Backfilling to +10.50mPD	18	21-Jul-17	10-Aug-17	07-Sep-17	27-Sep-17	38.89%	0%	-41																								
A31080	Backfilling to +12.70mPD	18	11-Aug-17	31-Aug-17	28-Sep-17	20-Oct-17	0%	0%	-41																								
Fuel Tank																																	
A31190	Complete GF Slab, Columns & Walls at Portion GFT6	0		07-Jul-17		28-Aug-17	100%	0%	-44																								
A31210	RSS Review & Approve Method Statement for Fuel Tank	12	23-Jun-17	07-Jul-17	09-May-17 A	11-May-17 A	100%	100%	48																								
A31220	Remove Hoarding fixed to sheetpile at Portion M04	5	08-Jul-17	13-Jul-17	28-Aug-17	02-Sep-17	100%	0%	-44																								
A31230	Install Hoarding on road-side edge of footway (500mm r	12	14-Jul-17	27-Jul-17	02-Sep-17	16-Sep-17	100%	0%	-44																								
A31240	Cut down sheet pile to underside of footway pavement	18	28-Jul-17	17-Aug-17	16-Sep-17	10-Oct-17	5.56%	0%	-44																								
A31250	Excavate to Base Slab & Wall of Fuel Tank	12	18-Aug-17	31-Aug-17	10-Oct-17	24-Oct-17	0%	0%	-44																								
A31260	Construct Bottom Level of Fuel Oil Storage Tank	12	01-Sep-17	14-Sep-17	24-Oct-17	08-Nov-17	0%	0%	-44																								



Lyric Theatre Complex

Activity ID	Activity Name	Durn. (Days)	Planned Start	Planned Finish	Current / Actual Start	Current / Actual Finish	Physical % Complete	Finish Variance	Float (Days)	2017												2018											
										Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
										1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
ELs for DCS Intake Cofferdam and DCS / Box Culvert Outfall Cofferdam																																	
KEY DAY																																	
Supplementary Agreement / Contract Administrator's Instruction																																	
DCS.0010	Issuance of CAI 025 - Design of ELs for DCS Intake Cofferdam	0	14-Mar-17		14-Mar-17 A		100%	0		◆																							
DCS.0020	Forming of Supplementary Agreement	0	13-Jul-17		02-Sep-17*		0%	-44	-46																								
DCS.0080	Completion of Cofferdam A Including Submission of Pumping Test Report	0		06-Oct-18		02-Nov-18*	0%	-27	-27												◆												
DCS.0090	Completion of Cofferdam B Including Submission of Pumping Test Report	0		08-Jul-18		26-May-18*	0%	43	43												◆												
Access Date																																	
DCS.0130	M+ Contractor (Hsin Chong) Vacate DCS Eastern Portion	0		09-Apr-17		09-Apr-17 A	100%	0		◆																							
DCS.0140	M+ Contractor (Hsin Chong) Vacate DCS Western Portion	0		05-May-17		05-May-17 A	100%	0		◆																							
DCS.0150	Access to Portion M14B and M14C	0	09-Jun-17		03-Jun-17 A		100%	5			◆																						
DCS.0180	Vacate Area Within Lyric Main Cofferdam and Handover to L1 Contractor	0		28-Feb-18		22-Mar-18*	0%	-22	-22												◆												
DCS.0190	Vacate and Handover Working Area within M+ Boundary	0		10-Feb-18		13-Mar-18*	0%	-23	-23												◆												
APPROVAL / PERMIT																																	
DCS.0270	Obtaining Tree Felling Permit from PMC for Tree Removal in DCS Construction Area	0		13-Jul-17		11-Jul-17 A	100%	2													◆												
DCS.0290	Obtaining No Objection from PMC for Use of Water Barrier as Hoarding	0		13-Jul-17		12-Jul-17 A	100%	1													◆												
SUMMARY OF MAJOR WORKS																																	
DCS.0610	Cofferdam A First Design Submission and Approval; Obtaining BD Consent for Commencement	93	11-May-17	11-Aug-17	11-May-17 A	21-Aug-17 A	100%	-9																									
DCS.0612	Withdrawal of BA8 (Initial Monitoring Reading Missing), Re-submission to Obtain BD Consent	0			24-Aug-17 A	21-Sep-17	31%	-26																									
DCS.0620	Pre-grouting Works for Cofferdam A	40	12-Aug-17	27-Sep-17	05-Sep-17	27-Oct-17	0%	-23	-22																								
DCS.0640	Installation of Cofferdam A Stage 1 CPP and Grout Curtain; Side Walls	80	23-Sep-17	30-Dec-17	23-Oct-17	27-Jan-18	0%	-22	-22																								
DCS.0650	Installation of Cofferdam A Stage 2 CPP and Grout Curtain; Western Portion of ESS	63	06-Dec-17	23-Feb-18	05-Jan-18	23-Mar-18	0%	-23	-22																								
DCS.0660	Installation of Cofferdam A Stage 3 CPP and Grout Curtain; Eastern Portion of ESS	126	20-Feb-18	25-Jul-18	19-Mar-18	21-Aug-18	0%	-22	-22																								
DCS.0680	Submission of BA14 for Completion of Cofferdam A CPP and BD Acknowledgement	54	26-Jul-18	17-Sep-18	22-Aug-18	14-Oct-18	0%	-26	-26																								
DCS.0690	Pumping Test at Cofferdam A and Submission of Report to BD	19	18-Sep-18	06-Oct-18	14-Oct-18	02-Nov-18	0%	-26	-26																								
DCS.0710	Allow M+ Contractor for Construction of 600D Seawater Outfall Pipe within 2m Zone of Cofferdam A	39	02-Jan-18	15-Feb-18	27-Jan-18	17-Mar-18	0%	-22	-21																								
DCS.0810	Cofferdam B First Design Submission and Approval; Obtaining BD Consent for Commencement (Rejected)	93	08-Jul-17	08-Oct-17	10-Jul-17 A	26-Jul-17 A	100%	75																									
DCS.0814	BD Confirmation of Not Approval by BD; Obtaining ICE Certification and Approval by PMC	0			26-Jul-17 A	01-Sep-17 A	100%																										
DCS.0820	Pre-grouting Works for Cofferdam B	32	09-Oct-17	15-Nov-17	25-Aug-17 A	04-Oct-17	27%	34	33																								
DCS.0840	Installation of Cofferdam B Stage 1 CPP and Grout Curtain (Side Walls)	37	16-Nov-17	30-Dec-17	06-Oct-17	18-Nov-17	0%	34	33																								
DCS.0850	Installation of Temporary Decking over Outfall Pipes for Stage 2 Clutch Pipe Pile	10	20-Feb-18	02-Mar-18	09-Jan-18	19-Jan-18	0%	33	33																								
DCS.0860	Installation of Cofferdam B Stage 2 CPP and Grout Curtain (End Wall)	42	03-Mar-18	25-Apr-18	20-Jan-18	13-Mar-18	0%	33	33																								
DCS.0880	Submission of BA14 for Completion of Cofferdam B CPP and BD Acknowledgement	55	26-Apr-18	19-Jun-18	13-Mar-18	06-May-18	0%	44	43																								
DCS.0890	Pumping Test at Cofferdam B and Submission of Report to BD	19	20-Jun-18	08-Jul-18	07-May-18	26-May-18	0%	43	43																								
DCS.0920	Allow M+ Contractor for Construction of 600D Seawater Outfall Pipe within 2m Zone of Cofferdam B	39	02-Jan-18	15-Feb-18	21-Nov-17	08-Jan-18	0%	33	33																								
DCS.0930	Allow L1 Contractor to Access to Portion M4 1C for Diversion of 11 kV CLP Cables	39	02-Jan-18	15-Feb-18	21-Nov-17	08-Jan-18	0%	33	33																								
DESIGN OF ELs FOR COFFERDAMS A AND B																																	
Design, BD Submission / Approval / Consent																																	
DCS.1050	Preliminary Design for Cofferdam A First (1st) BD Submission	15	15-Mar-17	31-Mar-17	15-Mar-17 A	31-Mar-17 A	100%	1																									
DCS.1060	Design Review of Cofferdam A by PMC and Design Revision	16	01-Apr-17	24-Apr-17	01-Apr-17 A	24-Apr-17 A	100%	1																									
DCS.1070	CA's No Objection to Contractor's Design	12	25-Apr-17	10-May-17	25-Apr-17 A	10-May-17 A	100%	1																									
DCS.1080	Design Submission for Cofferdam A to BD by PMC	4	11-May-17	15-May-17	11-May-17 A	15-May-17 A	100%	1																									
DCS.1090	Obtaining BD Approval for Cofferdam A First (1st) Design Submission	60	16-May-17	14-Jul-17	16-May-17 A	01-Aug-17 A	100%	-18																									
DCS.1100	Submission of BA8 and Obtaining BD Consent of Cofferdam A	28	15-Jul-17	11-Aug-17	26-Jul-17 A	21-Aug-17 A	100%	-9																									
DCS.1103	Withdrawal of BA8 Consent Application (Initial Monitoring Readings Missing) and Re-submission	0			24-Aug-17 A	24-Aug-17 A	100%																										
DCS.1110	Obtaining BA8 BD Consent for Cofferdam A	0			25-Aug-17 A	21-Sep-17	28%		-27																								
DCS.1140	Cofferdam A Design Amendment after UU Checking and Exposure	14	15-Aug-17	30-Aug-17	09-Aug-17 A	11-Sep-17	75%	-10	1																								
DCS.1150	Review of Design Amendment for Cofferdam A by PMC	14	31-Aug-17	15-Sep-17	12-Sep-17	27-Sep-17	0%	-10	1																								
DCS.1160	Submission of Design Amendment of Cofferdam A to BD by PMC	2	16-Sep-17	18-Sep-17	28-Sep-17	29-Sep-17	0%	-10	1																								
DCS.1170	Obtaining BD Approval for Cofferdam A Design Amendment	30	19-Sep-17	18-Oct-17	30-Sep-17	29-Oct-17	0%	-11	2																								
DCS.1250	Preliminary Design for Cofferdam B First (1st) BD Submission	13	15-May-17	29-May-17	15-May-17 A	29-May-17 A	100%	1																									
DCS.1260	Design Review of Cofferdam B by PMC and Design Revision	32	31-May-17	07-Jul-17	31-May-17 A	10-Jul-17 A	100%	-1																									
DCS.1290	Design Submission for Cofferdam B to BD by PMC	4	08-Jul-17	12-Jul-17	10-Jul-17 A	10-Jul-17 A	100%	3																									

■ Primary Baseline
■ Actual Work
■ Remaining Work
■ Critical Remaining Work
◆ Milestone

WEST KOWLOON CULTURAL DISTRICT AUTHORITY
FOUNDATION WORKS FOR LYRIC THEATRE COMPLEX
AND THE EXTENDED BASEMENT IN ZONE 3B
PROGRESS PROGRAMME FOR ELs FOR DCS INTAKE AND OUTFALL COFFERDAMS
 (Planned Dates as of Programme Rev. '0' 1st Draft Dated 08-Jul-2017)



Date	Revision	Checked	Approved
08-Jul-17	Submission for SA	R.L. / D.L.	A.W. / K.K.
01-Sep-17	Update	R.L. / D.L.	K.K.

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
AM2A	274.2	500

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

Monitoring Station	Action Level (µg/m ³)	Limit Level (µg/m ³)
AM1	143.6	260
AM2A	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 documented complaint is received from any one of the sensitive receivers	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	WKCD A	Contractor
Action Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and WKCD A; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and WKCD A; 3. Advise the WKCD A 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 WKCD A; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Monitor the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial to WKCD A within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
Limit Level				
1. Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform WKCD A, 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 WKCD A informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the WKCD A on the effectiveness of the proposed remedial measures; 5. Monitor the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 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	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">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.	<ol style="list-style-type: none">1. Confirm receipt of notification of failure in writing;2. Notify Contractor;3. In consolidation with the IEC, agree on the remedial measures to be implemented;4. Ensure remedial measures properly implemented;5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	<ol style="list-style-type: none">1. Take immediate action to avoid further exceedance;2. Submit proposals for remedial actions to IEC within 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.
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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	WKCD	Contractor
Action Level	<ol style="list-style-type: none"> 1. Notify WKCD, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, WKCD and Contractor; 4. Discuss with the IEC and Contractor on remedial measures required; 5. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the WKCD accordingly; 3. Advise the WKCD on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IEC and WKCD; 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 1. Inform IEC, WKCD, 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 WKCD on remedial measures required; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and WKCD informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst WKCD, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the WKCD accordingly. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and WKCD 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 WKCD 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	WKCD A	Contractor
Design Check	<ol style="list-style-type: none"> 1. Design check to make sure the design complies with all the proposed mitigation measures in the EIA report; 2. Prepare and submit report. 	<ol style="list-style-type: none"> 1. Check report submitted by ET; 2. Recommend remedial design if necessary. 	<ol style="list-style-type: none"> 1. Undertake remedial design if necessary. 	-
Non-conformity on one occasion	<ol style="list-style-type: none"> 1. Identify source of non-conformity; 2. Report to IEC and WKCD A; 3. Discuss remedial actions with IEC, WKCD A and Contractor; 4. Monitor remedial actions until rectification has been completed. 	<ol style="list-style-type: none"> 1. Check and verify source of non-conformity; 2. Discuss remedial actions with ET and Contractor; 3. Advise WKCD A on effectiveness of proposed remedial actions; 4. Check implementation of remedial actions. 	<ol style="list-style-type: none"> 1. Notify Contractor; 2. Ensure remedial actions are properly implemented. 	<ol style="list-style-type: none"> 1. Amend working method as necessary; 2. Rectify damage and undertake necessary replacement and remedial actions.
Repeated conformity	<ol style="list-style-type: none"> 1. Identify source of non-conformity; 2. Report to IEC and WKCD A; 3. Increase monitoring frequency; 4. Discuss remedial actions with IEC, WKCD A and Contractor; 5. Monitor remedial actions until rectification has been completed; 6. If non-conformity rectified, reduce monitoring frequency back to normal. 	<ol style="list-style-type: none"> 1. Check and verify source of non-conformity; 2. Check Contractor's working method; 3. Discuss remedial actions with ET and Contractor; 4. Advise WKCD A on effectiveness of proposed remedial actions; 5. Supervise implementation of remedial actions. 	<ol style="list-style-type: none"> 1. Notify Contractor; 2. Ensure remedial actions are properly implemented. 	<ol style="list-style-type: none"> 1. Amend working method as necessary; 2. Rectify damage and undertake necessary replacement and remedial actions.

E. Monitoring Schedule

AUGUST 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	3	4	5
6	7	8 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	9	10	11	12
13	14 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	15	16	17	18 AM1, AM2A - 24hrTSP, 1hr TSP x3	19
20	21	22	23	24 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	25	26
27	28	29	30 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	31		
		Notes: AM1 - International Commerce Centre (ICC) AM2A - Austin Road West (Opposite to The Harbourside) NM1A - International Commerce Centre (ICC)				

SEPTEMBER 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	6	7	8	9
10	11 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	12	13	14	15 AM1, AM2A - 24hrTSP, 1hr TSP x3	16
17	18	19	20	21 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	22	23
24	25	26	27 AM1, AM2A - 24hrTSP, 1hr TSP x3 NM1A - Noise Impact Monitoring	28	29	30
		Notes: AM1 - International Commerce Centre (ICC) AM2A - Austin Road West (Opposite to The Harbourside) 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 : 12/06/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 Mar 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.03684
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1007
 Ta(K) : 303

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	9.8	3.095	1.503	54	53.39
2 13 holes	7.8	2.761	1.342	48	47.46
3 10 holes	5.6	2.340	1.140	38	37.57
4 7 holes	3.8	1.927	0.942	30	29.66
5 5 holes	2.0	1.398	0.688	20	19.78

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

Sampler Calibration Relationship

Slope(m): 41.883 Intercept(b): -9.467 Correlation Coefficient(r): 0.9991

Checked by: 
 Magnum Fan

Date: 16/06/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : AM1 (ICC)
 Calibrated by : K.T.Ho
 Date : 12/08/2017

Sampler

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

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 Mar 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.03684
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1007
 Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	10.2	3.153	1.530	58	57.25
2 13 holes	8.4	2.861	1.390	52	51.33
3 10 holes	6.2	2.458	1.197	44	43.43
4 7 holes	4.4	2.071	1.011	36	35.54
5 5 holes	2.6	1.592	0.781	22	21.72

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

Sampler Calibration Relationship

Slope(m): 46.559 Intercept(b): -13.169 Correlation Coefficient(r): 0.9959

Checked by: 
 Magnum Fan

Date: 16/08/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : AM2A (Harbourside)
 Calibrated by : K.T.Ho
 Date : 12/06/2017

Sampler

Model : TE-5170
 Serial Number : S/N 8919

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 Mar 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.03684
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition


Pa (hpa) : 1007
 Ta(K) : 303

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.0	3.425	1.661	58	57.35
2 13 holes	9.0	2.966	1.441	50	49.44
3 10 holes	7.0	2.616	1.273	42	41.53
4 7 holes	4.4	2.074	1.013	32	31.64
5 5 holes	2.4	1.532	0.752	22	21.75

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

Sampler Calibration Relationship

Slope(m): 39.568 Intercept(b): -8.240 Correlation Coefficient(r): 0.9994

Checked by: 
 Magnum Fan

Date: 16/06/2017

High-Volume TSP Sampler
5-Point Calibration Record

Location : AM2A (Harbourside)
 Calibrated by : K.T.Ho
 Date : 12/08/2017

Sampler

Model : TE-5170
 Serial Number : S/N 8919

Calibration Orifice and Standard Calibration Relationship

Serial Number : 2454
 Service Date : 20 Mar 2017
 Slope (m) : 2.08464
 Intercept (b) : -0.03684
 Correlation Coefficient(r) : 0.99994

Standard Condition

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

Calibration Condition

Pa (hpa) : 1007
 Ta(K) : 304

Resistance Plate	dH [green liquid] (inch water)	Z	X=Qstd (cubic meter/min)	IC (chart)	Y (corrected)
1 18 holes	12.2	3.448	1.672	59	58.24
2 13 holes	9.2	2.994	1.454	52	51.33
3 10 holes	7.2	2.649	1.288	44	43.43
4 7 holes	4.6	2.117	1.033	34	33.56
5 5 holes	2.6	1.592	0.781	24	23.69

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

Sampler Calibration Relationship

Slope(m): 39.424 Intercept(b): -7.058 Correlation Coefficient(r): 0.9990

Checked by: 
 Magnum Fan

Date: 16/08/2017



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELS, OH
 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 20, 2017 Rootsmeter S/N 0438320 Ta (K) - 293
 Operator Tisch Orifice I.D. - 2454 Pa (mm) - 759.46

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4390	3.2	2.00
2	NA	NA	1.00	1.0240	6.4	4.00
3	NA	NA	1.00	0.9170	7.9	5.00
4	NA	NA	1.00	0.8730	8.8	5.50
5	NA	NA	1.00	0.7200	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0120	0.7033	1.4257	0.9958	0.6920	0.8784
1.0078	0.9842	2.0163	0.9916	0.9683	1.2423
1.0057	1.0967	2.2543	0.9895	1.0791	1.3889
1.0045	1.1507	2.3643	0.9884	1.1322	1.4567
0.9992	1.3878	2.8514	0.9831	1.3654	1.7568
Qstd slope (m) = 2.08464			Qa slope (m) = 1.30537		
intercept (b) = -0.03684			intercept (b) = -0.02270		
coefficient (r) = 0.99994			coefficient (r) = 0.99994		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760) (298/Ta))] - b}
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}

CALIBRATION CERTIFICATE

Date: December 21, 2016

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	276020
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	787CPM
Scale Setting	:	December 16, 2016

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Shintaro Okamura

Shintaro Okamura

Overseas Sales Division

TEST CERTIFICATE

Report No. 16-1879-1.

CUSTOMER : INNOTECH INSTRUMENTATION CO.LTD.



SIBATA SCIENTIFIC TECHNOLOGY LTD.
DATE 19/ December /2016

APPROVE BY 	VERIFIED BY 	ISSUED BY
----------------	-----------------	---------------

PRODUCT NAME	: Digital Dust Indicator
MODEL NUMBER	: LD-3B
SERIAL NUMBER	: 276020
CALIBRATION DATE	: 16- December -2016

Testing Category	Judging Standard	Judgment			Inspection chart
		Reading of Master	Reading of this Instrument	Correction	
Function Test	Switch, Display, Wiring will normally function	OK			Reference Value(S)
Sensitivity Calibration	Count is $\pm 2\%$ accurate to the master by the standard calibration particle	799 CPM	795 CPM	-0.5 %	
Dust Concentration Measuring	Count is $\pm 10\%$ accurate to the master under the 3 different concentration.	2053 CPM	1979 CPM	-3.6 %	787 CPM
Reproducibility	The difference between maximum and minimum value of sensitivity adjustment scale setting must be 5.0 % or less of maximum value. (The results of measurement of sensitivity adjustment in 5 times are within this range.)	978 CPM	957 CPM	-2.1 %	Test atmosphere
	Synthetic Judgment	516 CPM	507 CPM	-1.7 %	
		OK			Temperature
					Humidity
					23 °C
					45 %


REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO. : HK1710039
 PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER
 DATE OF ISSUE : 17/01/2017
 CUSTOMER : Envirotech Services Company
 ADDRESS : Rm. 113, 1/F., MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T.

REPORT NO. : HK1710039
 PROJECT ITEM NO. : HK1710039-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT
 TYPE : Digital Dust Indicator
 MANUFACTURER : SIBATA
 MODEL NO. : LD-3B
 SERIAL NO. : 276020
 EQUIPMENT NO. : ---
 RECEIPT DATE : 11/01/2017
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory

Issue Date:

17/01/2017

 Wong Po Yan Pauline
 (Testing Engineer)



REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER
 DATE OF ISSUE : 17/01/2017
 REPORT NO. : HK1710039

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE : Digital Dust Indicator
 MANUFACTURER : SIBATA
 MODEL NO. : LD-3B
 SERIAL NO. : 276020
 EQUIPMENT NO. : ---
 SENSITIVITY ADJUSTMENT : ---
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

STANDARD EQUIPMENT

TYPE : HIGH VOLUME AIR SAMPLER
 MANUFACTURER : TISCH
 MODEL NO. : TE-5170
 EQUIPMENT REF NO. : PTL_HV002
 LAST CALIBRATION DATE : 23/11/2016

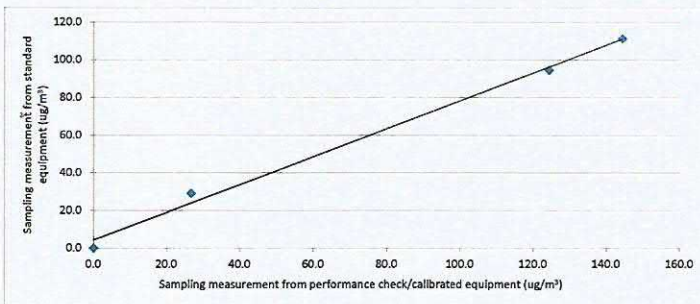
EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Sensitivity Adjustment Scale Setting (Before Performance check / Calibration): 787 CPM
 Sensitivity Adjustment Scale Setting (After Performance check / Calibration): 787 CPM

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m ³ (Standard equipment) (Y - Axis)	Total Count ² (Performance Check / Calibrated equipment)	Concentration in Count/Minute ³ (Performance Check / Calibrated equipment) (X - Axis)
Zero Check ¹	12/01/2017,10:00:00 AM	19	1016	0	0	0
1	12/01/2017,11:10:00 AM	19	1016	95	7462	124
2	12/01/2017,2:30:00 PM	19	1016	111	8670	145
3	12/01/2017,3:34:00 PM	19	1016	29	1600	27

Linear Regression of Y on X

Slope (K- factor) : 0.7
 Correlation Coefficient : 0.9972
 Validity of Performance Check / Calibration Record : 12/01/2018



- Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.
 2. Total Count was measured by Digital Dust Indicator.
 3. Count/minute was calculated by (Total Count/60)
 4. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 5. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: MA Ching Him, Jackey Signature: [Signature] Date: 12/01/2017

Checked by: Wong Po Yan, Pauline Signature: [Signature] Date: 17/01/2017

CALIBRATION CERTIFICATE

Date: December 21, 2016

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	2Z6240
Sensitivity	:	0.001 mg/m ³
Sensitivity Adjustment	:	565CPM
Scale Setting	:	December 16, 2016

We hereby certify that the above mentioned instrument has been calibrated satisfactorily.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Shintaro Okamura

Shintaro Okamura

Overseas Sales Division

TEST CERTIFICATE

Report No. 16-1879-2

CUSTOMER : INNOTECH INSTRUMENTATION CO.LTD.



SIBATA SCIENTIFIC TECHNOLOGY LTD.

DATE 19/ December /2016

APPROVE BY 	VERIFIED BY 	ISSUED BY 
---	--	--

PRODUCT NAME	: Digital Dust Indicator
MODEL NUMBER	: LD-3B
SERIAL NUMBER	: 2Z6240
CALIBRATION DATE	: 16-- December --2016

Testing Category	Judging Standard	Judgment		
		Reading of Master	Reading of this Instrument	Correction
Function Test	Switch, Display, Wiring will normally function	OK		
Sensitivity Calibration	Count is $\pm 2\%$ accurate to the master by the standard calibration particle	798 CPM	796 CPM	-0.3%
Dust Concentration Measuring	Count is $\pm 10\%$ accurate to the master under the 3 different concentration.	2053 CPM	1989 CPM	-3.1%
		978 CPM	966 CPM	-1.2%
Reproducibility	The difference between maximum and minimum value of sensitivity adjustment scale setting must be 5.0 % or less of maximum value. (The results of measurement of sensitivity adjustment in 5 times are within this range.)	516 CPM	515 CPM	-0.2%
		OK		
Synthetic Judgment		Good		
		Reference Value(S)		565 CPM
		Test atmosphere		Temperature Humidity
		23 °C		45 %


REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION

REPORT NO. : HK1710040
PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER
DATE OF ISSUE : 17/01/2017

CUSTOMER : Envirotech Services Company
ADDRESS : Rm. 113, 1/F., MY LOFT, 9 HOI WING ROAD, TUEN MUN, N.T.

REPORT NO. : HK1710040
PROJECT ITEM NO. : HK1710040-01
PERFORMANCE CHECK / CALIBRATED EQUIPMENT
TYPE : Digital Dust Indicator
MANUFACTURER : SIBATA
MODEL NO. : LD-3B
SERIAL NO. : 2Z6240
EQUIPMENT NO. : ---
RECEIPT DATE : 11/01/2017
PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

PERFORMANCE CHECK / CALIBRATION Information

CODE	Calibration Parameter	Method Procedure	Reference Method
Dust PC/CAL	Performance Check / Calibration of Dust Meter	CAL003	General Technical Requirements of Environmental Monitoring, Environmental Monitoring & Audit Guidelines for Development Projects in HK

- Notes :
1. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 2. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Approved Signatory :

Issue Date: 17/01/2017

 Wong Po Yan Pauline
 (Testing Engineer)



REPORT OF PERFORMANCE CHECK / CALIBRATION

PROJECT NAME : PERFORMANCE CHECK / CALIBRATION OF DUST METER
 DATE OF ISSUE : 17/01/2017
 REPORT NO. : HK1710040

PERFORMANCE CHECK / CALIBRATED EQUIPMENT

TYPE : Digital Dust Indicator
 MANUFACTURER : SIBATA
 MODEL NO. : LD-3B
 SERIAL NO. : 2Z6240
 EQUIPMENT NO. : ---
 SENSITIVITY ADJUSTMENT : ---
 PERFORMANCE CHECK / CALIBRATION DATE : 12/01/2017

STANDARD EQUIPMENT

TYPE : HIGH VOLUME AIR SAMPLER
 MANUFACTURER : TISCH
 MODEL NO. : TE-5170
 EQUIPMENT REF NO. : PTL_HV002
 LAST CALIBRATION DATE : 23/11/2016

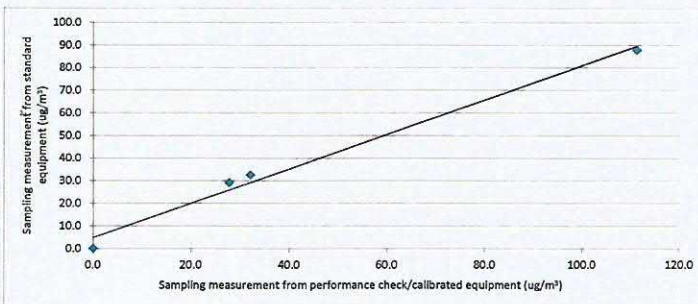
EQUIPMENT PERFORMANCE CHECK / CALIBRATION RESULTS:

Sensitivity Adjustment Scale Setting (Before Performance check / Calibration): 565 CPM
 Sensitivity Adjustment Scale Setting (After Performance check / Calibration): 565 CPM

Trial no. in 1-hr period	Time	Mean Temp (°C)	Mean Pressure (hPa)	Concentration in ug/m ³ (Standard equipment) (Y - Axis)	Total Count ² (Performance Check / Calibrated equipment)	Concentration in Count/Minute ³ (Performance Check / Calibrated equipment) (X - Axis)
Zero Check ¹	12/01/2017,10:00:00 AM	19	1016	0	0	0
1	12/01/2017,12:15:00 PM	19	1016	88	6680	111
2	12/01/2017,1:25:00 PM	19	1016	33	1924	32
3	12/01/2017,3:34:00 PM	19	1016	29	1664	28

Linear Regression of Y on X

Slope (K- factor) : 0.8
 Correlation Coefficient : 0.9940
 Validity of Performance Check / Calibration Record : 12/01/2018



- Notes : 1. Zero check conducted as per CAL003 SOP and manufacturer's manual as appropriate.
 2. Total Count was measured by Digital Dust Indicator.
 3. Count/minute was calculated by (Total Count/60)
 4. This report shall not be reproduced, except in full, without prior approval from Pilot Testing Limited.
 5. Performance Check / Calibration result relates to performance check / calibration item(s) as received.

Operator: MA Ching Him, Jackey Signature: _____ Date: 12/01/2017

Checked by: Wong Po Yan, Pauline Signature: Wong Po Yan Date: 17/01/2017



Certificate of Calibration 校正證書

Certificate No. : C173613
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-1398) Date of Receipt / 收件日期 : 21 June 2017
Description / 儀器名稱 : Sound Level Meter
Manufacturer / 製造商 : Rion
Model No. / 型號 : NL-52
Serial No. / 編號 : 00131627
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 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(55 \pm 20)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration

DATE OF TEST / 測試日期 : 4 July 2017

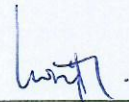
TEST RESULTS / 測試結果

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
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By
測試


H T Wong
Technical Officer

Certified By
核證


K C Lee
Engineer

Date of Issue : 4 July 2017
簽發日期

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

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

Certificate of Calibration

校正證書

Certificate No. : C173613
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using the internal standard (After Adjustment) was performed before the test 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C170048
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

6.1.1.1 Before Adjustment

UUT Setting				Applied Value		UUT 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	* 92.8	± 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		104.0
				114.00		114.0

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

The test equipment used for calibration are traceable to the Nation 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。局部複印本證書請先獲本實驗室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C173613

證書編號

6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
30 - 130	L _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	77.8	-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)
					12.5 kHz	89.6	-4.3 (+3.0 ; -6.0)

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range (dB)	Function	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
30 - 130	L _C	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-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)
					12.5 kHz	87.6	-6.2 (+3.0 ; -6.0)

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

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



Certificate of Calibration

校正證書

Certificate No. : C173613
證書編號

Remarks : - UUT Microphone Model No. : UC-59 & S/N : 04870

- 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 are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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

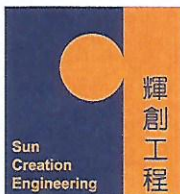
Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4 E, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel 電話: 2927 2606 Fax 傳真: 2744 8986 E-mail 電郵: calllab@suncreation.com Website 網址: www.suncreation.com



Certificate of Calibration 校正證書

Certificate No. : C171447
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC17-0633) Date of Receipt / 收件日期 : 16 March 2017
Description / 儀器名稱 : Sound Level Calibrator
Manufacturer / 製造商 : Rion
Model No. / 型號 : NC-73
Serial No. / 編號 : 10486660
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 : (55 ± 20)%
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範
Calibration check

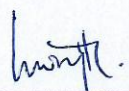
DATE OF TEST / 測試日期 : 17 March 2017


TEST RESULTS / 測試結果

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

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

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

Tested By : 
測試 : H T Wong
Technical Officer

Certified By : 
核證 : K C Lee
Project Engineer

Date of Issue : 23 March 2017
簽發日期

The test equipment used for calibration are traceable to the Nation 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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輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

Certificate of Calibration 校正證書

Certificate No. : C171447

證書編號

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

Equipment ID	Description	Certificate No.
CL130	Universal Counter	C163709
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C161175

- Test procedure : MA100N.

- Results :

5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	93.6	± 0.5	± 0.2

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.987	1 kHz ± 2 %	± 1

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

Note :

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

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

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

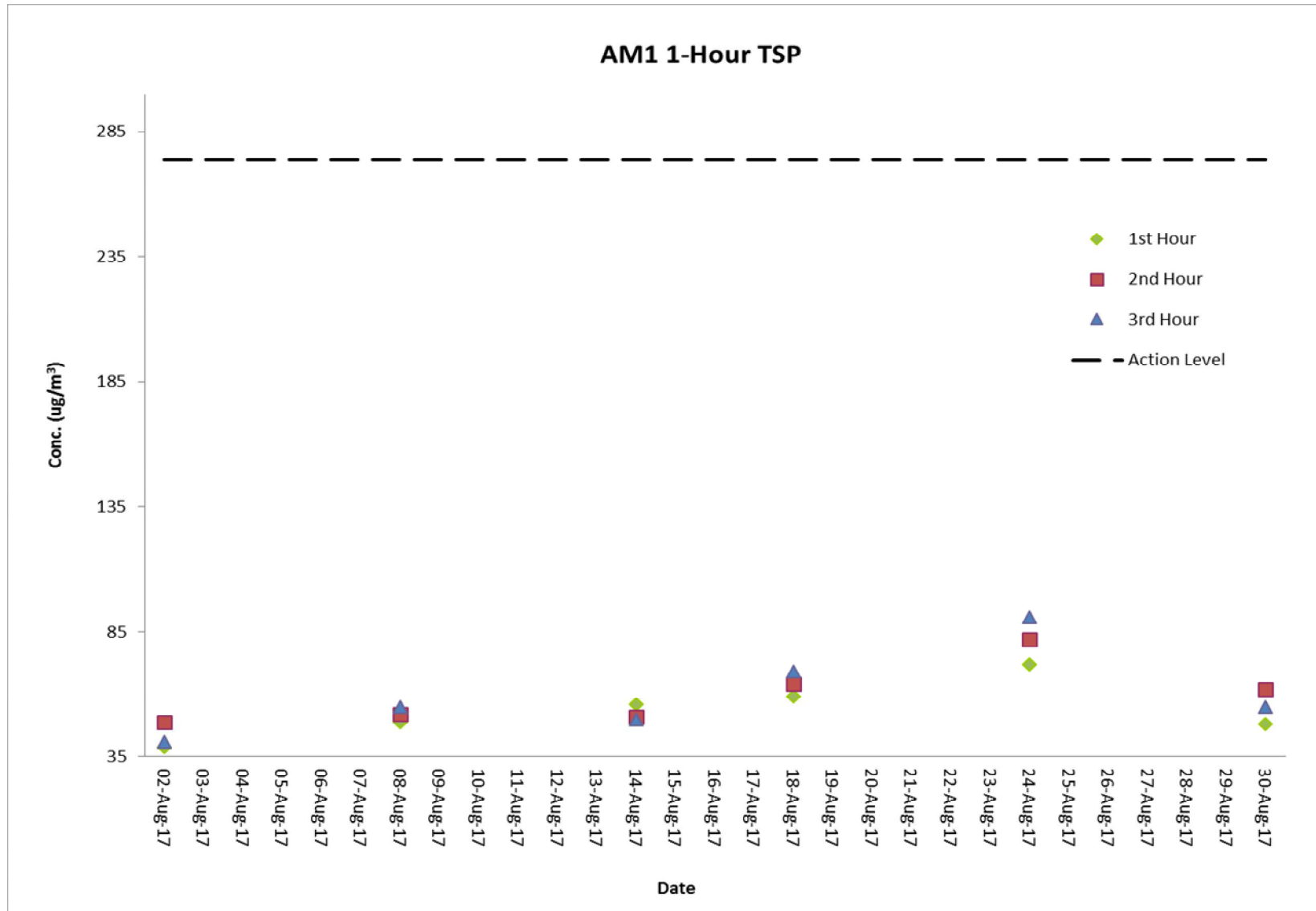
Website/網址: www.suncreation.com

G. Graphical Plots of the Monitoring Results

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

Date	Weather Condition	Time	Conc. ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1 st Hour	2 nd Hour	3 rd Hour		
02-Aug-17	Cloudy	10:42 - 16:00	39	49	41	273.7	500
08-Aug-17	Fine	10:50 - 16:00	49	52	55	273.7	500
14-Aug-17	Sunny	10:40 - 16:00	56	51	50	273.7	500
18-Aug-17	Sunny	8:02 - 11:02	59	64	69	273.7	500
24-Aug-17	Fine	10:40 - 16:00	72	82	91	273.7	500
30-Aug-17	Fine	10:38 - 16:00	48	62	55	273.7	500

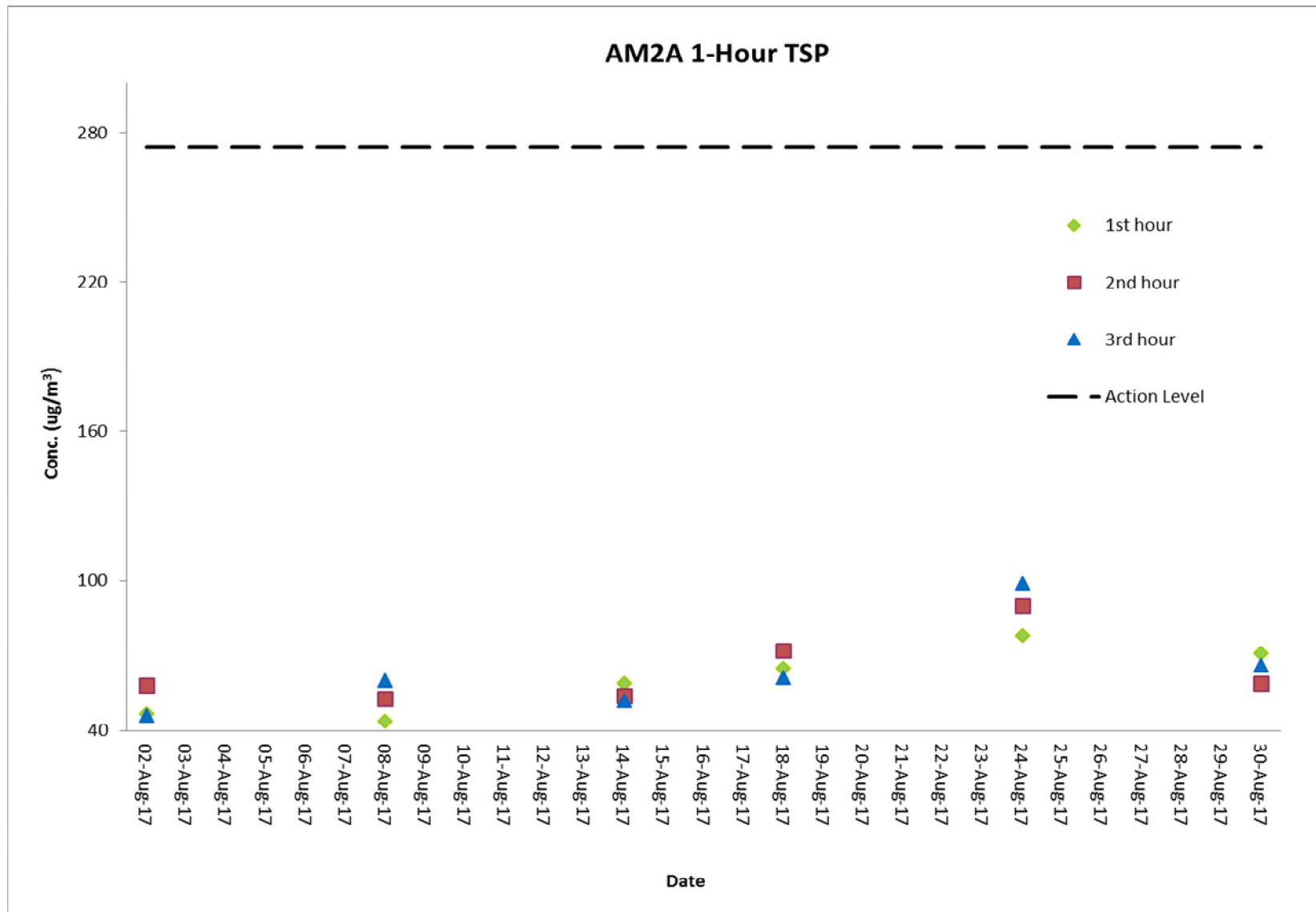
Graphical Presentation of Air Quality Monitoring Result at Station AM1 (1-hour TSP)



Air Quality Monitoring Result at Station AM2A (1-hour TSP)

Date	Weather Condition	Time	Conc. ($\mu\text{g}/\text{m}^3$)			Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
			1 st Hour	2 nd Hour	3 rd Hour		
02-Aug-17	Cloudy	10:54 - 16:10	47	58	46	274.2	500
08-Aug-17	Fine	11:02 - 16:10	44	53	60	274.2	500
14-Aug-17	Sunny	10:52 - 16:10	59	54	52	274.2	500
18-Aug-17	Sunny	8:14 - 11:14	65	72	61	274.2	500
24-Aug-17	Fine	10:54 - 16:10	78	90	99	274.2	500
30-Aug-17	Fine	10:52 - 16:10	71	59	66	274.2	500

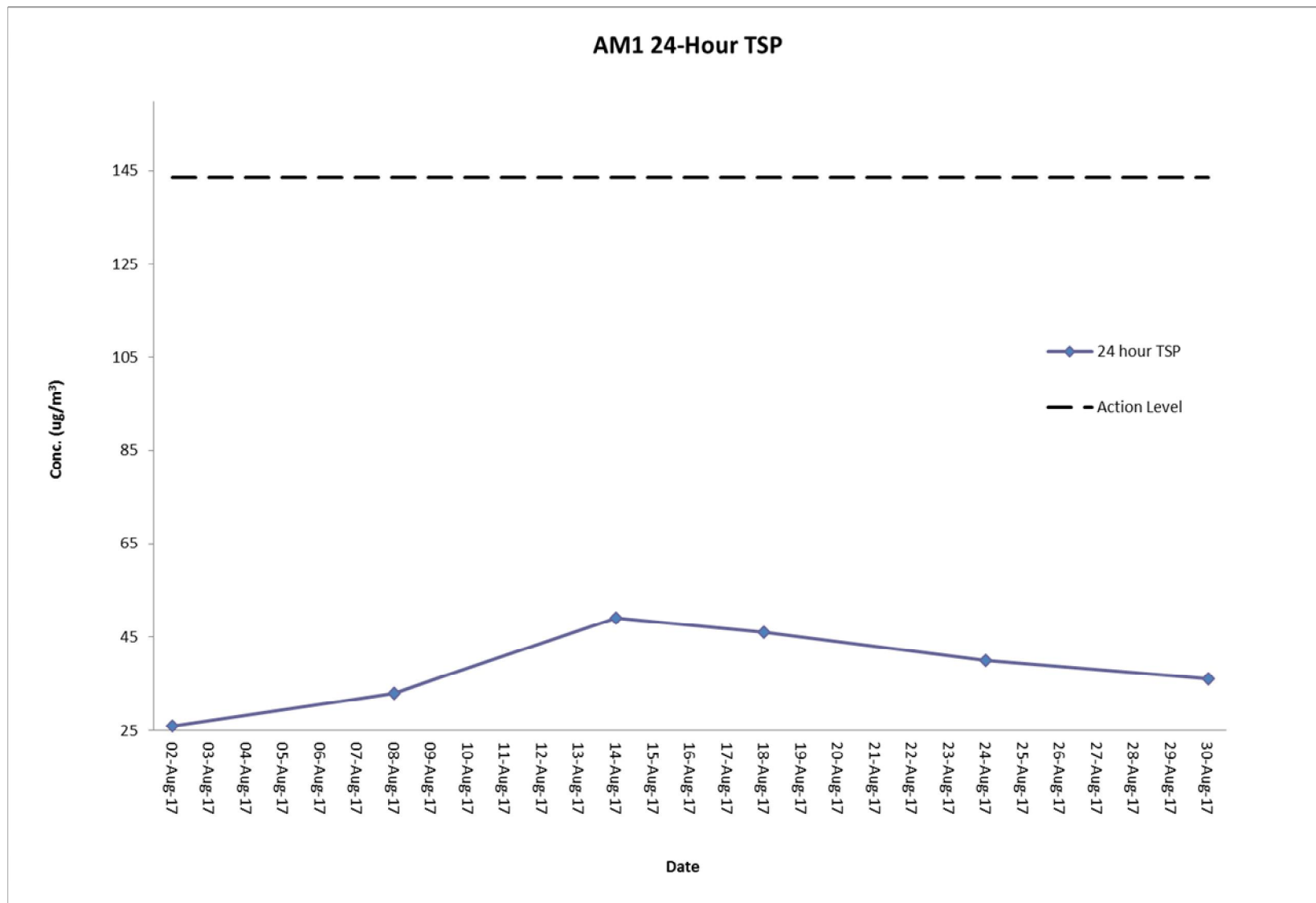
Graphical Presentation of Air Quality Monitoring Result at Station AM2A (1-hour TSP)



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. (µg/m ³)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
02-Aug-17	10:40	03-Aug-17	10:40	2.6397	2.6855	21384.38	21408.38	24	1.23	1.23	1.23	26	Cloudy	143.6	260
08-Aug-17	10:48	09-Aug-17	10:48	2.678	2.7365	21408.38	21432.38	24	1.23	1.23	1.23	33	Fine	143.6	260
14-Aug-17	10:38	15-Aug-17	10:38	2.7124	2.7991	21432.38	21456.38	24	1.23	1.23	1.23	49	Sunny	143.6	260
18-Aug-17	08:00	19-Aug-17	08:00	2.718	2.7998	21456.38	21480.38	24	1.23	1.23	1.23	46	Sunny	143.6	260
24-Aug-17	10:42	25-Aug-17	10:42	2.7219	2.7929	21480.38	21504.38	24	1.23	1.23	1.23	40	Fine	143.6	260
30-Aug-17	10:40	31-Aug-17	10:40	2.6819	2.745	21504.38	21528.38	24	1.23	1.23	1.23	36	Fine	143.6	260

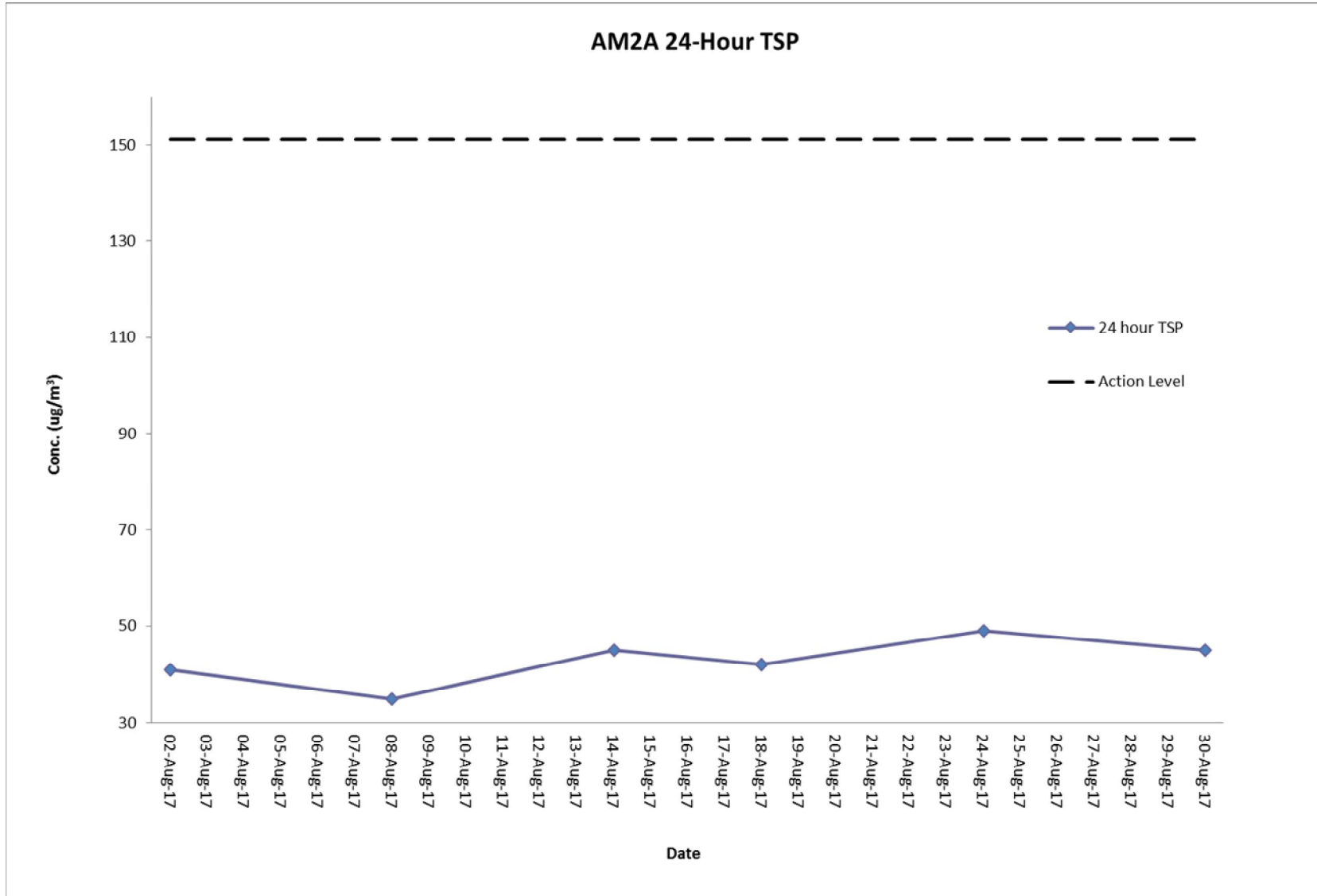
Graphical Presentation of Air Quality Monitoring Result at Station AM1 (24-hour TSP)



Air Quality Monitoring Result at Station AM2A (24-hour TSP)

Start		Finish		Filter Weight (g)		Elapsed Time Reading		Sampling Time (hrs)	Flow Rate (m ³ /min)			Conc. (µg/m ³)	Weather Condition	Action Level	Limit Level
Date	Time	Date	Time	Initial	Final	Initial	Final		Initial	Final	Average				
02-Aug-17	10:52	03-Aug-17	10:52	2.6180	2.6934	17039.59	17063.59	24	1.27	1.27	1.27	41	Cloudy	151.1	260
08-Aug-17	11:00	09-Aug-17	11:00	2.6790	2.7427	17063.59	17087.59	24	1.27	1.27	1.27	35	Fine	151.1	260
14-Aug-17	10:50	15-Aug-17	10:50	2.7037	2.7841	17087.59	17111.59	24	1.24	1.24	1.24	45	Sunny	151.1	260
18-Aug-17	08:12	19-Aug-17	08:12	2.6664	2.7419	17111.59	17135.59	24	1.24	1.24	1.24	42	Sunny	151.1	260
24-Aug-17	10:52	25-Aug-17	10:52	2.6840	2.7710	17135.59	17159.59	24	1.24	1.24	1.24	49	Fine	151.1	260
30-Aug-17	10:50	31-Aug-17	10:50	2.6858	2.7659	17159.59	17183.59	24	1.24	1.24	1.24	45	Fine	151.1	260

Graphical Presentation of Air Quality Monitoring Result at Station AM2A (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)
02-Aug-17	16:00	68.9	63.1	69
02-Aug-17	16:05	67.9	62.9	
02-Aug-17	16:10	69.0	64.1	
02-Aug-17	16:15	67.7	63.9	
02-Aug-17	16:20	68.4	64.1	
02-Aug-17	16:25	68.0	63.9	
08-Aug-17	14:00	67.1	62.1	68
08-Aug-17	14:05	68.0	63.1	
08-Aug-17	14:10	67.9	62.9	
08-Aug-17	14:15	66.7	60.9	
08-Aug-17	14:20	66.4	61.7	
08-Aug-17	14:25	67.0	63.1	
14-Aug-17	14:00	68.0	63.1	69
14-Aug-17	14:05	67.1	62.1	
14-Aug-17	14:10	67.9	63.9	
14-Aug-17	14:15	68.8	64.0	
14-Aug-17	14:20	67.0	63.1	
14-Aug-17	14:25	67.4	63.4	
24-Aug-17	14:00	68.0	63.9	69
24-Aug-17	14:05	69.4	64.7	
24-Aug-17	14:10	67.7	63.2	
24-Aug-17	14:15	67.9	63.4	
24-Aug-17	14:20	68.2	64.0	
24-Aug-17	14:25	68.8	63.9	
30-Aug-17	14:00	67.9	62.1	69
30-Aug-17	14:05	68.8	63.4	
30-Aug-17	14:10	69.0	63.7	
30-Aug-17	14:15	67.0	62.8	
30-Aug-17	14:20	67.4	63.7	
30-Aug-17	14:25	67.9	63.9	

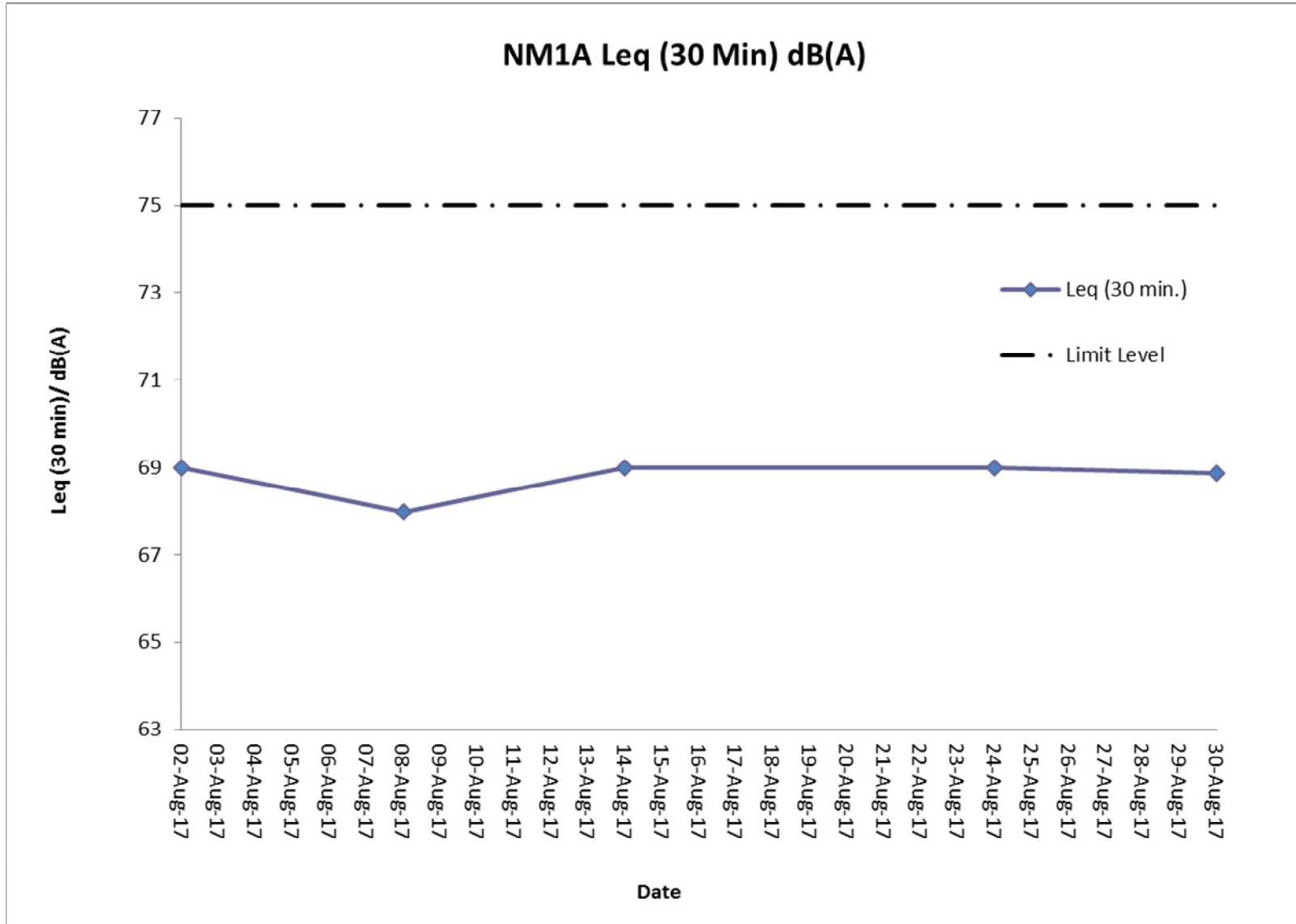
Remarks:

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



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

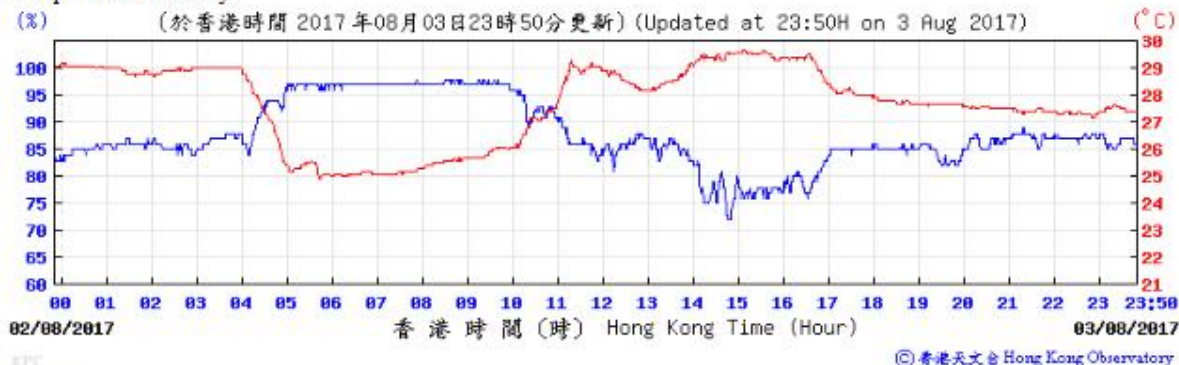
Graphical Presentation Noise Monitoring Result at Station NM1A



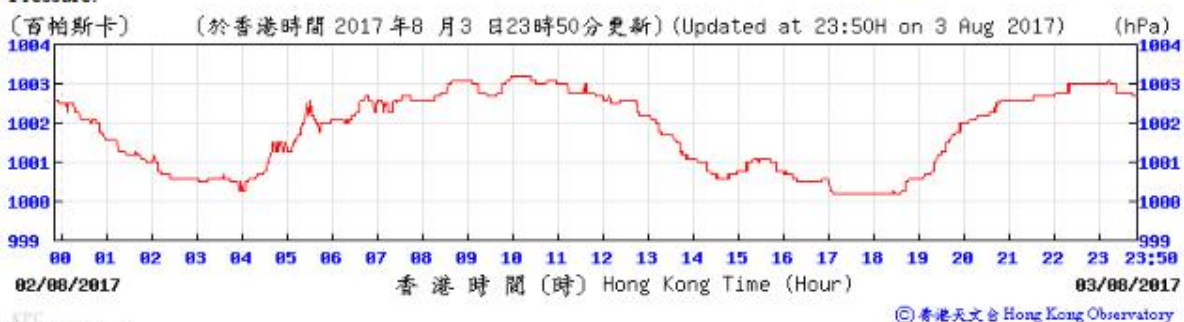
H. Meteorological Data Extracted from Hong Kong Observatory

Extract of Meteorological Observations for King's Park Automatic Weather Station, August 2017

Temperature/Humidity:



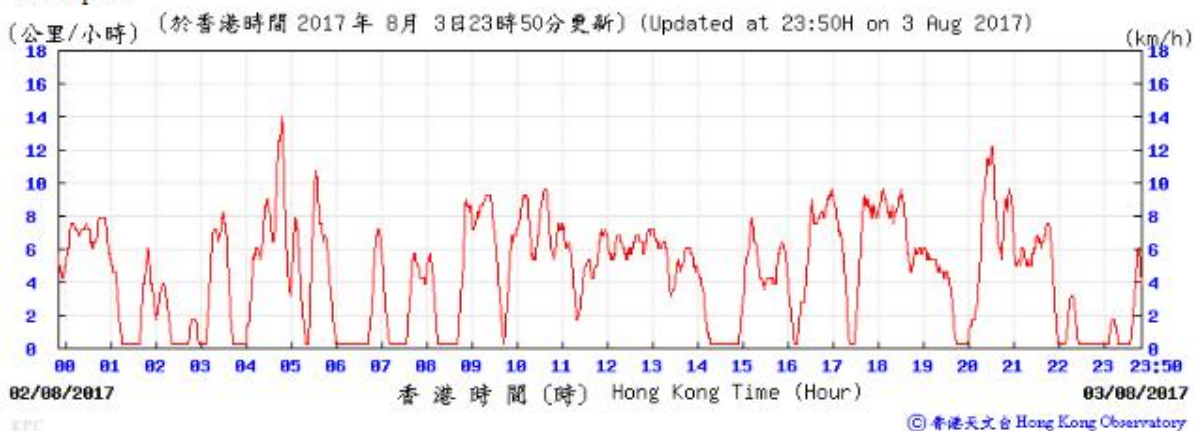
Pressure:



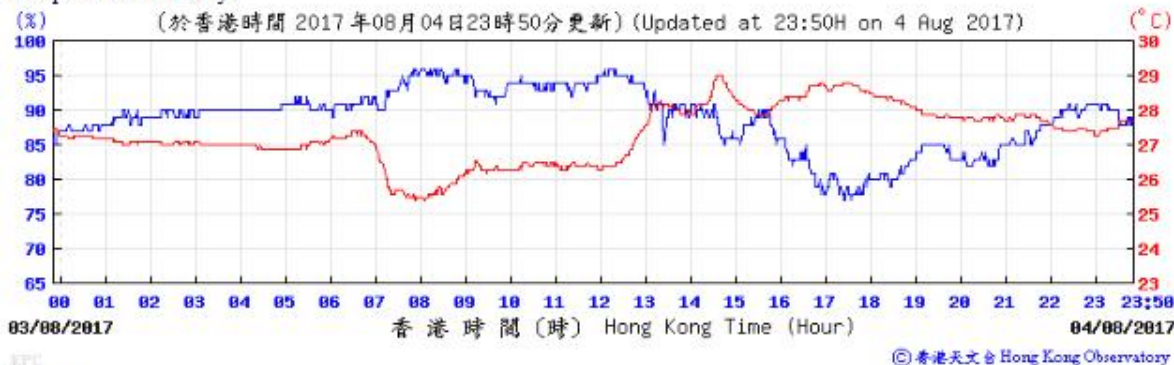
Wind Direction:



Wind Speed:



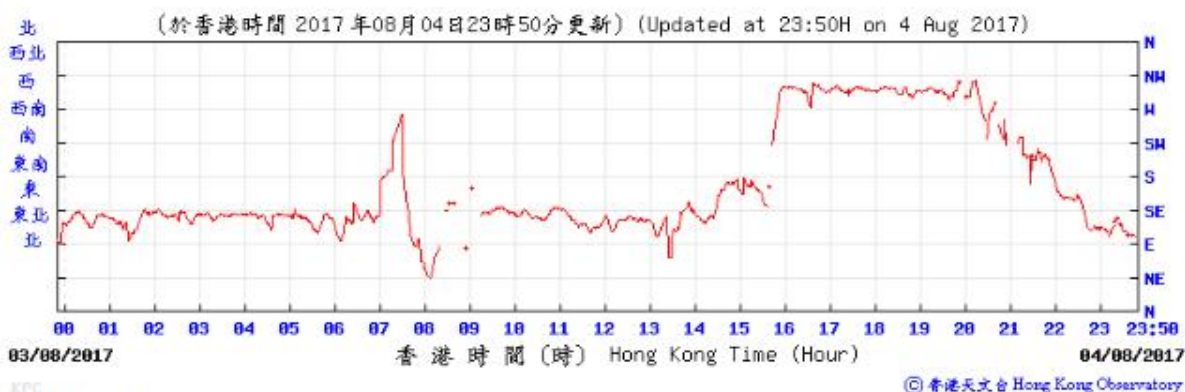
Temperature/Humidity:



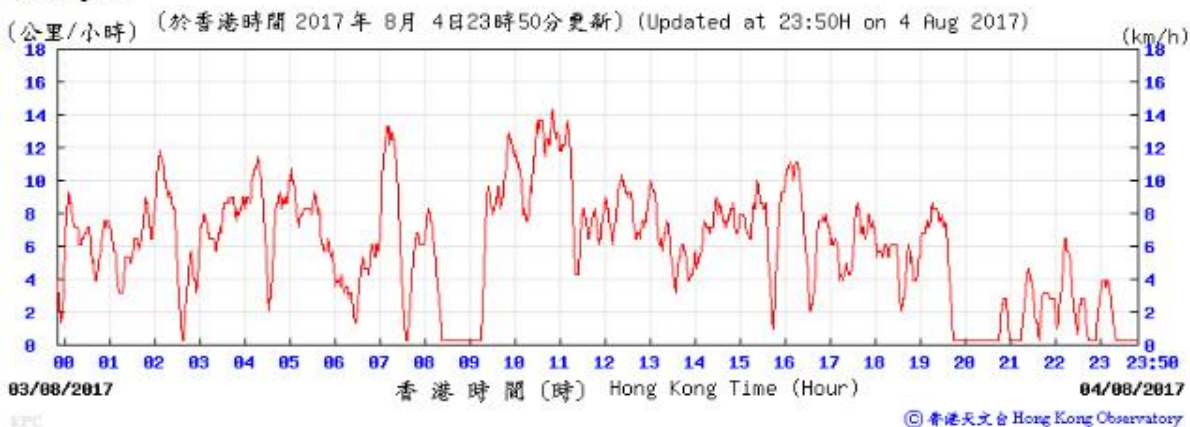
Pressure:



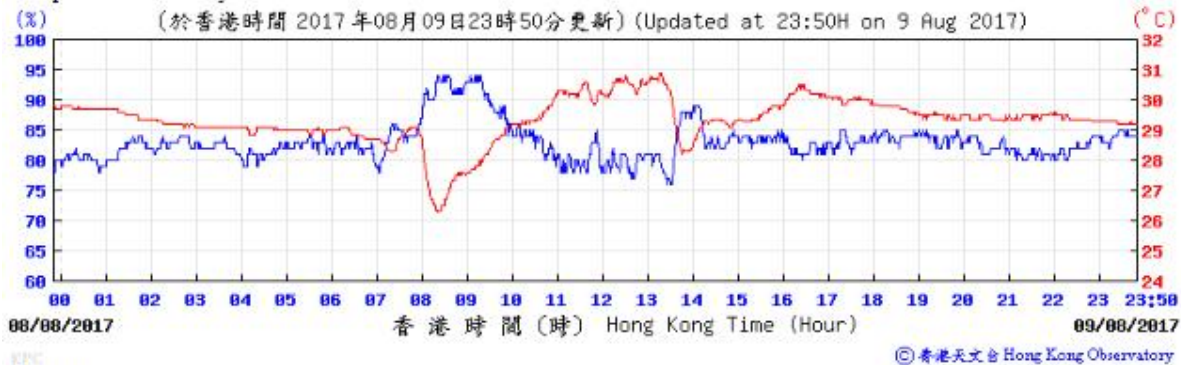
Wind Direction:



Wind Speed:



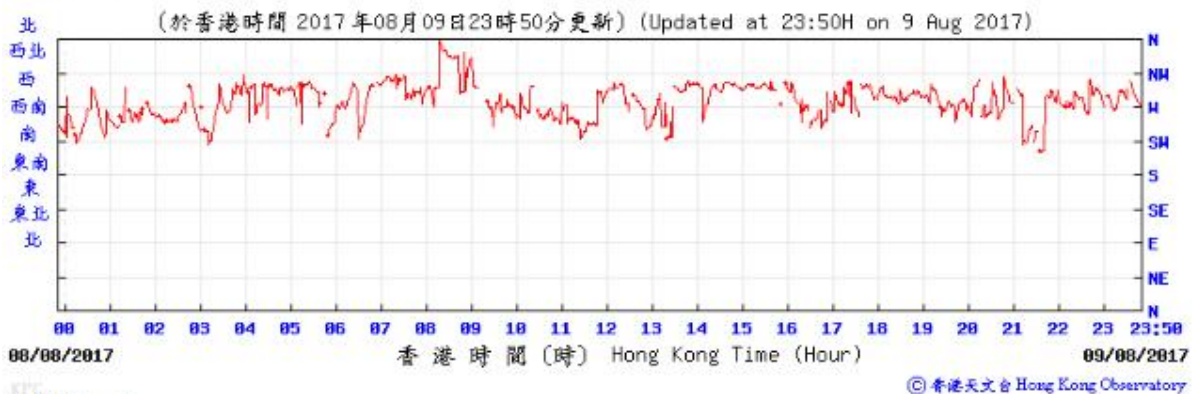
Temperature/Humidity:



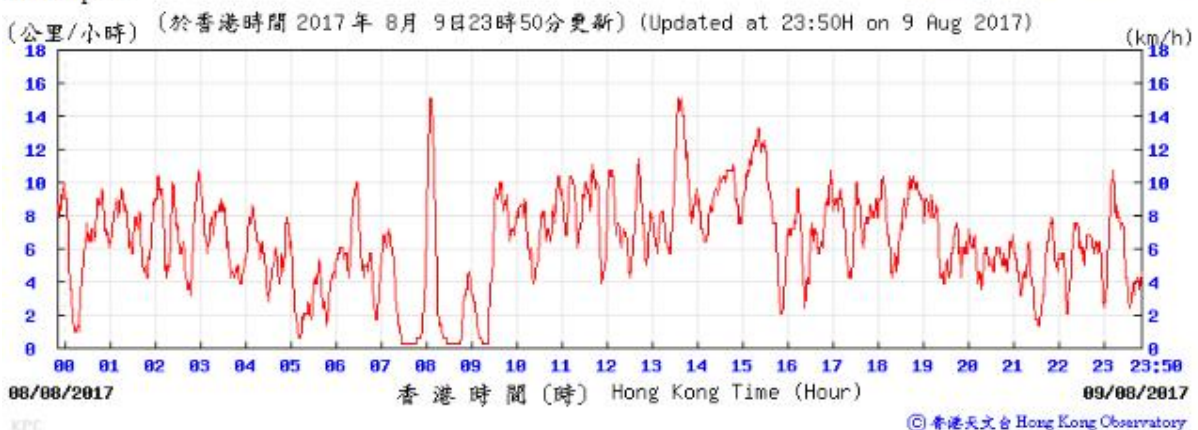
Pressure:



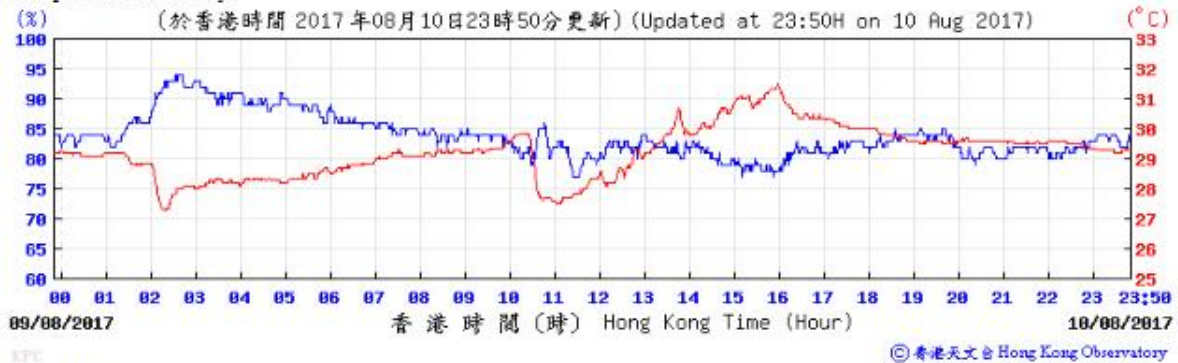
Wind Direction:



Wind Speed:



Temperature/Humidity:



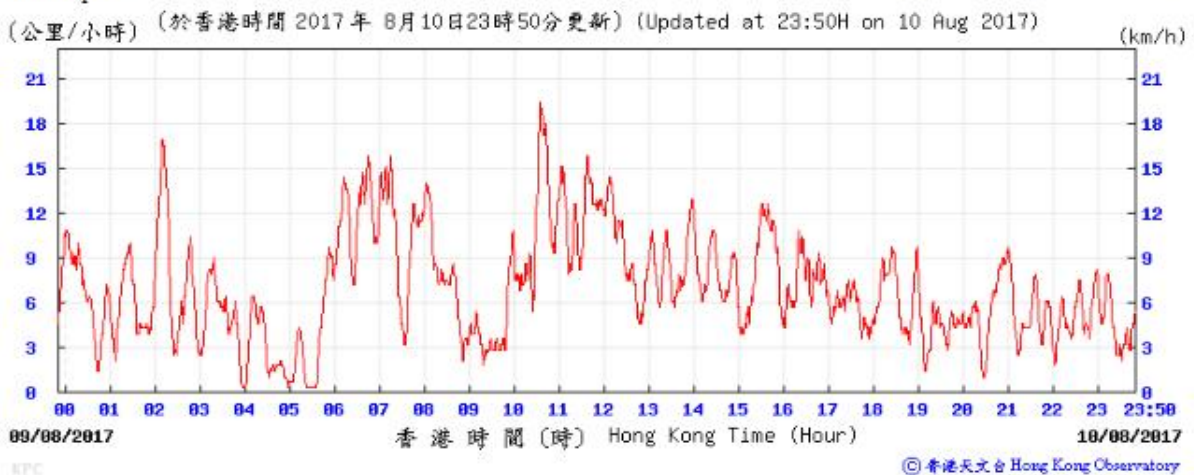
Pressure:



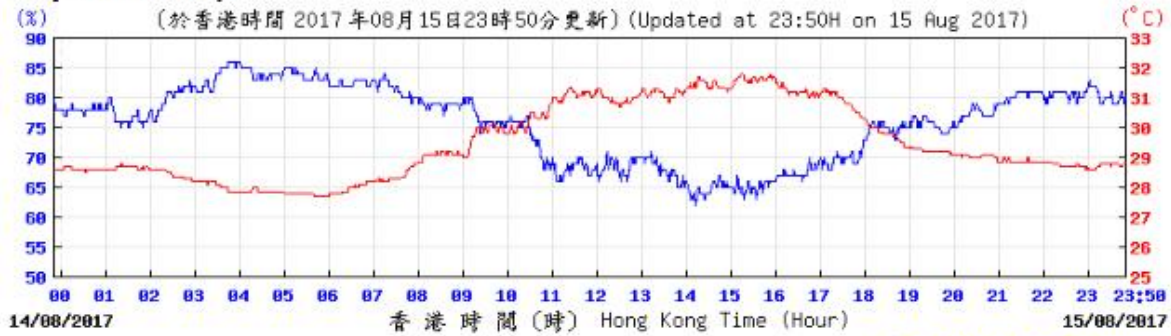
Wind Direction:



Wind Speed:

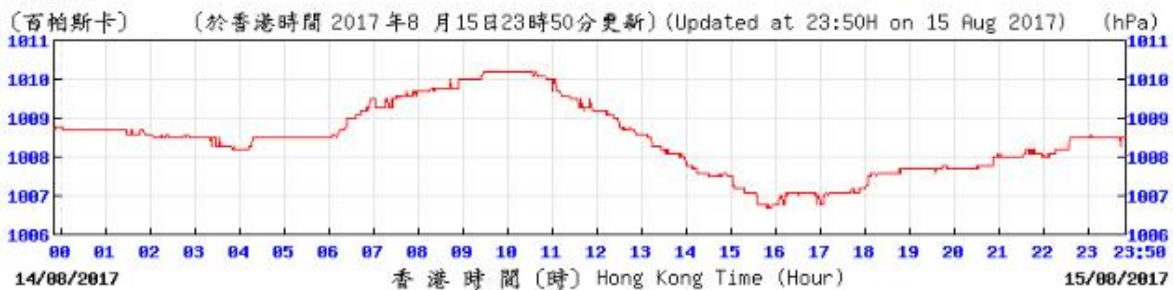


Temperature Humidity:



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Pressure:



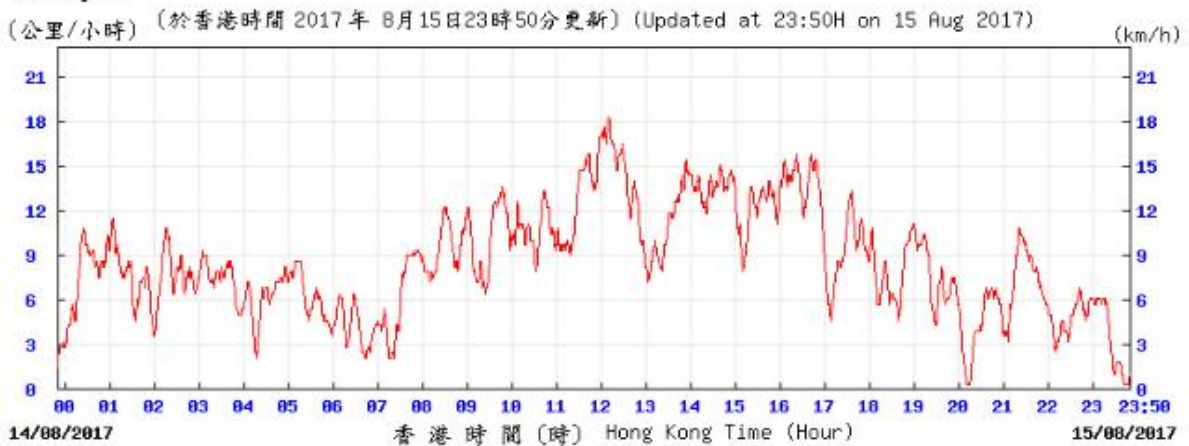
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Wind Direction:



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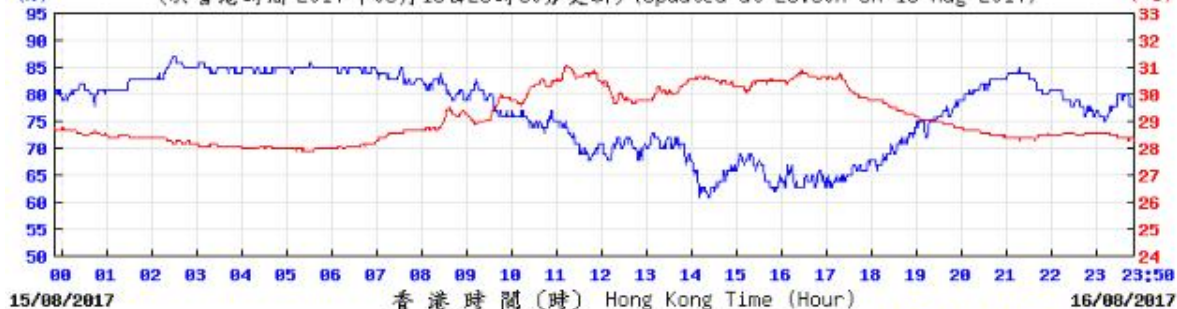
Wind Speed:



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Temperature/Humidity:

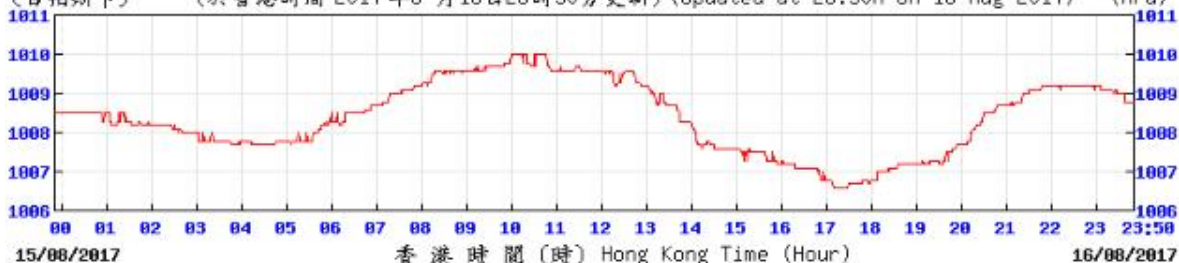
(%) (於香港時間 2017年08月16日23時50分更新) (Updated at 23:50H on 16 Aug 2017) (°C)



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Pressure:

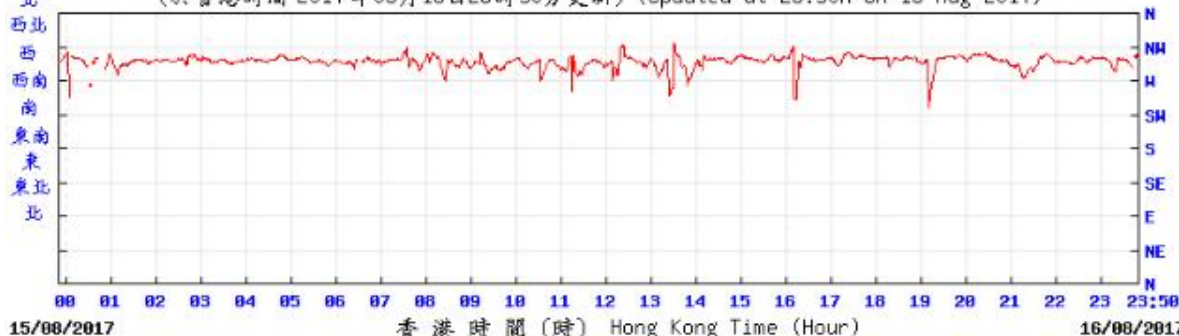
(百帕斯卡) (於香港時間 2017年8月16日23時50分更新) (Updated at 23:50H on 16 Aug 2017) (hPa)



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Wind Direction:

(於香港時間 2017年08月16日23時50分更新) (Updated at 23:50H on 16 Aug 2017)



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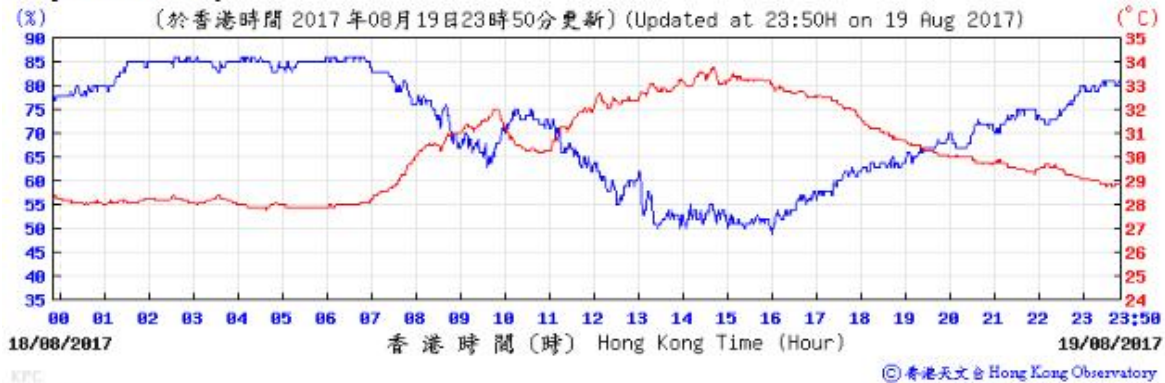
Wind Speed:

(公里/小時) (於香港時間 2017年8月16日23時50分更新) (Updated at 23:50H on 16 Aug 2017) (km/h)

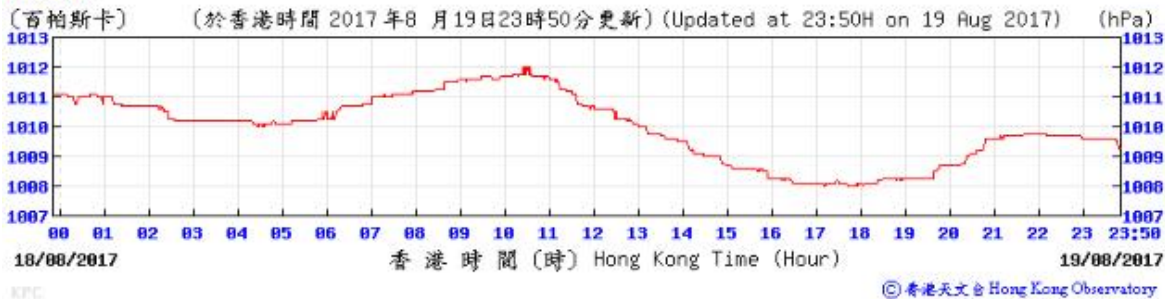


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Temperature/Humidity:



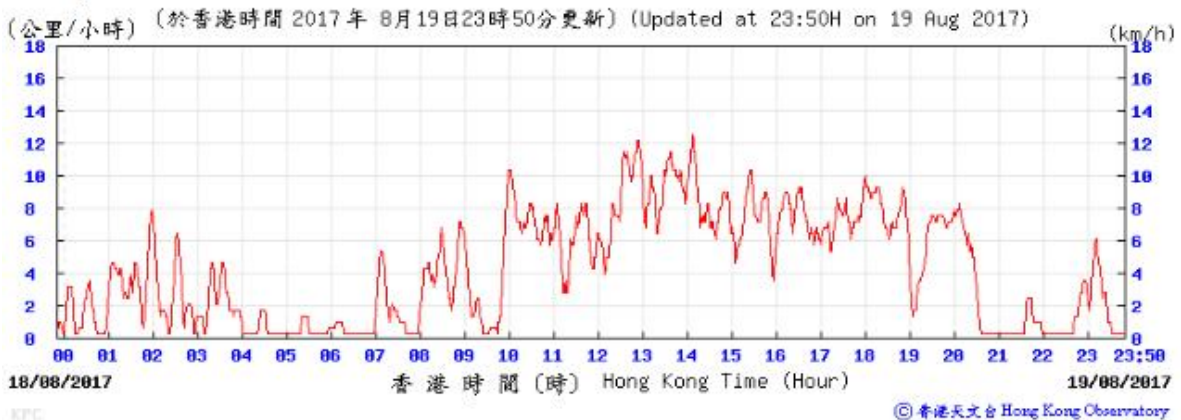
Pressure:



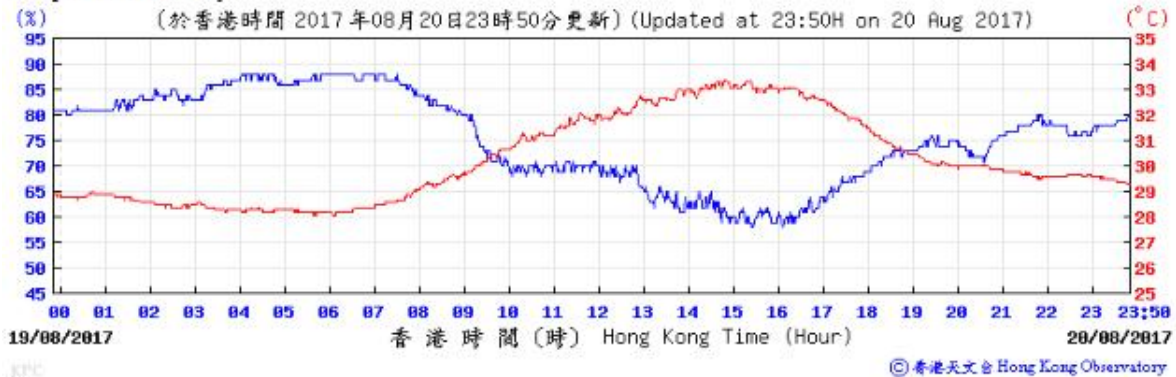
Wind Direction:



Wind Speed:



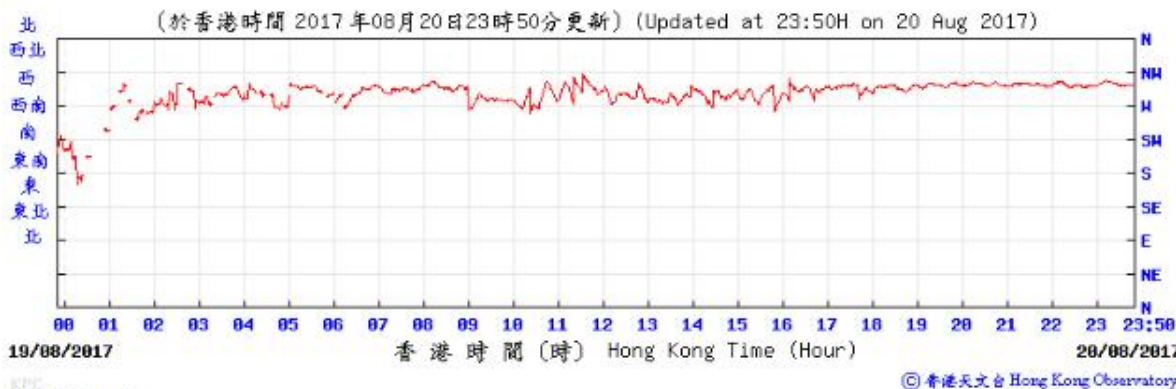
Temperature/Humidity:



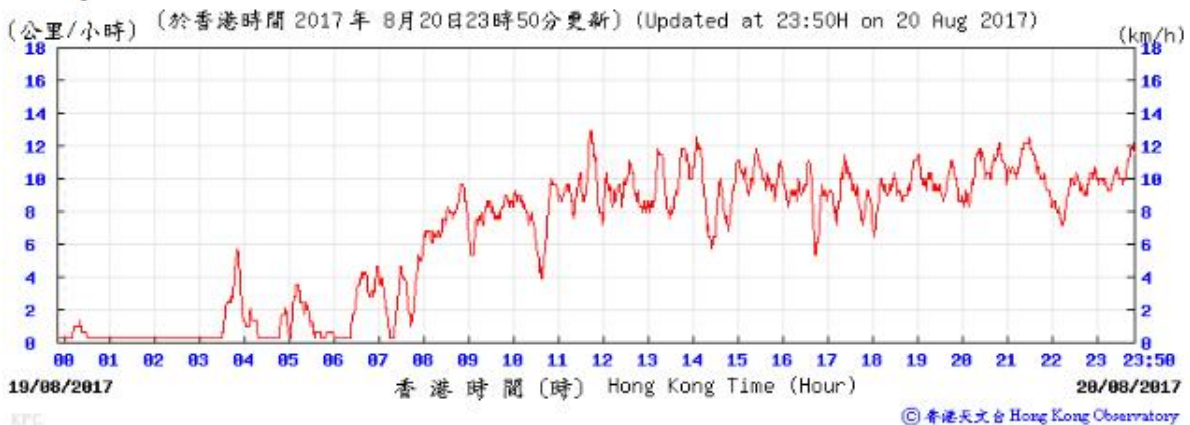
Pressure:



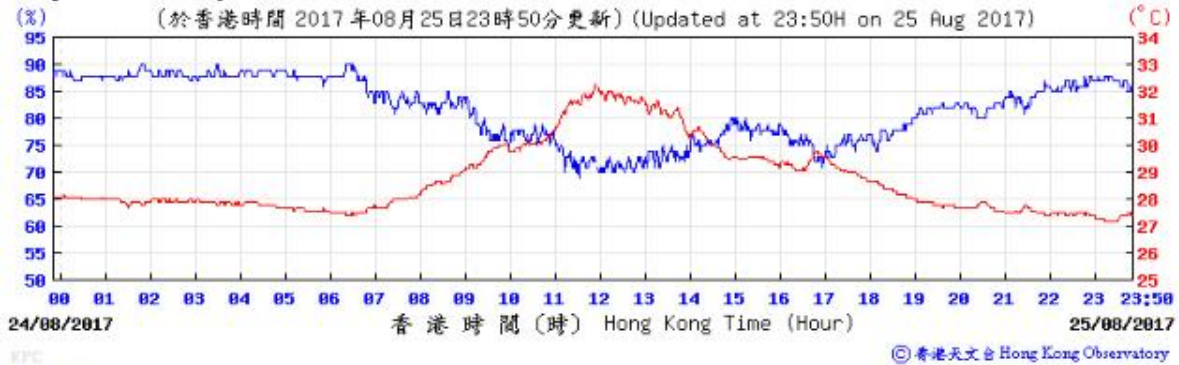
Wind Direction:



Wind Speed:



Temperature Humidity:



Pressure:



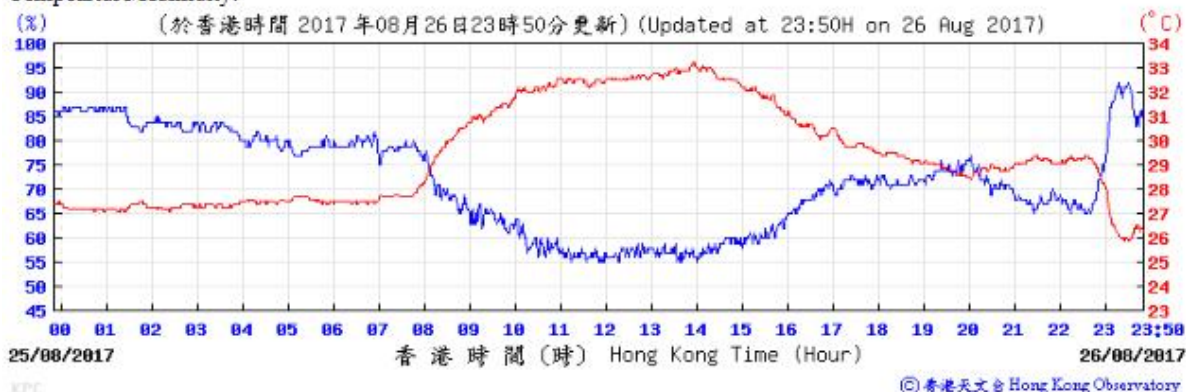
Wind Direction:



Wind Speed:



Temperature/Humidity:



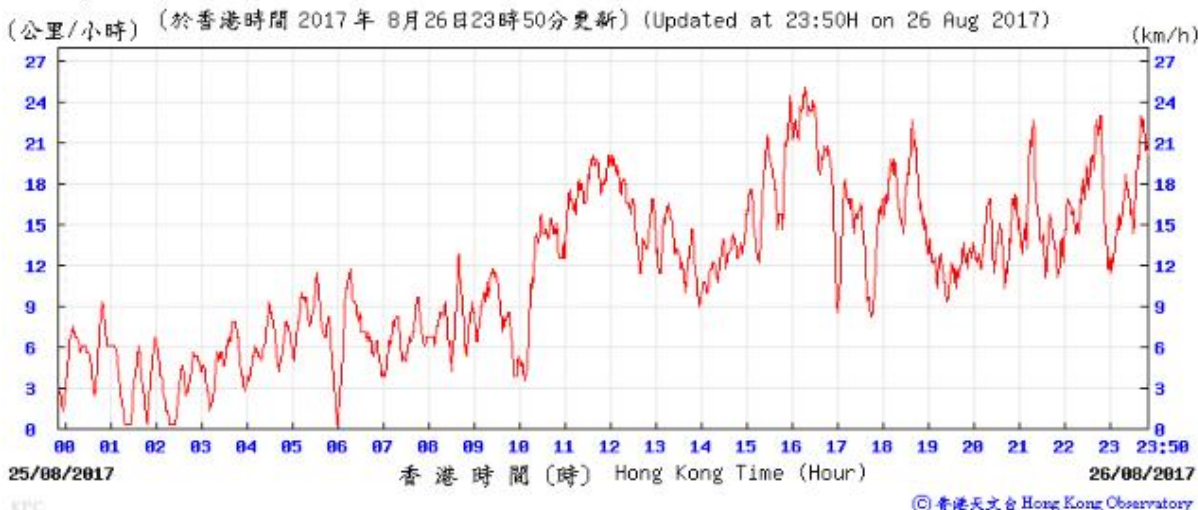
Pressure:



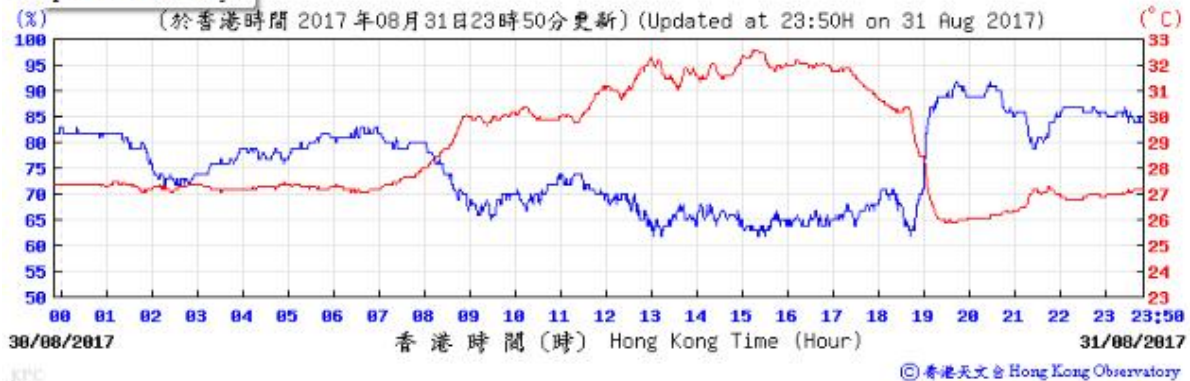
Wind Direction:



Wind Speed:



Temperature/Humidity:



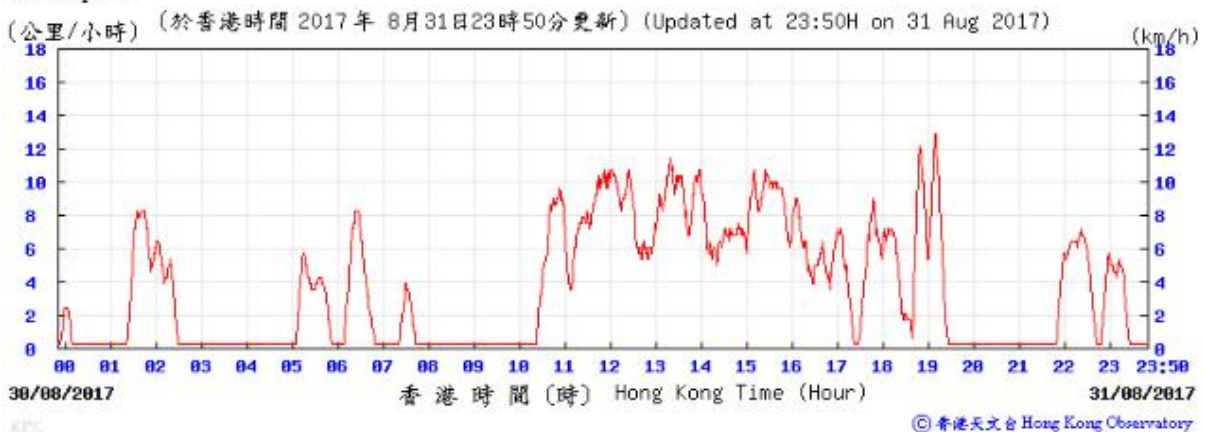
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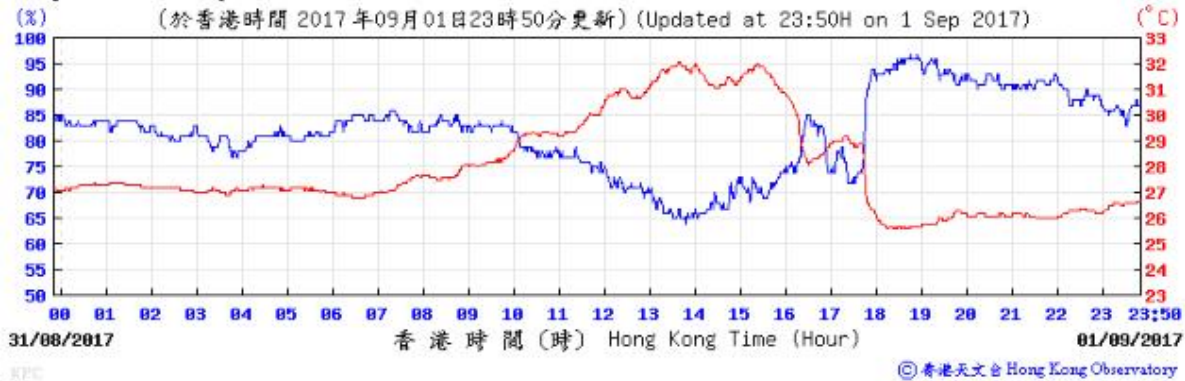
Wind Direction:



Wind Speed:



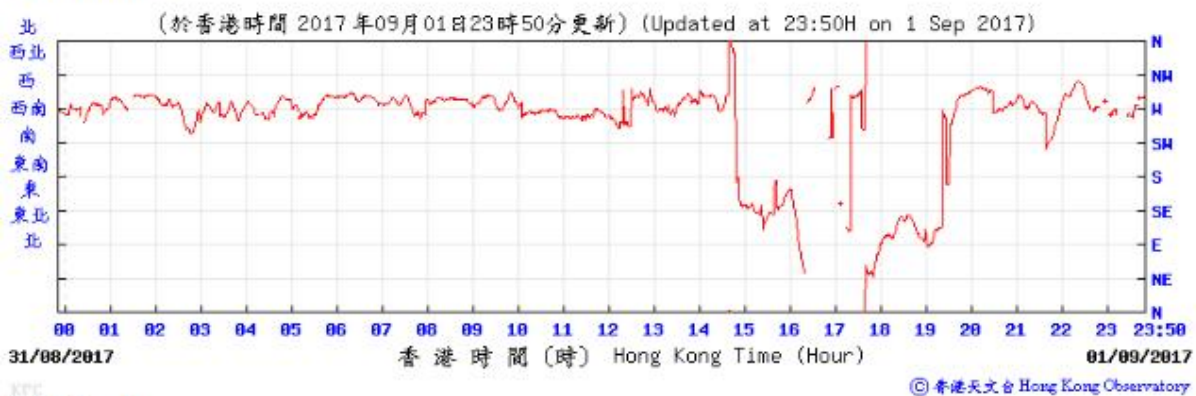
Temperature/Humidity:



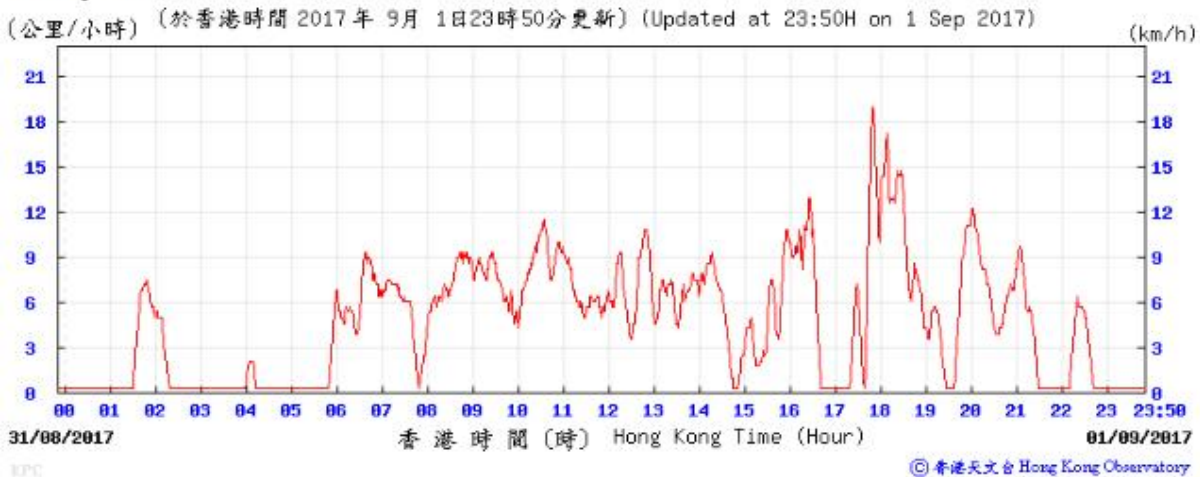
Pressure:



Wind Direction:



Wind Speed:



I. Waste Flow table

M+ Museum

Table I-1: Monthly Waste Flow Table for M+ Museum

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 Facility	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)
2015													
Nov	46607.4	0.0	0.0	8240.0	38367.4	0.0	0.0	76.2	0.0	0.0	0.0	0.0	67.6
Dec	29652.9	0.0	0.0	29621.4	31.5	0.0	0.0	26.3	0.0	0.0	0.0	1.0	66.0
Sub-total (2015)	76260.3	0.0	0.0	37861.4	38398.9	0.0	0.0	102.5	0.0	0.0	0.0	1.0	133.6
2016													
Jan	21077.4	0.0	6352.0	14576.0	149.4	0.0	0.0	18.8	0.0	0.0	0.0	0.0	23.2
Feb	7626.2	0.0	3424.0	4048.0	154.2	0.0	0.0	59.8	0.0	0.0	0.0	0.0	20.5
Mar	10442.5	0.0	1600.0	7888.0	954.5	0.0	0.0	29.7	0.0	0.0	0.0	0.0	46.3
Apr	30413.2	0.0	6352.0	23408.0	653.2	0.0	0.0	25.8	0.1	0.0	27.8	0.0	34.5
May	24083.5	0.0	112.0	23216.0	755.5	0.0	0.0	61.5	0.4	0.0	33.6	0.0	62.3
Jun	7880.1	0.0	4736.0	2384.0	760.1	0.0	0.0	106.6	0.1	0.0	14.6	0.0	52.8
Jul	5893.1	0.0	2656.0	2240.0	997.1	0.0	0.0	77.6	0.0	0.0	33.6	0.0	83.1
Aug	13709.6	0.0	0.0	12432.0	1277.6	0.0	0.0	111.3	0.2	0.0	38.5	0.0	104.9
Sep	6702.0	0.0	0.0	5648.0	1000.1	53.9	0.0	104.2	0.0	0.0	45.5	0.2	107.9
Oct	2103.6	0.0	0.0	496.0	1595.4	12.2	0.0	83.0	0.4	0.0	73.5	0.0	108.2
Nov	3302.7	0.0	0.0	2384.0	855.5	63.2	0.0	88.4	0.6	0.0	63.0	0.0	129.1
Dec	899.8	0.0	0.0	736.0	126.8	37.0	0.0	48.3	0.6	0.0	70.0	0.0	89.0
Sub-total (2016)	134133.5	0.0	25232.0	99456.0	9279.3	166.3	0.0	814.9	2.3	0.0	400.1	0.2	861.8
2017													
Jan	675.2	0.0	0.0	432.0	237.9	5.3	0.0	79.5	1.0	0.0	70.0	0.0	79.7
Feb	927.7	0.0	0.0	768.0	125.6	34.0	0.0	70.5	0.6	0.0	84.0	0.0	81.4
Mar	1856.7	0.0	0.0	1280.0	466.9	109.8	0.0	62.8	0.4	0.0	98.0	0.0	148.5
Apr	642.4	0.0	0.0	160.0	324.9	157.5	0.0	87.5	0.7	0.0	175.0	0.0	102.5
May	1118.2	0.0	0.0	528.0	416.4	173.7	0.0	118.3	0.0	0.0	280.0	0.0	139.0
June	650.0	0.0	0.0	0.0	451.6	198.4	0.0	199.7	1.4	0.0	350.0	0.0	98.7
Jul	1762.0	0.0	0.0	0.0	1466.6	295.4	0.0	36.9	0.8	0.0	183.0	0.0	164.2
Aug	1231.5	0.0	0.0	0.0	867.5	364.0	0.0	50.9	1.2	0.0	263.0	0.0	186.9
Sub-total (2017)	8863.5	0.0	0.0	3168.0	4357.4	1338.1	0.0	706.1	6.1	0.0	1503.0	0.0	1000.8
Total	219257.4	0.0	25232.0	140485.4	52035.6	1504.4	0.0	1623.5	8.4	0.0	1903.1	1.2	1996.2

Note:

-36.36 ton, 125.95 ton and 705.18 ton of inert C&D material were disposed of as public fill to Chai Wan Public Fill Barging Point, Tuen Mun Area 38 and Tseung Kwan O Area 137 Public Fill respectively in the reporting month.

-For inert C&D materials reused in other projects, the projects refer to (1) Green Valley; (2) Advance Works for Shek Wu Hui Sewage Treatment Works (3) Design and Construction of Kai Tak Cable Tunnel, CLP; (4) MTR Contract 1002 Whampoa Station and Overrun Tunnel; (5) CEDD Tuen Mun Area 54 Contract No. CV/2015/03; (6) Union Construction Ltd.'s site; (7) Foundation Works at Marriot Hotel at Ocean Park.

Lyric Theatre Complex

Table I-2: 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 Facility	Imported Fill	Metals	Paper/ Cardboard Packaging	Plastics	Wood/ Timber	Chemical Waste	Others, e.g. General Refuse
	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)	(in ton)
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
Sub-total (2017)	42874.4	0.0	0.0	2621.5	40247.6	5.3	0.0	152.4	0.3	0.0	0.0	2.7	70.0
Total	154013.2	0.0	0.0	2621.5	151386.4	5.3	0.0	486.9	0.7	1.5	0.0	10.3	261.6

Note:
 -1,728.51 and 624.89 tonnes of inert C&D material were disposed of as public fill to Tseung Kwan O Area 137 and Tuen Mun Area 38 respectively in the reporting month.

J. Environmental Mitigation Measures – Implementation Status

Table J-1: Environmental Mitigation Measures Implementation Status

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
Air Quality Impact (Construction)			
2.1 & 10.3.1	<p>General Dust Control Measures</p> <p>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)</p>	Obs	Obs
2.1 & 10.3.1	<p>Best Practice For Dust Control</p> <p>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:</p> <p><i>Good Site Management</i></p> <ul style="list-style-type: none"> 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. <p><i>Disturbed Parts of the Roads</i></p> <ul style="list-style-type: none"> 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. <p><i>Exposed Earth</i></p> <ul style="list-style-type: none"> 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. <p><i>Loading, Unloading or Transfer of Dusty Materials</i></p> <ul style="list-style-type: none"> All dusty materials should be sprayed with water immediately prior to any loading or transfer operation 	Obs/Rem	Obs
		Obs	Ü
		Obs	Obs
		N/A	N/A
		Ü	Ü

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
	so as to keep the dusty material wet.		
	<i>Debris Handling</i>		
	· Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides.	Ü	Ü
	· Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.	Ü	Ü
	<i>Transport of Dusty Materials</i>		
	· 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.	Ü	Ü
	<i>Wheel washing</i>		
	· 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.	Obs	Ü
	<i>Use of vehicles</i>		
	· 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.	Ü	Ü
	· Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.	Ü	Ü
	· 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.	Ü	Ü
	<i>Site hoarding</i>		
	· 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.	Ü	Ü
2.1 & 10.3.1	<p>Best Practicable Means for Cement Works (Concrete Batching Plant)</p> <p>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:</p> <p>Exhaust from Dust Arrestment Plant</p>		

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
	<ul style="list-style-type: none"> 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 <p>Emission Limits</p>	Ü	Ü
	<ul style="list-style-type: none"> All emissions to air, other than steam or water vapour, shall be colourless and free from persistent mist or smoke <p>Engineering Design/Technical Requirements</p>	Ü	Ü
	<ul style="list-style-type: none"> 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 	Ü	Ü
-	<p>Non-Road Mobile Machinery (NRMM):</p> <p>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.</p>	Obs	Obs
Noise Impact (Construction)			
3.1 & 10.4.1	<p>Good Site Practice</p> <p>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:</p> <ul style="list-style-type: none"> 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. 	Ü	Ü
3.1 & 10.4.1	<p>Adoption of Quieter PME</p> <p>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.</p>	N/A	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
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.	N/A	Obs
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.	N/A	N/A
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.	ü	ü
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	N/A
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:		
	<ul style="list-style-type: none"> 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 	Obs	ü
		ü	ü
		ü	ü

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
	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.		
	<ul style="list-style-type: none"> 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. 	Ü	Ü
	<ul style="list-style-type: none"> 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. 	Ü	Ü
	<ul style="list-style-type: none"> 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. 	Ü	Obs
	<ul style="list-style-type: none"> 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. 	Ü	Ü
	<ul style="list-style-type: none"> 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	Ü
	<ul style="list-style-type: none"> 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	N/A
	<p>Barging facilities and activities</p> <p>Recommendations for good site practices during operation of the proposed barging point include:</p> <ul style="list-style-type: none"> 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; 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 	N/A	N/A
		N/A	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
	materials or polluted water during loading or transportation;		
	<ul style="list-style-type: none"> All hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material; and 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	N/A
		N/A	N/A
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.	Ü	Ü
4.1 & 10.5.1	General construction activities <ul style="list-style-type: none"> 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. 	Ü	Ü
		Obs	Ü
Waste Management Implications (Construction)			
6.1 & 10.7.1	Good Site Practices Recommendations for good site practices during the construction activities include:		
	<ul style="list-style-type: none"> 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 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 	Ü	Ü
		Ü	Ü
		Obs	Ü
		Ü	Ü
		Obs	Ü
		Ü	Ü

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
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	ü	ü
	· Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of materials and their proper disposal	ü	ü
	· 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	ü	ü
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.	ü	ü
	· The surplus inert C&D material will be disposed of at the Government's PFRFs for beneficial use by other projects in Hong Kong.	ü	ü
	· 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.	ü	ü
	· 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.	ü	ü
· 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.	ü	ü	

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
6.1 & 10.7.1	<p>Chemical Waste</p> <ul style="list-style-type: none"> 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. 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. 	Obs	Obs
6.1 & 10.7.1	<p>General Refuse</p> <p>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.</p>	Ü	Ü
Land Contamination (Construction)			
7.1 & 10.8.1	<p>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.</p> <p>The following measures are proposed for excavation and transportation of contaminated material:</p> <ul style="list-style-type: none"> To minimize the chance for construction workers to come into contact with any contaminated materials, bulk earth-moving excavation equipment should be employed; 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; Stockpiling of contaminated excavated materials on site should be avoided as far as possible; 	N/A	N/A
		N/A	N/A
		N/A	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
	<ul style="list-style-type: none"> The use of contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; Vehicles containing any contaminated excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; Truck bodies and tailgates should be sealed to stop any discharge; 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; Speed control for trucks carrying contaminated materials should be exercised; 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 Maintain records of waste generation and disposal quantities and disposal arrangements. 	N/A	N/A
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	N/A
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	N/A
Table 9.1 & 10.8 (CM3)	Buffer trees for screening purposes to soften the hard architectural and engineering structures and facilities.	N/A	N/A
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	N/A
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	N/A
Table 9.1 & 10.8 (CM6)	Sensitive streetscape design should be incorporated along all new roads and streets.	N/A	N/A

EM&A Ref.	Recommendation Measures	Implementation Stage	
		M+ Museum	Lyric Theatre Complex
Table 9.1 & 10.8 (CM7)	Structure, ornamental planting shall be provided along amenity strips to enhance the landscape quality.	N/A	N/A
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	N/A
Table 9.1 (CM9)	Minimize the structure of marine facilities to built on the seabed and foreshore in order to minimize the affected extent to the waterbody	N/A	N/A
Table 9.2 & 10.9 (MCP1)	Use of decorative screen hoarding/boards	ü	ü
Table 9.2 & 10.9 (MCP2)	Early introduction of landscape treatments	N/A	N/A
Table 9.2 & 10.9 (MCP3)	Adoption of light colour for the temporary ventilation shafts for the basement during the transition period.	N/A	N/A
Table 9.2 & 10.9 (MCP4)	Control of night time lighting	ü	ü
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	N/A

N/A - Not Applicable

ü - 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. 31 October 2015 for M+ Museum main works and 1 March 2016 for Lyric Theatre Complex foundation works) to the end of the reporting month and are summarized in the **Table K-1** and **Table K-2** below respectively.

Table K-1: Statistics for complaints, notifications of summons and successful prosecutions for M+ Museum Main Works

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting month	0	0	0
From 31 October 2015 to end of the reporting month	3	1	0

Table K-2: Statistics for complaints, notifications of summons and successful prosecutions for Lyric Theatre Complex Foundation Works

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of summons	Successful prosecutions
This reporting month	0	0	0
From 1 March 2016 to end of the reporting month	5	0	0