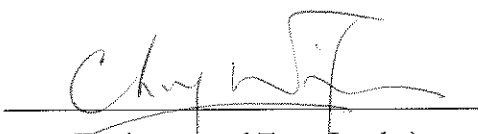


Leader and JEC Joint Venture

**Contract No. DC/2009/24
HATS Stage 2A – Upgrading of
Preliminary Treatment Works at
Sandy Bay, Cyberport,
Wah Fu, Aberdeen and Ap Lei Chau**

Final EM&A Report

(Version 1.0)

Certified By 
(Environmental Team Leader)

REMARKS:

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

WELLAB accepts no responsibility for changes made to this report by third parties

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**Agreement No. CE 8/2009(EP) Harbour Area Treatment Scheme Stage 2A
Independent Environmental Checker for Construction Phase – Investigation**

Our Reference
EC/AFK/DC/bw/
T261332/22.01/L-1491

**Contract No. DC/2009/24 – Upgrading of Preliminary Treatment Works at
Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau**

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Final EM&A Report on Construction Phase Activities

22 April 2021

By Post

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Dear Sir,

I refer to the captioned Final EM&A Report on construction phase activities under Contract No. DC/2009/24 as stipulated under Section 15.13 of the EM&A Manual, which was received on 21 April 2021 via email. Pursuant to Conditions 1.9 and 2.2 of Environmental Permit No. EP-322/2008/G, I hereby verify the captioned report.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED



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ABBREVIATION AND ACRONYM

AL Levels	Action and Limit Levels
DSD	Drainage Services Department
E / ER	Engineer/Engineer's Representative
EIA	Environmental Impact Assessment
EM&A	Environmental Monitoring and Audit
EMIS	Environmental Mitigation Implementation Schedule
EP	Environmental Permit
EPD	Environmental Protection Department
ET	Environmental Team
IEC	Independent Environmental Checker
RE	Resident Engineer
HATS 2A	Habour Area Treatment Scheme Stage 2A
HVS	High Volume Sampler
RH	Relative Humidity
QA/QC	Quality Assurance / Quality Control
SLM	Sound Level Meter
WMP	Waste Management Plan

EXECUTIVE SUMMARY

Introduction

1. This is the Final Environmental Monitoring and Audit (EM&A) Report prepared by Wellab Limited for DSD Contract No. DC/2009/24 “HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau” (hereinafter called “the Project”) which documents the key information of EM&A and environmental monitoring result from DC/2009/24 HATS Stage 2A with the Environmental Permit (Permit No.EP-322/2008/G) from 1st January 2012 to 31st March 2020.
2. As informed by the Contractor (Leader and JEC Joint Venture), all construction works at Ap Lei Chau PTW have been completed on 31st December 2019. The Proposal for Termination of Construction Phase EM&A Works of Contract No. DC/2009/24 at Ap Lei Chau PTW was submitted to EPD on 26th February 2020 and approved by EPD on 6th April 2020. As agreed with EPD, the termination date of the construction phase EM&A Works of Contract No. DC/2009/24 at Ap Lei Chau PTW was 31st March 2020. Thus, the EM&A works under Contract No. DC/2009/24 were ceased since 1st April 2020.

Summary of Site Activities undertaken during the Construction Period

3. The construction works under this Project included the construction of screens, grit traps, deodourisation rooms, workshop and administration buildings, and modification of existing inlet pumping stations.
4. Detail of Contractor’s Construction Programme from 1st January 2012 to 31st December 2019 could be found in the **Appendix H** of the relevant Monthly EM&A Report.

Environmental Monitoring Works

5. The environmental monitoring works of the Project were conducted by the ET of Contract DC/2009/24 under HATS 2A with the Environmental Permit and in accordance with the EM&A Manual. The monitoring results were checked and reviewed. Site audits were conducted once pre week. The implementation of the environmental mitigation measure, Event Action Plans and environmental complaint handing procedures were also checked.

Air Quality and Noise

6. The monitoring of air quality monitoring station at Wah Ming House, Wah Fu Estate (CM_WF1a) and noise monitoring stations at Aegean Terrace (M6a), Wah Ming House (M7a) and Wah Ling House (M8) were handed over to Contract No. DC/2009/24 from Contract No. DC/2007/24 in July 2014. The noise monitoring station at Mei Chun Court, South Horizons (M9) was handed over to Contract No. DC/2009/24 from Contract No. DC/2008/09 on 28th July 2014. The air quality and noise monitoring stations were set up by Cinotech Consultants Limited (post ET for this project) to monitor the air quality and noise in the vicinity of the sensitive receivers starting from July 2014 and the noise monitoring stations (M8, & M9) were taken over by Wellab Limited (current ET for this project) starting from 1st January 2019.
7. Hence, the monitoring of air quality monitoring stations at The Arcade, Cyberport (CM_CB1a), The Hong Kong Ice and Cold Storage (CM_AB1a) were handed over to Contract No. DC/2009/24 from Contract No. DC/2007/24 in August 2014. The air quality monitoring stations was set up by Cinotech Consultants Limited (post ET for this project) to monitor the air quality in the vicinity of the sensitive receivers starting from August 2014.

8. However, the air quality monitoring at CM_AB1a had been rejected and could not be continued, the proposed location (CM_AB1b – Works Site Boundary of Aberdeen PTW) was approved by ER on 22nd July 2014. The air quality monitoring stations was set up by Cinotech Consultants Limited (post ET for this project) to monitor the air quality in the vicinity of the sensitive receivers starting from August 2014 and the air quality station (CM_AB1b) was taken over by Wellab Limited (current ET for this project) starting from 1st January 2019. The location of CM_AB1b is shown in **Figure 1c**.

Noise (Sandy Bay PTW)

9. The Proposal for Termination of Construction Phase EM&A Works for Contract No. DC/2007/24 was submitted by its ET to EPD in July 2015. The proposal, including the termination of noise monitoring at Chuk Lam Ming Tong (M5), was approved by the EPD on 27th July 2015. The result of noise monitoring at M5 would not be reported from 27th July 2015, based on section 15.11 of the EM&A Manual of this Project as below:
- i) Construction activities including the remaining outstanding construction works for Sandy Bay PTW have been completed by the Contractor of this Project, therefore, no major environmental impact from Sandy Bay PTW is anticipated due to the Project.
 - ii) One Non Project-related Limit Level exceedance was recorded during the daytime construction noise monitoring on 27th June 2012 by the ET of DC/2007/24 at M5.

Air Quality and Noise (Cyberport PTW)

10. The Proposal for Termination of Construction Phase EM&A Works at Cyberport PTW for this Project was submitted by its ET to EPD in December 2017. The proposal, including the termination of air quality monitoring at The Arcade, Cyberport (CM_CB1a) and noise monitoring at Aegean Terrace (M6a), was approved by the EPD on 7th December 2017. The result of air quality monitoring at CM_CB1a and noise monitoring at M6a would not be reported from 7th December 2017, based on section 15.11 and 15.12 of the EM&A Manual of this Project as below:
- i) Referring to the certificates of substantial completion, the construction works at Cyberport PTW was substantially completed on 30th June 2016. Construction activities including the remaining outstanding construction works at Cyberport PTW will be completed by the Contractor by the end of November 2017. All construction activities with significant environmental impact at Cyberport PTW have been completed on 22nd November 2017. Therefore, no significant environmental impact at Cyberport PTW is anticipated due to the Project starting from 1st December 2017.
 - ii) No Project-related environmental monitoring (air quality monitoring and noise monitoring) exceedance was recorded over the duration of the monitoring programme at Cyberport PTW.
 - iii) No environmental-related prosecution or summons was recorded at Cyberport PTW. No case of complaint was logged since project commencement at Cyberport PTW.

Air Quality and Noise (Wah Fu PTW)

11. The Proposal for Termination of Construction Phase EM&A Works at Wah Fu PTW for this Project was submitted by its ET to EPD in July 2018. The proposal, including the termination of air quality monitoring at the rooftop of Wah Ming House (CM_WF1a) and noise monitoring at the rooftop of Wah Ming House (M7a), was approved by the EPD on 2nd October 2018. The result of air quality monitoring at CM_WF1a and noise monitoring at M7a would not be reported from 2nd October 2018, based on section 15.11 and 15.12 of the EM&A Manual of this Project as below:

- i) Referring to the certificates of substantial completion, the construction works at Wah Fu PTW was substantially completed on 25th August 2016. Construction activities including the remaining outstanding construction works at Wah Fu PTW is completed by the Contractor on 4th June 2018. All construction activities with significant environmental impact at Wah Fu PTW have been completed on 4th June 2018. Therefore, no significant environmental impact at Wah Fu PTW is anticipated due to the Project starting from 4th June 2018. Moreover, according to the email from ER on 11th June 2018, the site portion of Wah Fu PTW had been handed over to DSD/ST2 on 4th June 2018.
- ii) One Project-related Limit Level exceedance was recorded during the daytime construction noise monitoring on 19th December 2012 by the ET of DC/2007/24 at M7a. References could be made to the Monthly EM&A Report for December 2012. No Project-related environmental monitoring (air quality monitoring and noise monitoring) exceedance was recorded since January 2013 at Wah Fu PTW.

Air Quality and Noise (Aberdeen PTW)

12. The Proposal for Termination of Construction Phase EM&A Works at Aberdeen PTW for this Project was submitted by its ET to EPD in May 2019. The proposal, including the termination of air quality monitoring at Works Site Boundary of Aberdeen PTW (CM_AB1b) and noise monitoring at the rooftop of Wah Lai House (M8), was approved by the EPD on 9th July 2019. The result of air quality monitoring at CM_AB1b and noise monitoring at M8 would not be reported from 9th July 2019, based on section 15.11 and 15.12 of the EM&A Manual of this Project as below:

- i) Referring to the certificates of substantial completion, the construction works at Aberdeen PTW was substantially completed on 10th November 2017. Construction activities including the remaining outstanding construction works at Aberdeen PTW is completed by the Contractor on 31st March 2019. All construction activities with significant environmental impact at Aberdeen PTW have been completed on 1st April 2019. Moreover, according to the email from ER on 16th April 2019, the site portion of Aberdeen PTW had been handed over to DSD/ST2 on 1st April 2019.
- ii) No Project-related environmental monitoring (air quality monitoring and noise monitoring) exceedance was recorded over the duration of the monitoring programme at Aberdeen PTW.
- iii) No environmental-related prosecution, summons or complaint was recorded at Aberdeen PTW.

Noise (Ap Lei Chau PTW)

13. The Proposal for Termination of Construction Phase EM&A Works at Ap Lei Chau PTW for this Project was submitted to EPD on 26th February 2020. The proposal, including the termination of noise monitoring at Mei Chun Court, South Horizons (M9), was approved by EPD on 6th April 2020 and the termination date was 31st March 2020 as agreed with EPD. The result of noise monitoring at M9 would not be reported from 1st April 2020, based on section 15.11 and 15.12 of the EM&A Manual of this Project as below:
- i) Referring to the certificates of substantial completion, the construction works at Ap Lei Chau PTW were substantially completed on 8th January 2018. All construction works at Ap Lei Chau PTW were completed by the Contractor on 31st December 2019. Therefore, no significant environmental impact at Ap Lei Chau PTW is anticipated due to the Project since 1st January 2020.
 - ii) One complaint of construction noise nuisance (Action Level exceedance) was raised by the residents of South Horizons and Ap Lei Chau Estate on 28th December 2012. References could be made to the Monthly EM&A Report for December 2012. No Project-related environmental monitoring (noise monitoring) exceedance was recorded since January 2013 at Ap Lei Chau PYW.
 - iii) No environmental-related prosecution or summons was recorded at Ap Lei Chau PTW. No case of complaint was logged since April 2018 at Ap Lei Chau PTW.
14. Summary of the non-compliance of the construction phrase of this Project is tabulated in **Table I**.

Table I Summary Table for Non-compliance (Exceedances) Recorded Due to the Project

Monitoring Station(s)	Parameters	No. of Exceedance		No. of Exceedance Due to the Project		Total No. of Exceedance Due to the Project
		Action Level	Limit Level	Action Level	Limit Level	
CM_CB1a	1-hr TSP	2	0	0	0	0
	24-hr TSP	0	0	0	0	0
CM_WF1a	1-hr TSP	1	1	0	0	0
	24-hr TSP	0	0	0	0	0
CM_AB1a	1-hr TSP	2	0	0	0	0
	24-hr TSP	0	0	0	0	0
CM_AB1b	1-hr TSP	0	0	0	0	0
	24-hr TSP	0	0	0	0	0
M5	Noise (Day Time)	0	1	0	0	0
M6a		0	0	0	0	0
M7a		5	1	0	1	1
M8		0	0	0	0	0
M9		2	0	0	0	0

1-hour TSP Monitoring

15. All 1-hour TSP monitoring was conducted as scheduled during the construction period. No Project-related Action and Limit Level exceedance were recorded during monitoring throughout the whole construction period.

24-hour TSP Monitoring

16. All 24-hour TSP monitoring was conducted as scheduled during the construction period. No Action and Limit Levels exceedance was recorded for 24-hour TSP monitoring due to the Project throughout the whole construction period.

Construction Noise Monitoring

17. All construction noise monitoring was conducted as scheduled during the construction period. One Limit Level exceedance was recorded during the daytime monitoring on 19th December 2012 by the ET of DC/2007/24 at M7a.
18. One Action Level exceedance was recorded during the whole construction period due to documented complaint. Detail of the complaint could be referred to **Appendix H**. Summary of exceedance is presented in **Appendix E**.

Environmental Licenses and Permits

19. Licenses/Permits granted to the Project include the Environmental Permit (EP), Notification of Works under APCO, Water Discharge Licences and Registered as a Chemical Waste Producer for Sandy Bay, Cyberport, Ap Lei Chau, Aberdeen, Wah Fu PTWs sites.

Environmental Mitigation Implementation Schedule

20. According to the EIA Report Section 3.74, 4.56, 6.384, 9.154 and 13.44, air quality, noise, water quality, waste management and landscape and visual would be the key environmental issues and mitigation measures shall be implemented during the period covering the EM&A programme. Details of the implementation of mitigation measures are provided in the **Appendix G**.

Summary of Complaints and Prosecutions

21. No environmental non-compliance was recorded in the construction period. The observations and recommendations made in each individual site audit session were attached in the Monthly EM&A Reports.
22. 8 nos. of Project-related environmental complaints were received and no notification of summons/ successful prosecution was received in the whole construction period. The effectiveness of mitigation measure implemented by the Contractor for each complaint was observed to be satisfactory. All complaints had been resolved and closed. The details of all received complaints are present in **Appendix H**.

Conclusion

23. The EM&A programme were found to be effective and efficient in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on sensitive receivers at the designated monitoring locations were brought about by the Project. The environmental mitigation measures provided by the Contractor were generally acceptable apart from some minor deficiencies which were rectified timely by the Contractor.
24. In conclusion, the Project was environmentally acceptable.

1. INTRODUCTION

Background

- 1.1 The Project ‘HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau’ with Contract No. DC/2009/24 mainly comprises the following major works:
- The construction of screens, grit traps, deodourisation rooms, workshop and administration buildings, and modification of existing inlet pumping stations at the preliminary treatment works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau.
- 1.2 The general location plan of the Project is shown in **Figure 1**.
- 1.3 The Project is under Harbour Area Treatment Scheme (HATS) Stage 2A and is a designated project (Register No. : AEIAR-121/2008). The Environmental Permit (Permit No. EP-322/2008/G) which was issued on 9th May 2014 to the Drainage Services Department (hereinafter called the DSD) as the Permit Holder.
- 1.4 Leader and JEC Joint Venture (hereafter called the LJJV) was commissioned by the DSD to undertake the construction of the Contract No. DC/2009/24 “Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau”.
- 1.5 Cinotech Consultants Limited was commissioned by LJJV to undertake the Environmental Monitoring and Audit (EM&A) works for the project and was appointed as the Environmental Team (ET) of the Project under Condition 2.1 of the EP. The ET of this project was taken over by Wellab Limited (Wellab) starting from 1st January 2019.
- 1.6 As informed by the Contractor, the major construction works under Contract No. DC/2009/24 have been substantially completed on 31st December 2019. The Proposal for Termination of Construction Phase EM&A Works of Contract No. DC/2009/24 at Ap Lei Chau PTW was submitted to EPD on 26th February 2020 and approved by EPD on 6th April 2020. As agreed with EPD, the termination date of the construction phase EM&A Works of Contract No. DC/2009/24 at Ap Lei Chau PTW was 31st March 2020. Thus, the EM&A works under Contract No. DC/2009/24 were ceased since 1st April 2020.

Project Organizations

- 1.7 The contacts of the Project are shown in **Table 1.1** and the Project Organization Chart is shown in **Figure 2**.

Table 1.1 Key Project Contacts

Party	Role	Name	Position	Phone No.
Drainage Services Department	Project Proponent	Mr. K.W. Mo, Jim	Senior Engineer	2159 3404
Ove Arup & Partners Hong Kong Ltd	Engineer’s Representative	Mr. Mark Ngan	Senior Resident Engineer	2370 4362
	Coordinator	Mr. Kevin Cheung	Resident Engineer	3925 6506
Wellab	Environmental	Dr. Priscilla Choy	ET Leader	2151 2089

Party	Role	Name	Position	Phone No.
	Team	Mr. Kenneth Leung	Project Coordinator	2153 2125
Mott MacDonald	Independent Environmental Checker	Dr. Anne Kerr	Independent Environmental Checker	2828 5757
Leader and JEC Joint Venture	Contractor	Mr. Kelvin Cheung	Site Agent	9656 8865
		Mr. Edmond Wong	Environmental Officer	9843 1771

Summary of EM&A Requirements

- 1.8 The EM&A programme requires construction phase monitoring for air quality and construction noise, landscape and visual and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:
- All monitoring parameters;
 - Action and Limit levels for all environmental parameters;
 - Event Action Plans;
 - Environmental mitigation measures, as recommended in the project EIA study final report; and
 - Environmental requirements in contract documents.
- 1.9 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in **Section 4** of this report.
- 1.10 This Final EM&A report represents the monitoring results, observation and locations of the required monitoring parameter, namely air quality, noise and audit works conducted for the Project in the construction period between 1st January 2012 to 31st March 2020.

2. AIR QUALITY

Baseline Condition

- 2.1 Baseline air quality monitoring was conducted at the designated monitoring stations. The baseline data was used for the Project to derive the Action and Limit Level. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

- 2.2 Three designated monitoring stations, CM_CB1a, CM-WF1a and CM_AB1b were selected for impact dust monitoring for the Project. The air quality monitoring station CM_AB1a was unavailable due to rejection by the premises owner and therefor an alternative monitoring station CM_AB1b was proposed and adopted for subsequent impact monitoring starting on 5th August 2014. **Table 2.1** describes the air quality monitoring locations and the responsible ET who is carrying out the impact air quality monitoring. The monitoring location which are also depicted in **Figure 1**.
- 2.3 The termination of air quality monitoring at CM_CB1a - The Arcade, Cyberport was approved by EPD on 7th December 2017.
- 2.4 The termination of air quality monitoring at CM_WF1a – Wah Ming House, Wah Fu Estate was approved by EPD on 2nd October 2018.
- 2.5 The termination of air quality monitoring at CM_AB1b - Works Site Boundary of Aberdeen PTW was approved by EPD on 9th July 2019.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Station(s)	Monitoring date		ET of Contract
	From	To	
1-hour TSP & 24-hour TSP			
CM_CB1a - The Arcade, Cyberport	Jan 2012	Jul 2014	DC/2007/24
	Aug 2014	Dec 2017	DC/2009/24
CM_WF1a - Wah Ming House, Wah Fu Estate	Jan 2012	Jun 2014	DC/2007/24
	Jul 2014	Sep 2018	DC/2009/24
CM_AB1a - The Hong Kong Ice and Cold Storage	Jan 2012	Jul 2014	DC/2007/24
CM_AB1b ⁽¹⁾ - Works Site Boundary of Aberdeen PTW	Aug 2014	Jul 2019	DC/2009/24

Remark: (1): Relocation of the air quality monitoring station CM_AB1a to CM_AB1b was verified by IEC on 15 July 2014 and approved by ER on 22 July 2014.

Prediction and Evaluation of Environmental Impact

- 2.6 The maximum predicted 1-hour and 24-hour average TSP levels for construction of the Project were predicted and evaluated during EIA period. The **Table 2.2** summarizes the EIA predictions during construction period.

Table 2.2 EIA Predictions of 1-hour and 24-hour Average TSP Levels

Monitoring Station(s)	Predicted Mitigated Average TSP conc.	
	1-hour TSP	24-hour TSP
CM_CB1a	347	124
CM_WF1a	376	170
CM_AB1a	475	212
CM_AB1b ⁽¹⁾	Not Predicted in EIA Report	Not Predicted in EIA Report

Remark: (1): Relocation of the air quality monitoring station CM_AB1a to CM_AB1b was verified by IEC on 15 July 2014 and approved by ER on 22 July 2014.

Monitoring Parameters, Frequency and Duration

2.7 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hour TSP	Three times every 6 days
24-hour TSP	once every 6 days

Results and Observations

2.8 The impact air quality monitoring work was conducted by the ET of Contract No. DC/2007/24 with same Environmental Permit in accordance with the EM&A Manual for Contract DC/2009/24 which has been submitted and verified by IEC. The impact monitoring methodology conducted by DC/2007/24 under the requirements of the EM&A Manual are also applicable for the Project since the two Contracts have shared the same site areas and executed their works under the same EP. The impact monitoring data under DC/2007/24 was adopted for the Project from January 2012.

2.9 From July to August 2014 onward, the impact air quality monitoring was conducted by the ET of Contract No. DC/2009/24, which took over three monitoring stations from Contract No. DC/2007/24 under the same EP. The impact monitoring methodology conducted by DC/2009/24 will follow the requirements of the EM&A Manual. Impact air quality monitoring was conducted by the ET of Contract No. DC/2009/24 during the construction period between August 2014 to July 2019.

2.10 A summary of the impact air quality monitoring results in the construction period after took over three monitoring stations from Contract No. DC/2007/24 is given in **Table 2.4**.

Table 2.4 Summary of 1-hour and 24-hour TSP Monitoring Results in the Construction Period

Monitoring Station(s)	Average $\mu\text{g}/\text{m}^3$	Maximum $\mu\text{g}/\text{m}^3$	Minimum $\mu\text{g}/\text{m}^3$	Action Level $\mu\text{g}/\text{m}^3$	Limit Level $\mu\text{g}/\text{m}^3$
1-hour TSP					
CM_CB1a	111.7	276.3	10.0	280	500
CM_WF1a	102.4	281.8	10.8	285	
CM_AB1a	147.5	335.0	10.2	283	
CM_AB1b ⁽¹⁾	107.4	282.7	11.1		

Monitoring Station(s)	Average $\mu\text{g}/\text{m}^3$	Maximum $\mu\text{g}/\text{m}^3$	Minimum $\mu\text{g}/\text{m}^3$	Action Level $\mu\text{g}/\text{m}^3$	Limit Level $\mu\text{g}/\text{m}^3$
24-hour TSP					
CM_CB1a	67.1	160.0	17.9	178	260
CM_WF1a	57.0	164.6	12.6	185	
CM_AB1a	75.0	167.0	5.0	174	
CM_AB1b ⁽¹⁾	79.0	164.8	5.5		

Remark:

(1): Relocation of the air quality monitoring station CM_AB1a to CM_AB1b was verified by IEC on 15 July 2014 and approved by ER on 22 July 2014.

(2) The 1-hr and 24-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No. DC/2007/24 under the same EP.

- 2.11 All 1-hour TSP monitoring was conducted as scheduled during the construction period. Six Non Project-related Action Level exceedances were record during monitoring throughout the whole construction period. No Limit Level exceedance was recorded.
- 2.12 All 24-hour TSP monitoring was conducted as scheduled during the construction period. No Action and Limit Level exceedance was recorded. Summary of exceedance is presented in **Appendix E**.
- 2.13 The air quality monitoring data collected during construction period were generally in line with the prediction of the approved EIA Report.
- 2.14 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results during construction period are shown in **Appendix B**.
- 2.15 The weather information during construction period is summarized in **Appendix D**.
- 2.16 According to field observations during site inspection, identifiable dust emission sources near the monitoring stations were vehicles movement mobile crane, excavator, sea traffic and Dump truck.

3. NOISE

Baseline Condition

3.1 Baseline noise monitoring was conducted at the designated monitoring stations. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Location

3.2 Noise monitoring was conducted at five designed monitoring stations, **Table 3.1** and **Figure 1** indicated their positions in relation to the site boundary.

3.3 The termination of noise monitoring at M5 - Chuk Lam Ming Tong was approved by EPD on 27th July 2015.

3.4 The termination of noise monitoring at M6a - Aegean Terrace was approved by EPD on 7th December 2017.

3.5 The termination of noise monitoring at M7a - Wah Ming House was approved by EPD on 2nd October 2018.

3.6 The termination of noise monitoring at M8 - Wah Lai House was approved by EPD on 9th July 2019.

3.7 The termination of noise monitoring at M9 - Mei Chun Court, South Horizons was approved by EPD on 6th April 2020.

Table 3.1 Locations for Noise Monitoring Stations

Monitoring Station(s)	Monitoring Date		ET of Contract
	From	To	
M5 - Chuk Lam Ming Tong	Jan 2012	Jul 2015	DC/2007/24
M6a - Aegean Terrace	Jan 2012	Jun 2014	DC/2007/24
	Jul 2014	Dec 2017	DC/2009/24
M7a - Wah Ming House	Jan 2012	Jun 2014	DC/2007/24
	Jul 2014	Oct 2018	DC/2009/24
M8 - Wah Lai House	Jan 2012	Jun 2014	DC/2007/24
	Jul 2014	Jul 2019	DC/2009/24
M9 - Mei Chun Court, South Horizons	Jan 2012	Jul 2014	DC/2008/09
	Jul 2014	Mar 2020	DC/2009/24

Prediction and Evaluation of Environmental Impact

3.8 The Predicted Noise Levels for construction of the Project were predicted and evaluated in the absence of mitigation measures during EIA period. The **Table 3.2** summarizes the EIA predictions during construction period.

Table 3.2 EIA predictions of Noise Levels

Monitoring Station(s)	Predicted Mitigated Construction Noise Levels during Normal Working Hour ($L_{eq(30\ min)}$ dB(A))
M5	63 - 74
M6a	62 - 71
M7a	73 - 75
M8	56 - 64
M9	57 - 61

Monitoring Parameters, Frequency and Duration

3.9 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Station(s)	Parameter	Period	Frequency
M5 M6a M7a M8 M9	$L_{eq(30\ min.)}$ dB(A)	0700-1900 hrs on normal weekdays	Once per week
M5 M6a M7a M8 M9	$L_{eq(5\ min.)}$ dB(A)	During restricted hours	Monitoring to be conducted during the construction works

Results and Observations

3.10 The impact noise monitoring work was conducted by the ET of Contract No. DC/2007/24 and DC/2008/09 with the same Environmental Permit in accordance with the EM&A Manual for Contract No. DC/2009/24 which has been submitted and verified by IEC. The impact monitoring methodology conducted by DC/2007/24 and DC/2008/09 under the requirements of the EM&A Manual are also applicable for the Project since the those Contracts have shared the same site areas and executed their works under the same EP. The impact monitoring data under DC/2007/24 and DC/2008/09 was adopted for the Project from January 2012.

3.11 From July 2014 onward, the impact noise monitoring was conducted by the ET of Contract No. DC/2009/24, which took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP. The impact monitoring methodology conducted by DC/2009/24 will follow the requirements of the EM&A Manual. Impact noise monitoring was conducted by the ET of Contract No. DC/2009/24 during the construction period between July 2014 to March 2020.

3.12 A summary of the noise monitoring results in the construction period is given in **Table 3.4**.

Table 3.4 Summary of Noise Monitoring Results in the Construction Period

0700-1900 hrs. during weekdays			
Noise Monitoring Station	Range, Leq (30 min.) dB(A) ⁽¹⁾	Action Level	Limit Level, Leq (30 min.) dB(A)
M5	59.5 – 76.2	When one documented complaint is received	>75* dB(A)
M6a	41.0 – 70.7		
M7a	42.9 – 73.2		
M8	47.7 – 72.5		
M9	40.2 – 69.3		

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

(*) 70 dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

(1)The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24and DC/2008/09 under the same EP.

- 3.13 All construction noise monitoring was conducted as scheduled during the construction period. A Limit Level exceedance was recorded during the daytime monitoring on 19th December 2012 by the ET of DC/2007/24 at M7a. Summary of exceedance is presented in **Appendix E**.
- 3.14 One Action Level exceedance was recorded during the whole construction period due to documented complaint. Detail of the complaint could be referred to **Appendix H**.
- 3.15 The noise monitoring data collected during construction period were generally in line with the prediction of the approved EIA Report.
- 3.16 Noise monitoring results and graphical presentations are shown in **Appendix C**.
- 3.17 The major noise source identified at the designated noise monitoring stations was vehicles movement, mobile crane, concrete breaking, excavator, sea traffic and dump truck.

4. REVIEW OF THE EM&A PROGRAMME

Implementation Status of Environmental Mitigation Measures

- 4.1 The mitigation measures detailed in the EM&A Manual were implemented throughout the whole construction period. A summary of the EMIS is provided in **Appendix G**.
- 4.2 No non-compliance was recorded during the site audits throughout the construction period. Observations and recommendations recorded during the site audits were summarized in each of the Monthly EM&A Reports.

Review of Environmental Monitoring Procedures

- 4.3 The monitoring works conducted by the monitoring team were inspected regularly. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The Monitoring team recorded all observations around the monitoring stations, within and outside the construction site.
- The monitoring team recorded the temperature and weather conditions on the monitoring days.

Noise Monitoring

- The monitoring team recorded all observations around the monitoring stations, which might affect the monitoring result.
- Major noise sources were identified and recorded. Other intrusive noise attributing to the result was trimmed off by pausing the monitoring temporarily.

Site Audits

- 4.4 Site audits were carried out by representative of the Contractor, Engineer and Contractor's ET on weekly basis to observe the aspect of water quality, noise, air quality, landscape, waste and chemical management. Reminders and recommendation were given to the Contractor, and the Contractor rectified and implemented environmental management practices and mitigation measures timely and properly in the Project site. The representative of the IEC joined the site inspection once per month. For details of site audits finding, please refer to respective monthly EM&A Reports.

Comparison of the EM&A data with EIA

Air Quality

- 4.5 The EIA Report has predicted that dust nuisance at ASRs would not be expected if the recommended mitigation measures has been implemented. No air quality complaints from EPD were received by the Project and no Project-related exceedance at the monitoring stations were recorded during the construction period.

Noise

- 4.6 The EIA report had predicted that residual impacts of construction noise levels can be kept below the construction noise limit if the recommended mitigation measures has been implemented. One construction noise complaint was logged on 19th December 2012 by

the ET of DC/2007/24 at M7a and was considered not Project-related after investigation. One project-related Limit level was recorded during the construction period and one non project-related exceedance was recorded during the construction period. Detail of the exceedance is provided in **Appendix E**.

Status of Waste Management

- 4.7 Waste generated from this Project includes non-inert C&D materials which are made up of general refuse and recyclable waste like paper/ cardboard packaging. The amount of wastes generated by the activities of this Project during the construction period is shown in **Appendix I**.
- 4.8 Most of the necessary mitigation measures have been implemented and recommended follow-up actions have been discharged by the Contractor regarding to waste management in the reporting period. Observations and recommendations recorded during the site audits were summarized in each of the Monthly EM&A Reports.

Implementation Status of Landscape and Visual Mitigation Measures

- 4.9 Landscape and Visual monitoring was carried out on site in accordance with the EM&A Manual to ensure that the implementation and maintenance of landscape and visual mitigation measures were achieved.
- 4.10 No non-compliance was recorded during the works period of the Project. The implementation status for Landscape and Visual mitigation measures is provided on **Appendix G**.

5. ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

- 5.1 The Event/ Action Plans for air quality and noise are presented in **Appendix F**.

1-hour TSP monitoring

- 5.2 All 1-hour TSP monitoring was conducted as scheduled during the construction period. Six Non Project-related Action Level exceedances were record during monitoring throughout the whole construction period.

24-hour Monitoring

- 5.3 24-hour TSP monitoring was conducted as scheduled during construction period. No Action and Limit Level exceedance of 24-hour TSP monitoring due to the Project throughout the whole construction period.

Construction Noise Monitoring

- 5.4 All construction noise monitoring was conducted as scheduled during construction period. One Limit Level exceedance and one Action Level exceedance were recorded during the whole construction period. Summary of exceedance is presented in **Appendix E**.

Summary of Environmental Non-Compliance

- 5.5 No environmental non-compliance was recorded in the construction period. The observations and recommendations made in each individual site audit session were attached in the Monthly EM&A Reports.

Summary of Complaint, Prosecutions, Reporting Changes and Notification of Summons

- 5.6 8 nos. of Project-related environmental complaints were received and no notification of summons/ successful prosecution was received in the whole construction period. The effectiveness of mitigation measure implemented by the Contractor for each complaint was observed to be satisfactory. The summary of complaint, prosecutions, reporting changes and notification of summons is presented in **Appendix H**.

6. COMMENT, CONCLUSIONS AND RECOMMENDATIONS

Comment on Overall EM&A Programme

- 6.1 The EM&A Programme requires construction phase monitoring for air quality, air-borne construction noise and environmental site audit. Timely implementation of mitigation measures were carried out according to the environmental data obtained during construction phase. According to the information from RE and Contractor, the major construction activities under Contract No. DC/2009/24 have been completed on 31st December 2019. Thus, The EM&A works under DC/2009/24 were ceased since 1st April 2020.
- 6.2 Therefore, there was no construction activities after 31st December 2019 and no future environmental concerns under Contract No. DC/2009/24. The weekly site audits were effective to ensure the implementation and efficiency of the mitigation measures. As a result, environmental nuisance to the public could be reduced to a minimal.
- 6.3 Therefore, the overall performance of the monitoring methodology adopted and environmental management system in this Project was effective.

Overall EM&A Data

- 6.4 Environmental monitoring works were performance during construction period and all monitoring results were checked and reviewed. Impact air quality and noise monitoring were carried out according to the requirements in the EM&A Manual.

1-hour TSP monitoring

- 6.5 1-hour TSP monitoring was conducted as scheduled during construction period. No Project-related exceedances were record during monitoring throughout the whole construction period.

24-hour Monitoring

- 6.6 24-hour TSP monitoring was conducted as scheduled during construction period. No Action and Limit Level exceedance of 24-hour TSP monitoring due to the Project throughout the whole construction period.

Construction Noise Monitoring

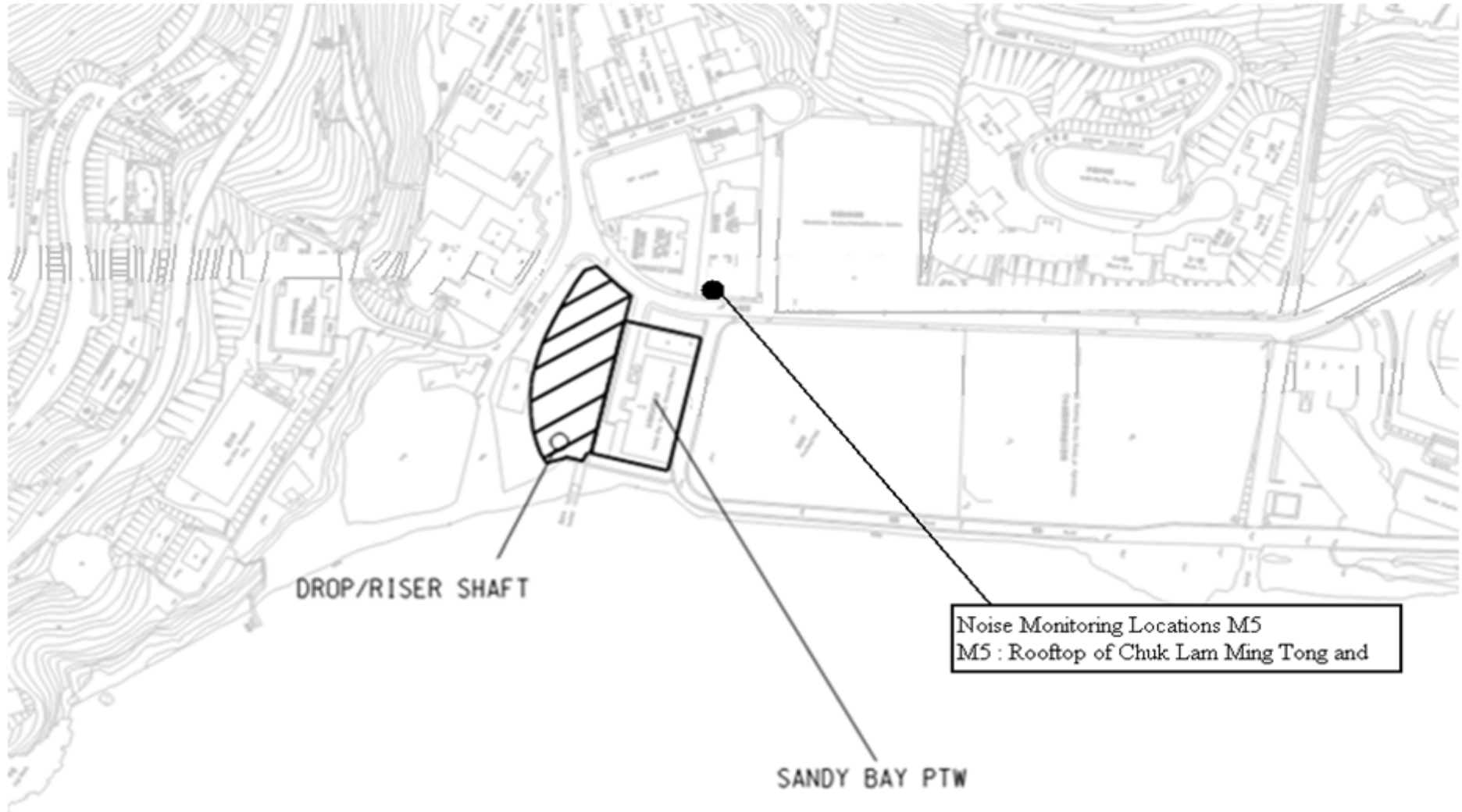
- 6.7 All construction noise monitoring was conducted as scheduled during construction period. One Limit Level exceedance and one Action Level exceedance were recorded during the whole construction period.

Recommendations and Conclusions

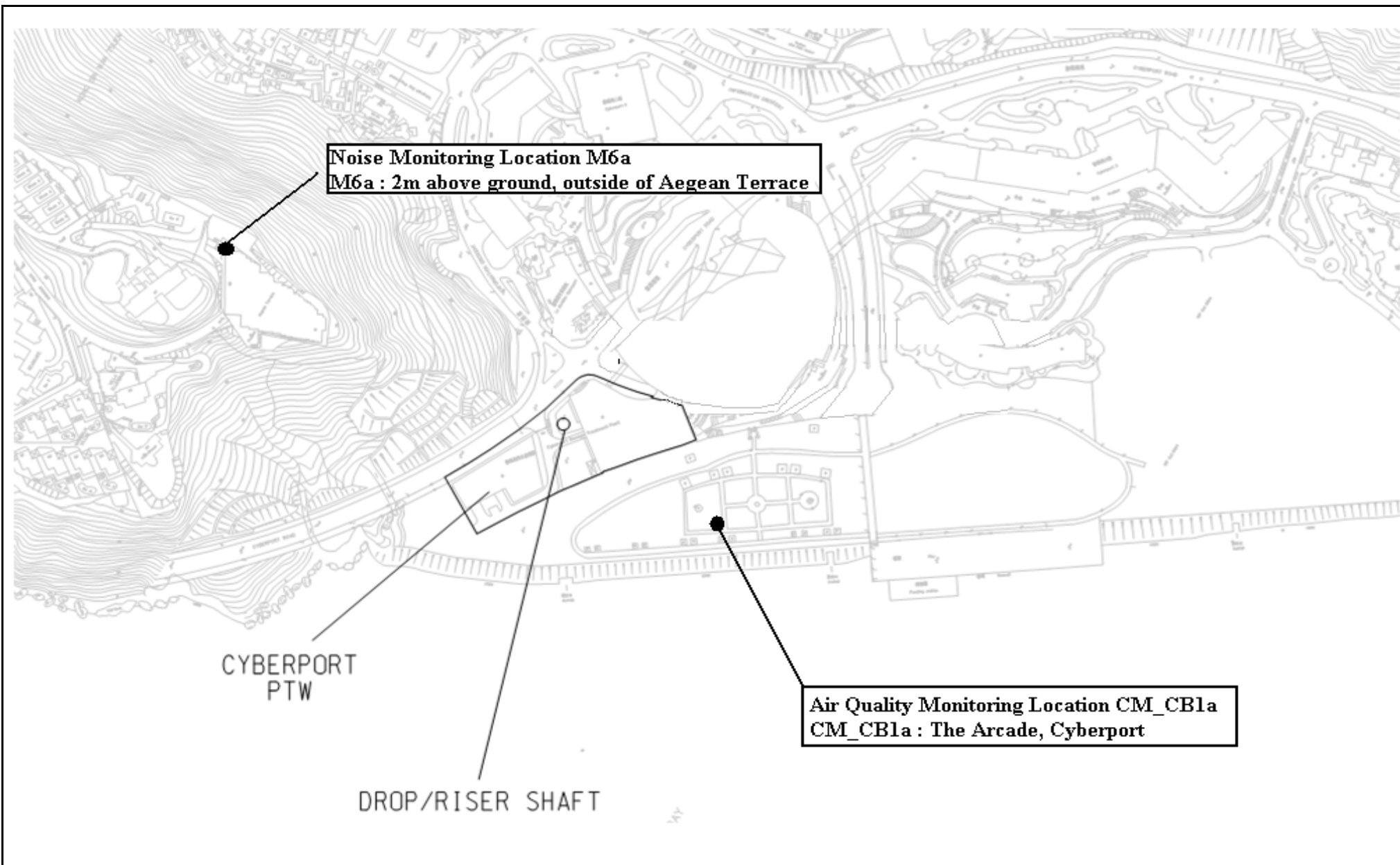
- 6.8 The EM&A programme was found to be effective and efficient in monitoring impacts arising from the Project. The findings of the environmental monitoring program suggest that no adverse impacts on the sensitive receivers were brought about by the Project. The environmental mitigation measures provided by the Contractor were generally acceptable apart from some minor deficiencies, which were rectified timely by the Contractor. In conclusion, the Project was environmentally acceptable.

- 6.9 With the success of the overall EM&A programme, the deterioration of the environment caused by the Project was cost-effectively identified and necessary prompt effective mitigation measures were implemented to avoid any unacceptable impacts.

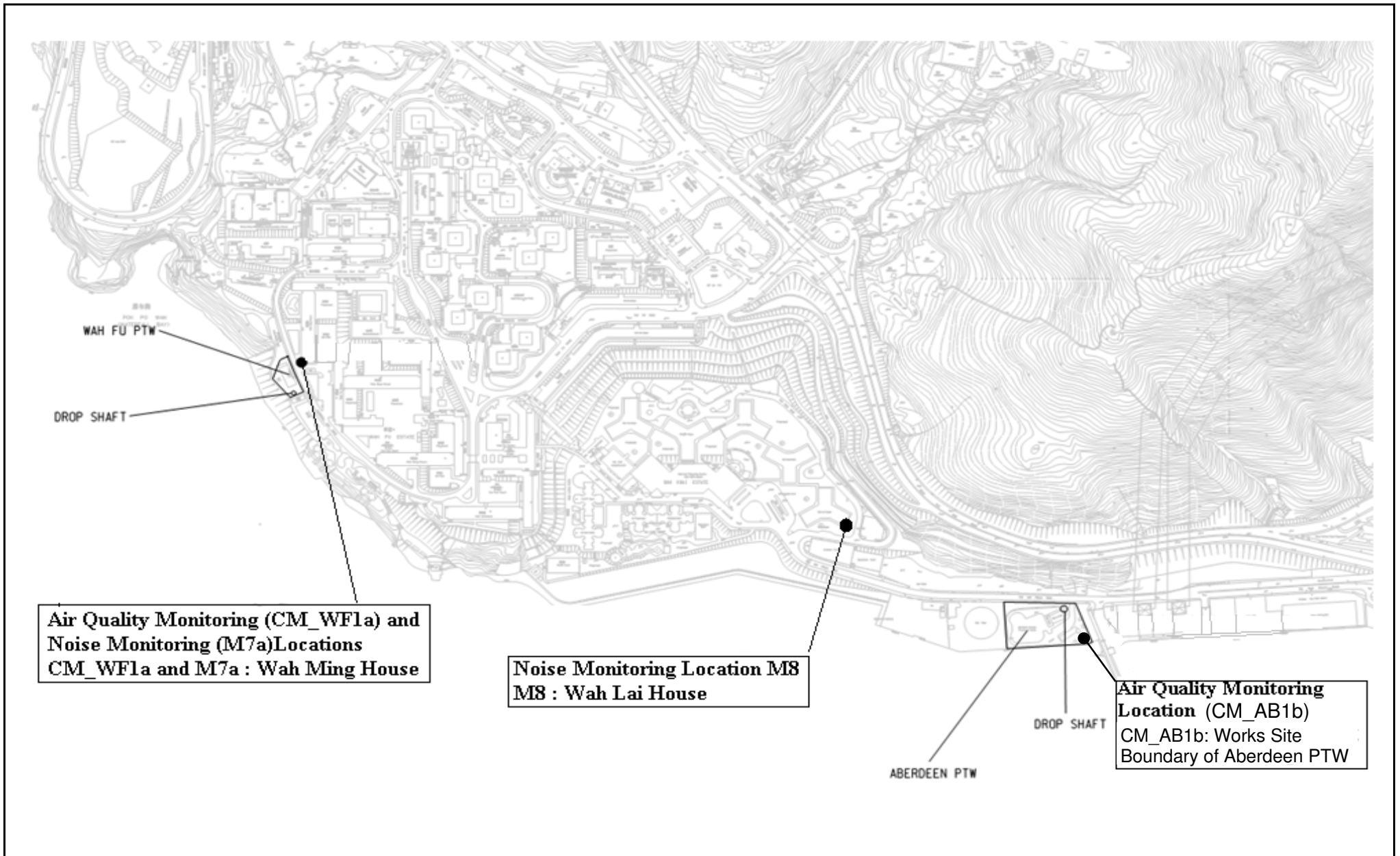
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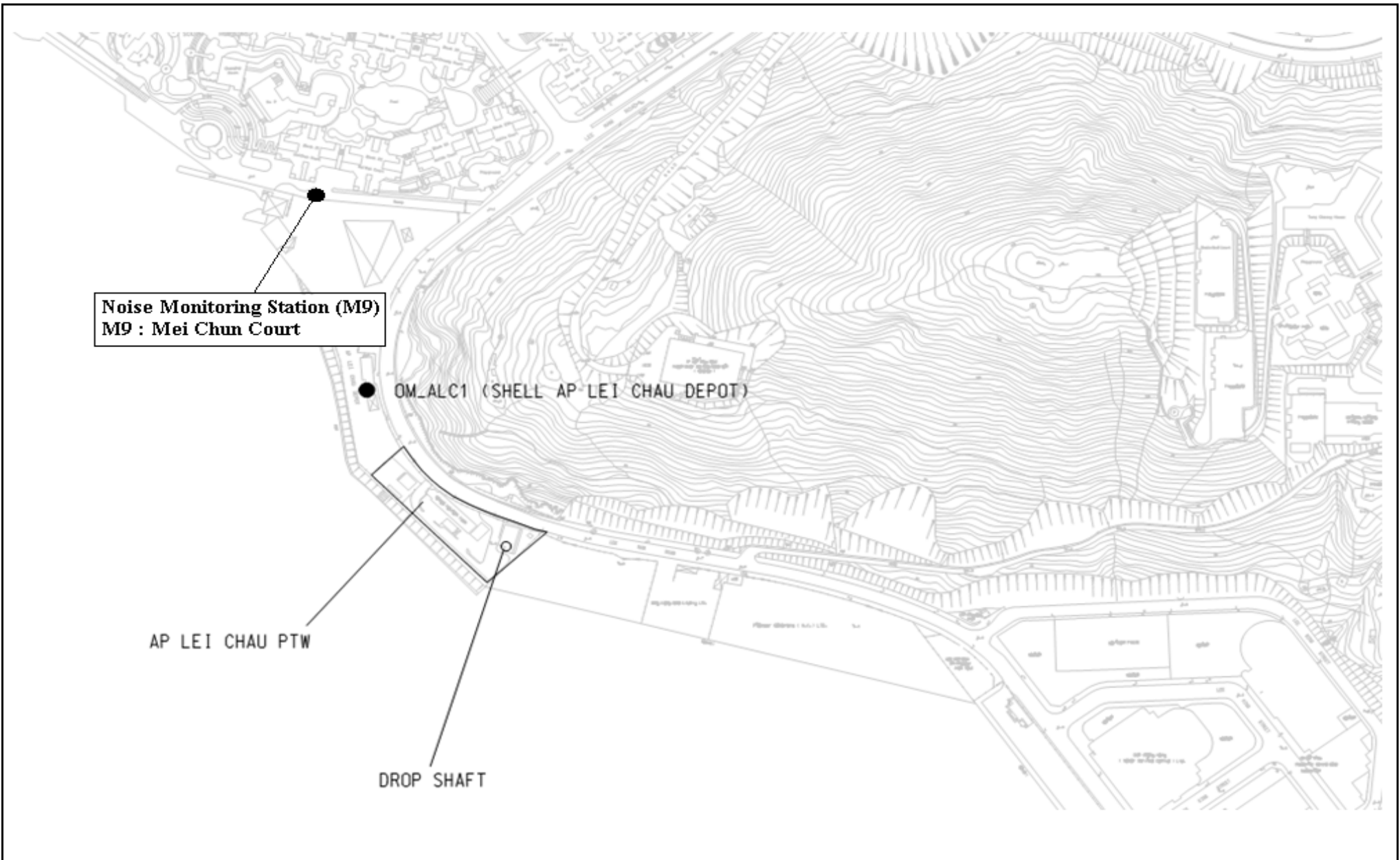
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	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	General Location Plan of Sandy Bay PTW and Locations of Noise Monitoring Stations	Date	Figure	
		01/2012	1A	



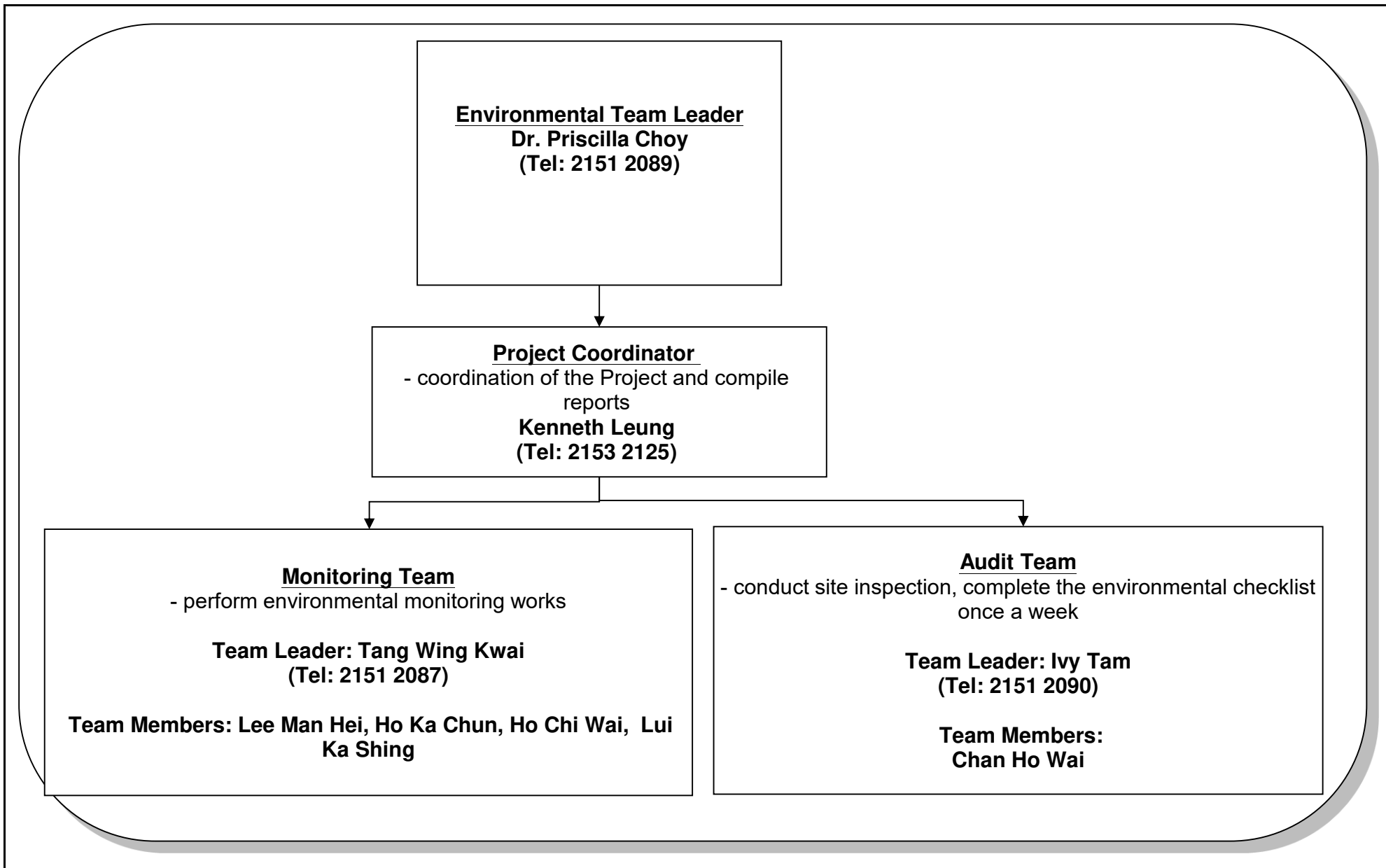
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	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	General Location Plan of Cyberport PTW and Locations of Air Quality and Noise Monitoring Stations	Date	Figure	
		01/2012	1B	



Title	Contract No: DC/2009/24	Scale	Project	WELLAB
	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	Location of Wah Fu and Aberdeen PTW and Locations of Air Quality and Noise Monitoring Locations	Date	Figure	
		07/2014	1C	



Title	Contract No: DC/2009/24	Scale	Project	WELLAB
	HATS 2A - Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau	N.T.S	No. MA11060	
	Locations of AP LEI CHAU PTW and the Noise Monitoring Location	Date	Figure	
		1/2012	1D	



Title	Contract No. DC/2009/24 HATS Stage 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyperport, Wah Fu, Aberdeen and Ap Lei Chau ET's Organization Chart	Scale	Project	
		N.T.S	No. MA11060	
		Date	Figure	
		Jan-20	2	

**APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR
QUALITY AND NOISE QUALITY**

Appendix A Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP and 24-Hour TSP

Monitoring Stations	Action Level ($\mu\text{g}/\text{m}^3$)		Limit Level ($\mu\text{g}/\text{m}^3$)	
	1-hour	24-hour	1-hour	24-hour
CM_CB1a	280	178	500	260
CM_WF1a	285	185		
CM_AB1a	283	174		
CM_AB1b	283	174		

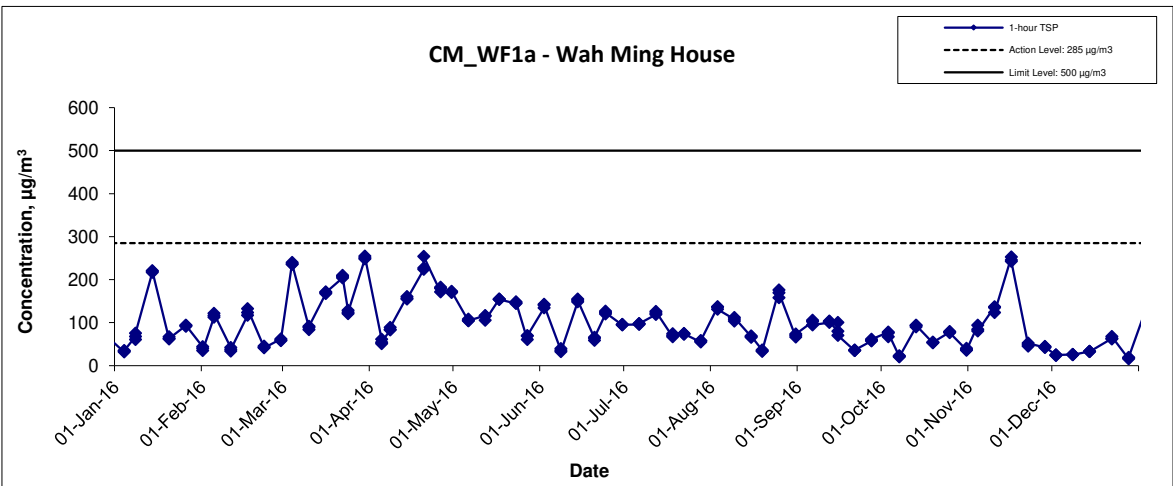
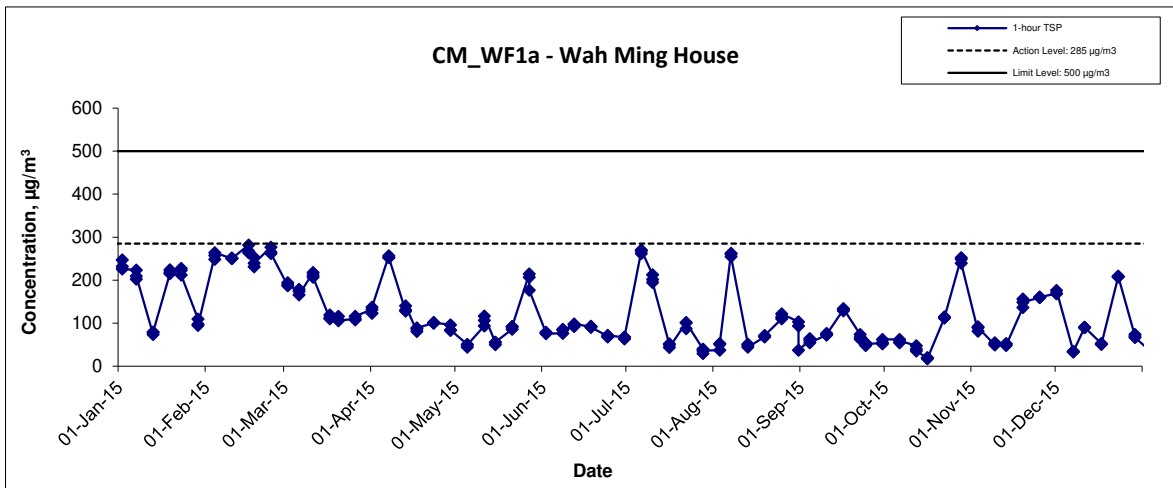
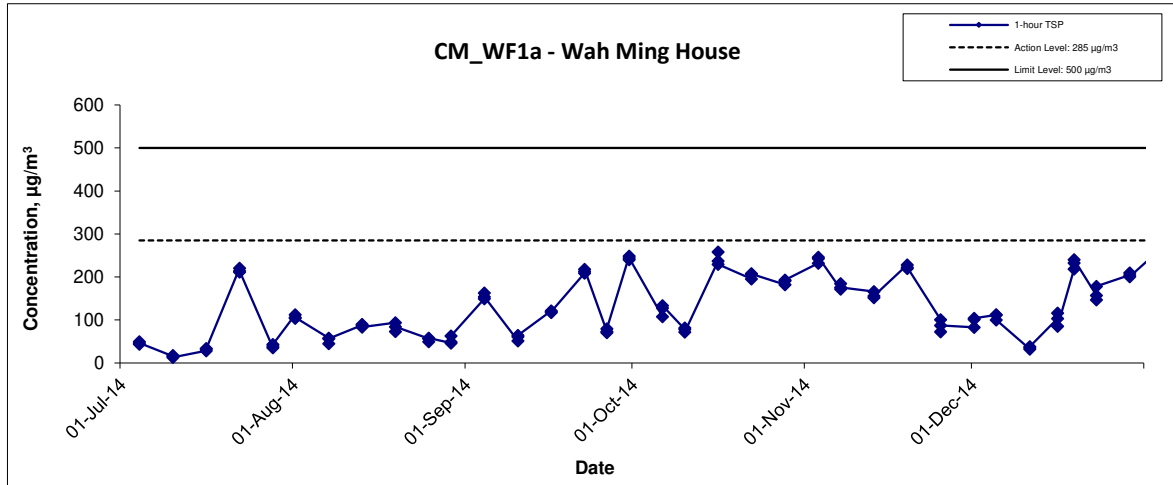
Table A-2 Action and Limit Level for Construction Noise

Monitoring Stations	Time Period	Action Level	Limit Level in dB(A)
M5 M6a M7a M8 M9	0700-1900 hours on normal weekdays	When one documented complaint is received	75 ⁽¹⁾

Remark: 1: 70 dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

**APPENDIX B
1-HOUR AND 24-HOUR TSP
MONITORING RESULTS AND
GRAPHICAL
PRESENTATION**

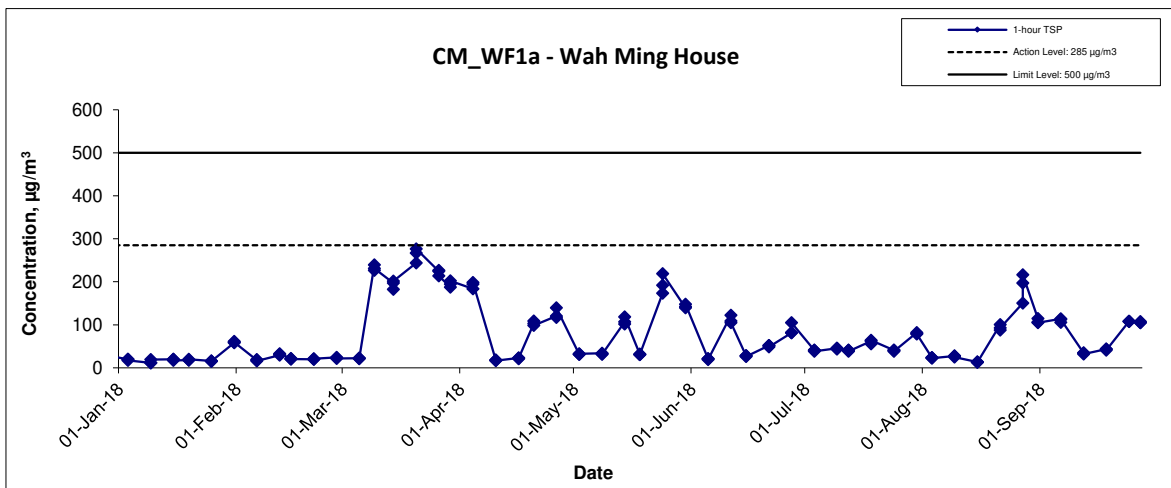
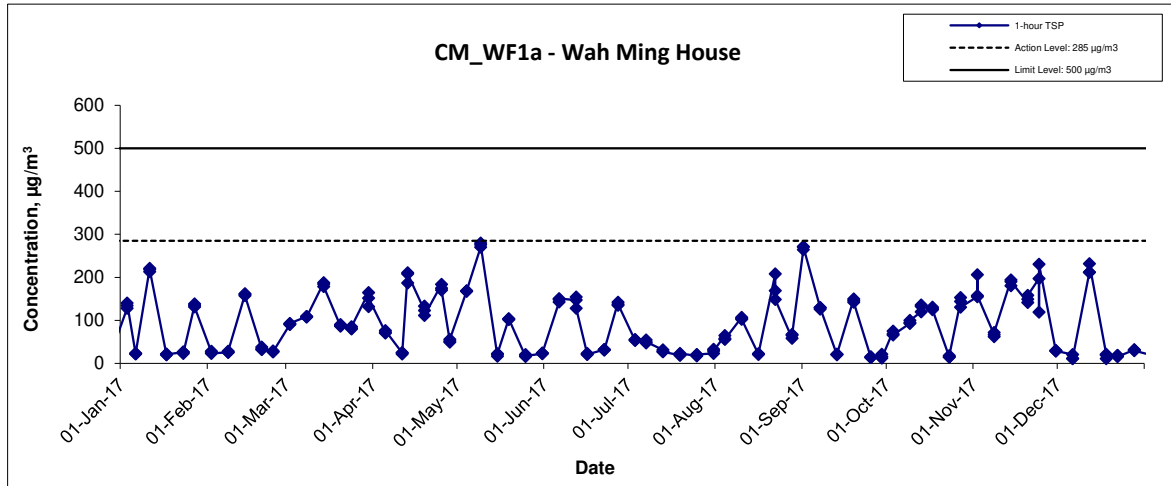
1-hr TSP Concentration Levels



Remark: The 1-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11060	
	Date Aug-20	Appendix B	

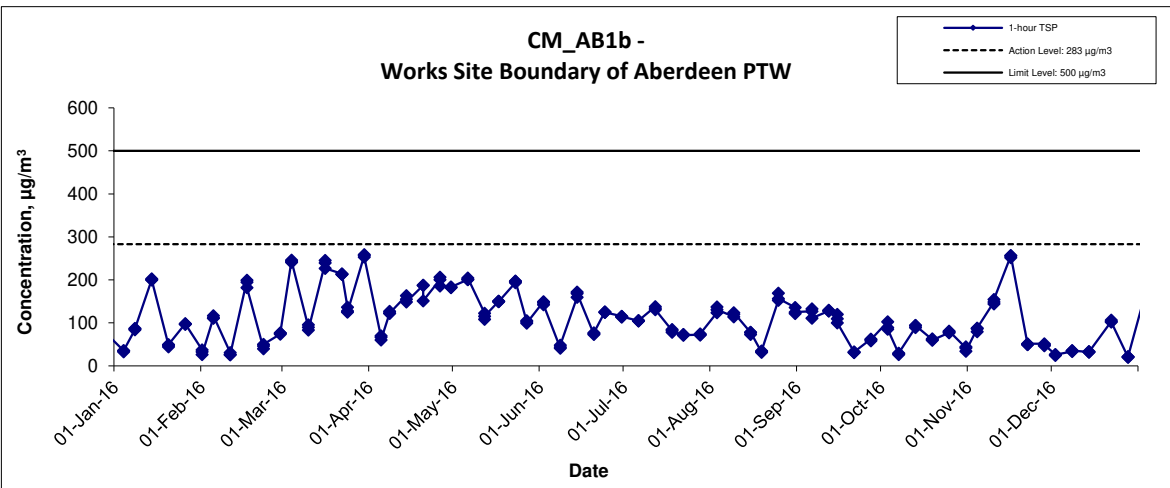
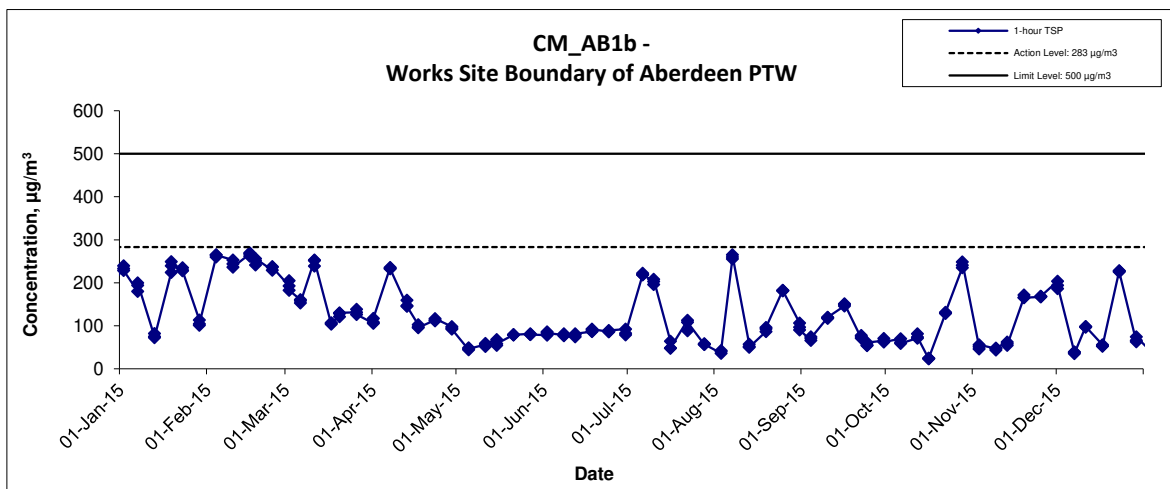
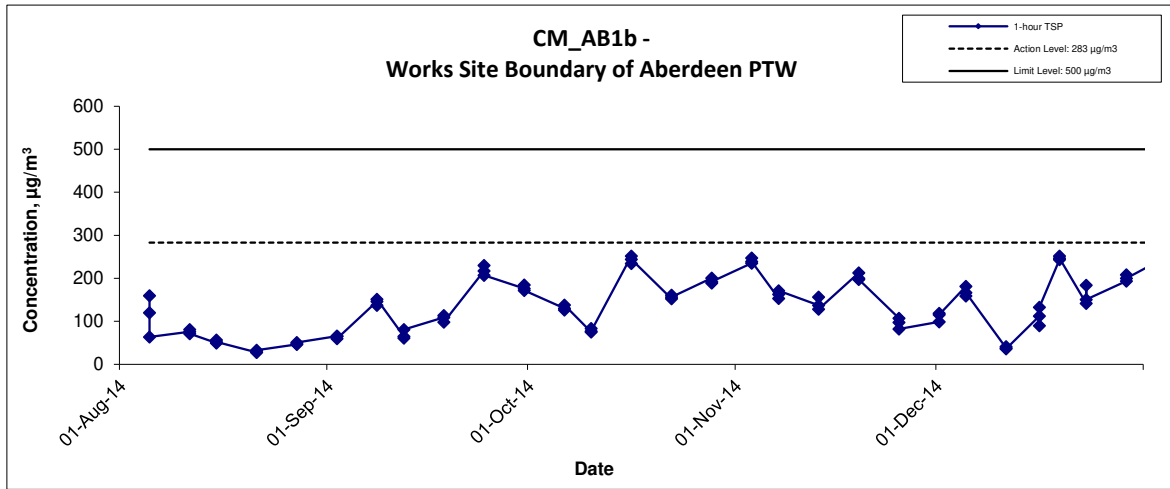
1-hr TSP Concentration Levels



Remark: The 1-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

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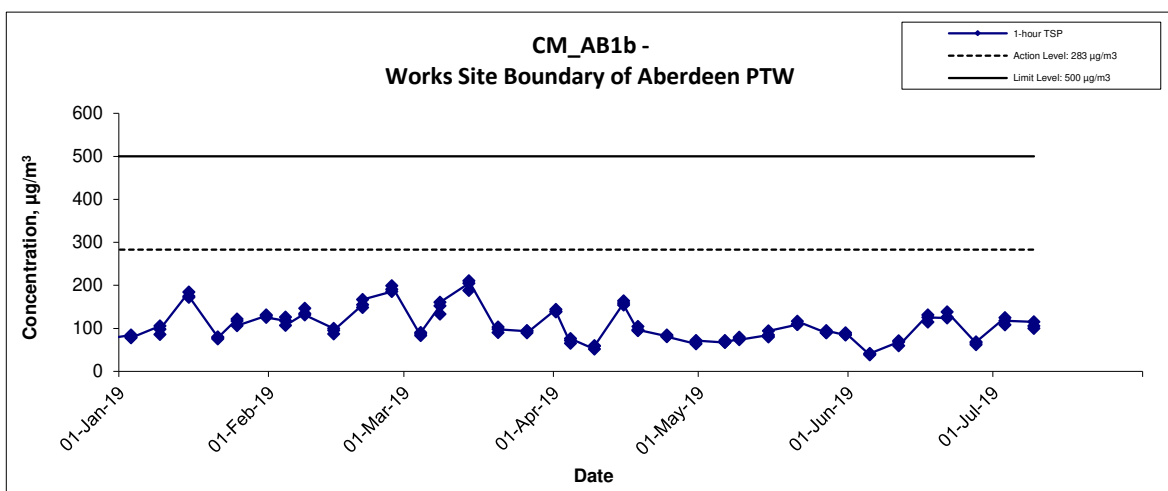
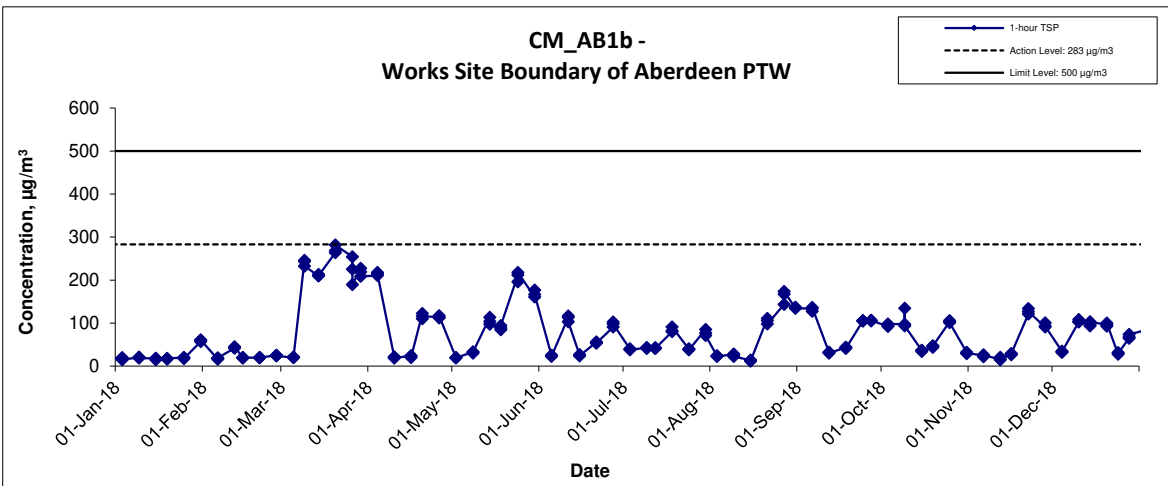
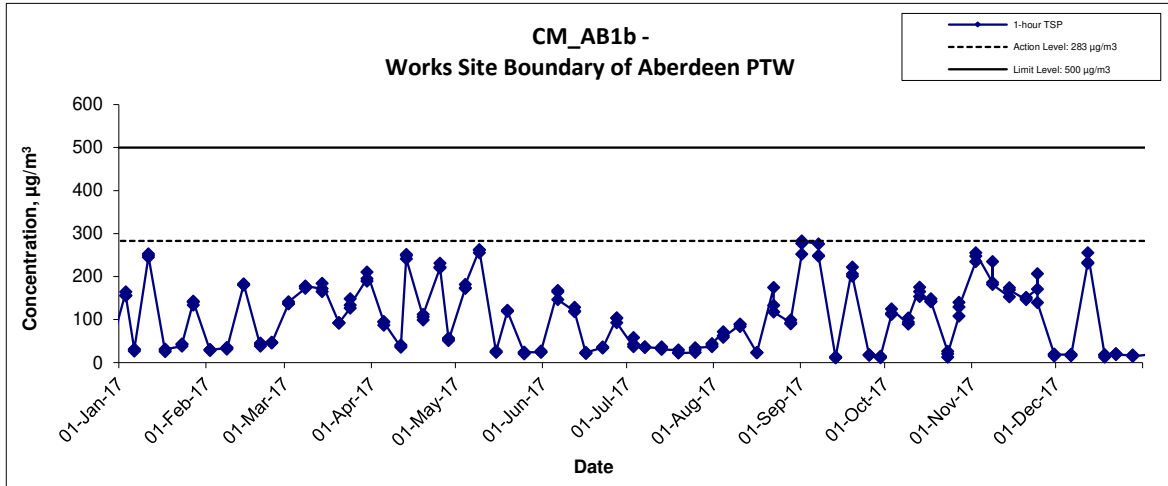
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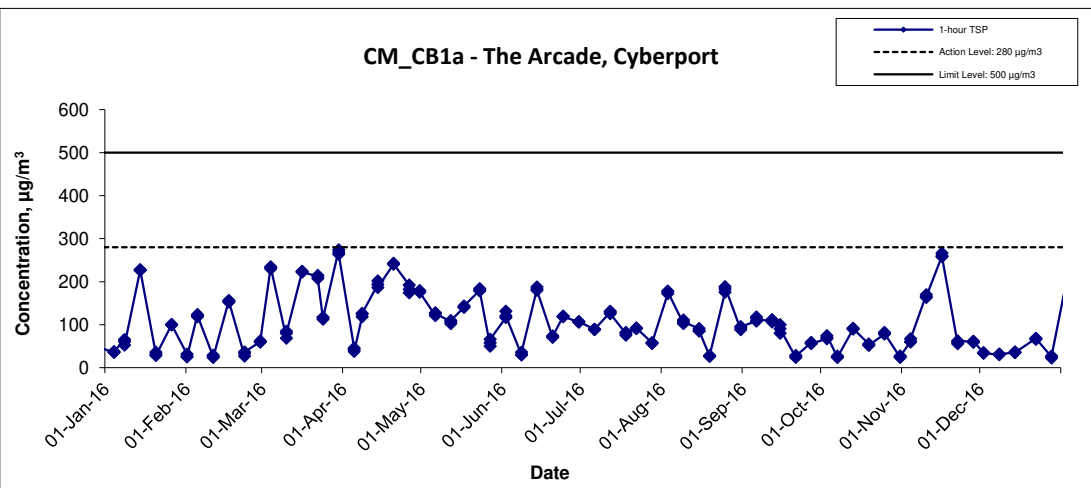
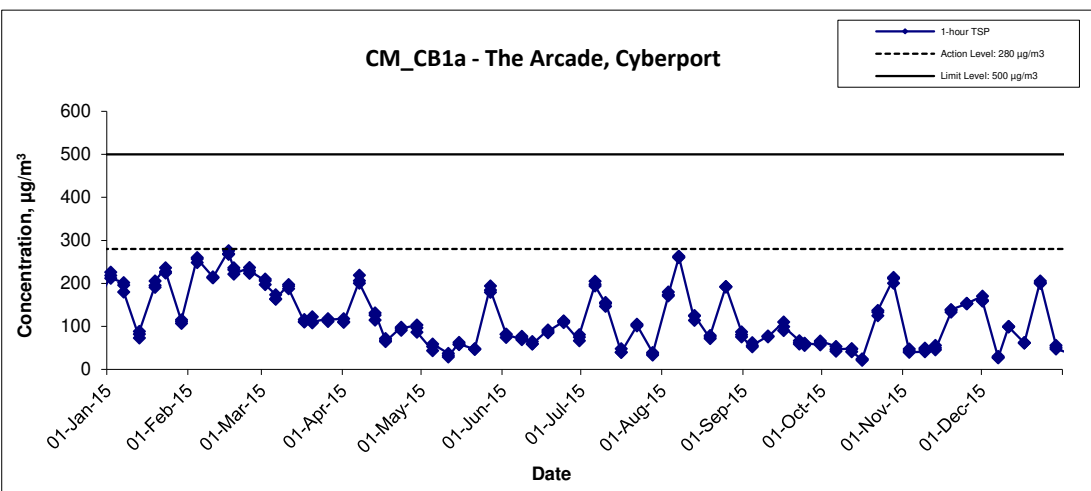
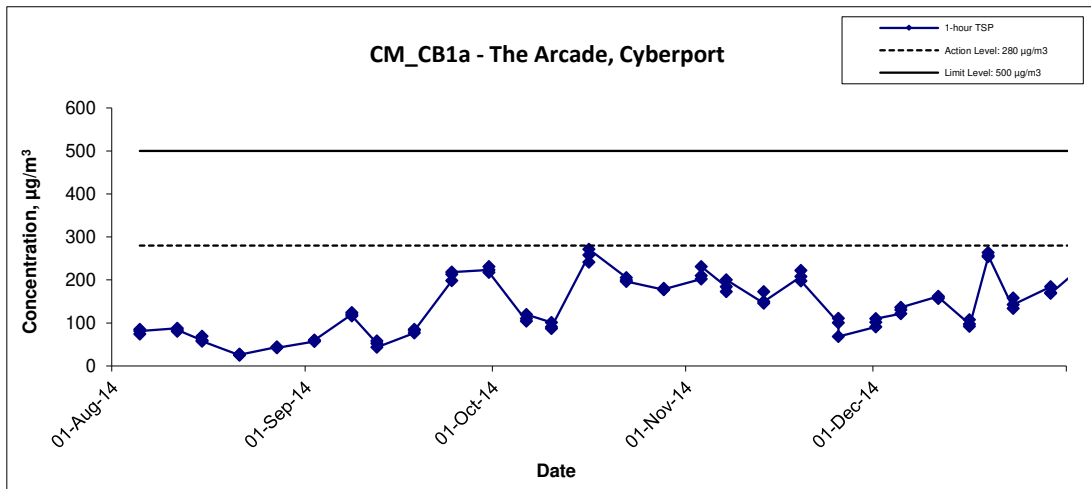
1-hr TSP Concentration Levels



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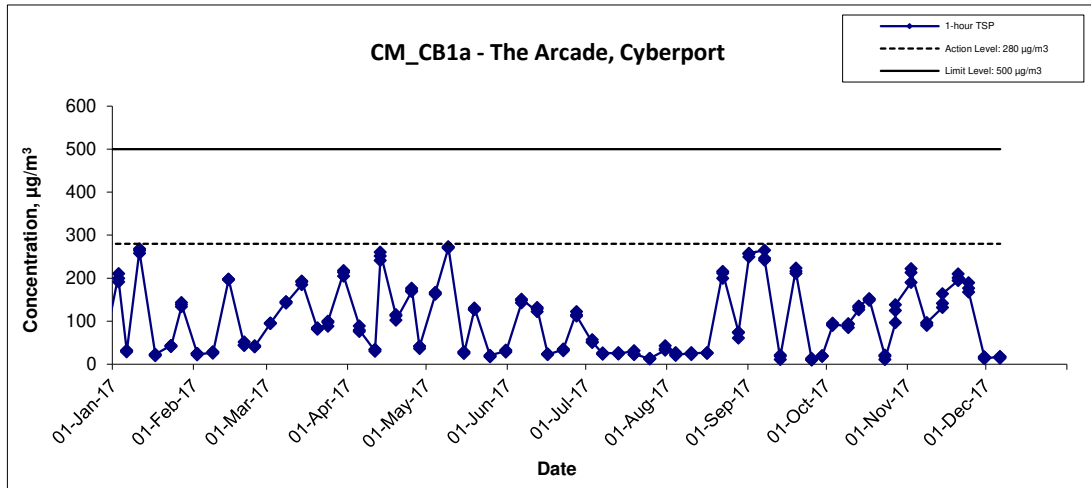
1-hr TSP Concentration Levels



Remark: The 1-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

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	Date Aug-20	Appendix B	

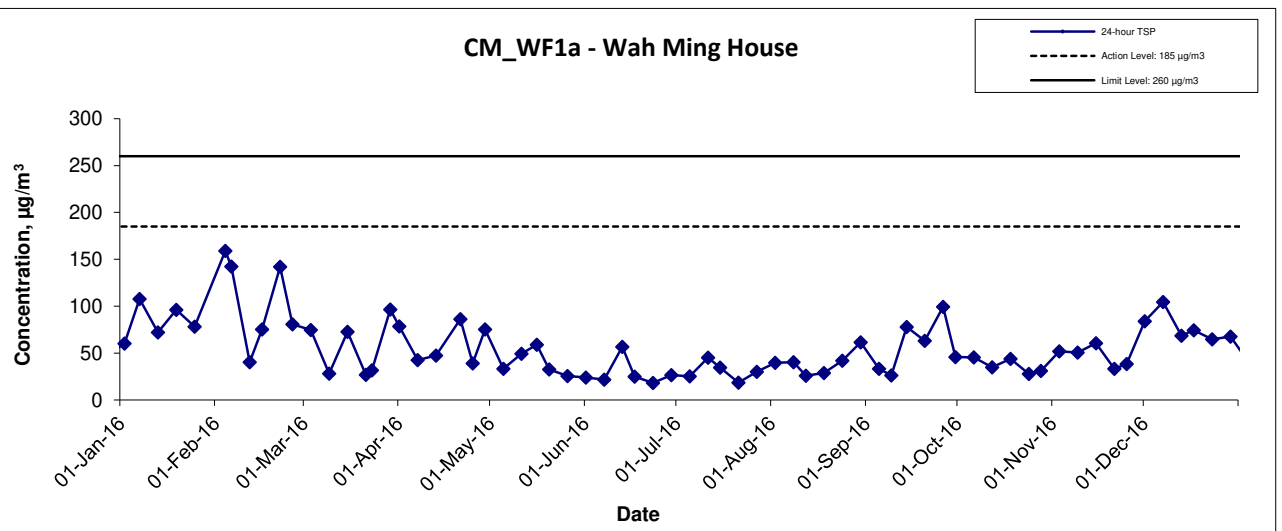
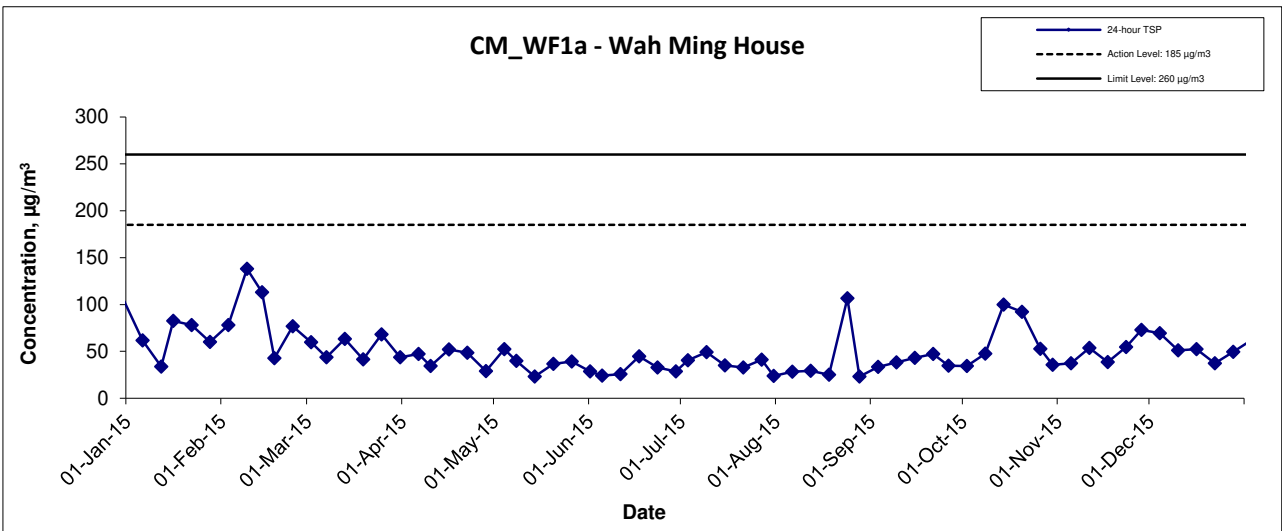
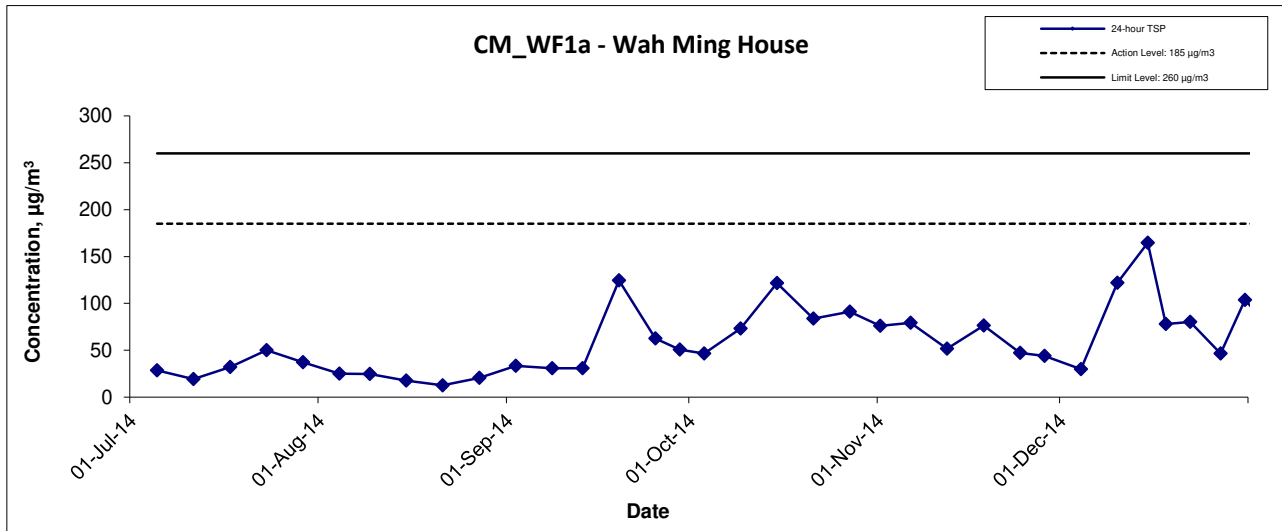
1-hr TSP Concentration Levels



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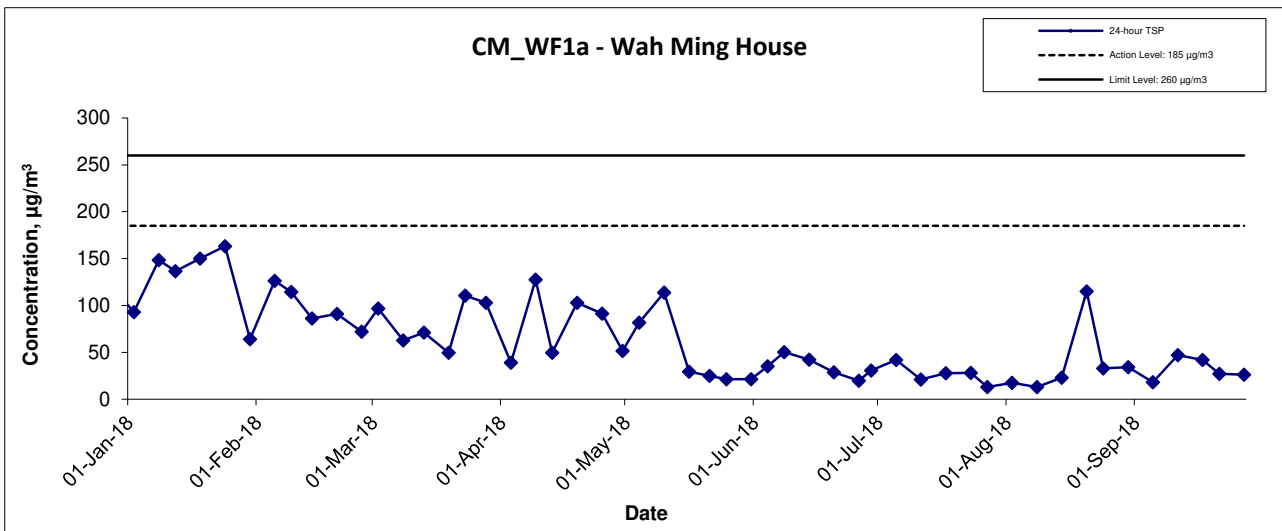
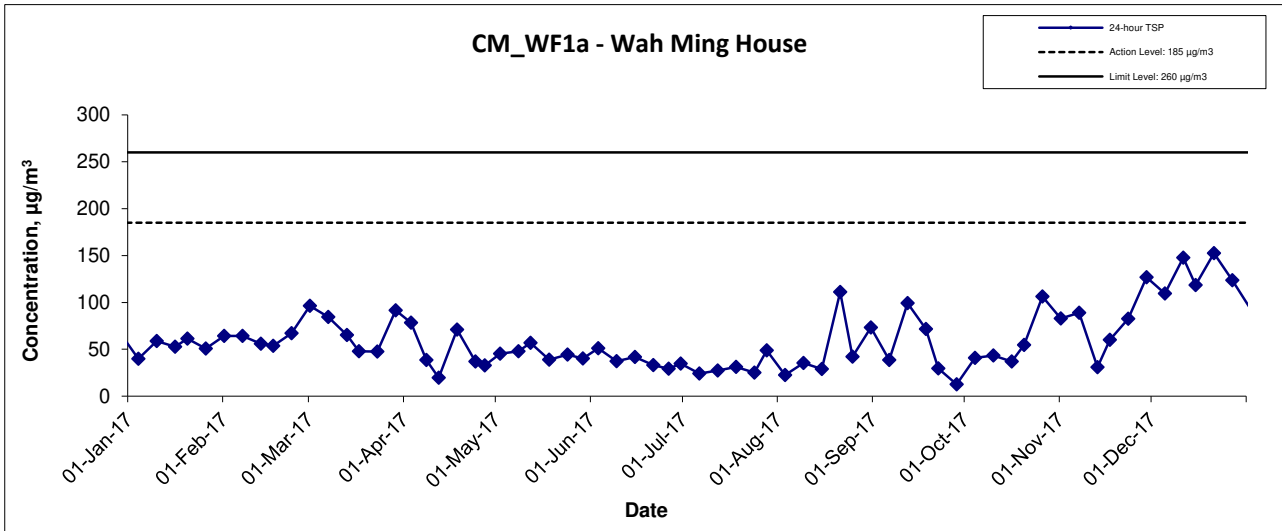
24-hr TSP Concentration Levels



Remark: The 24-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11060	
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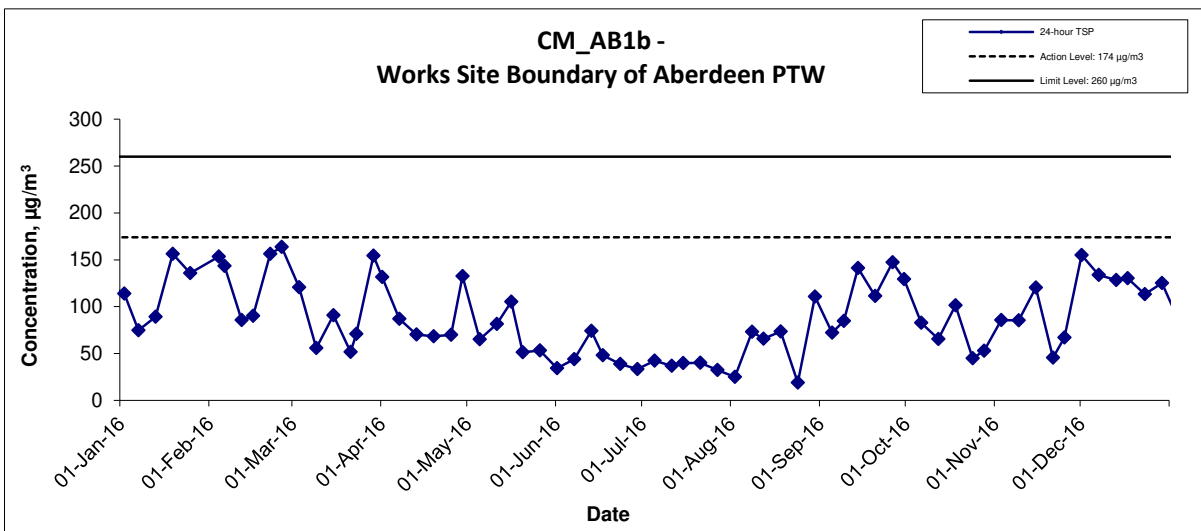
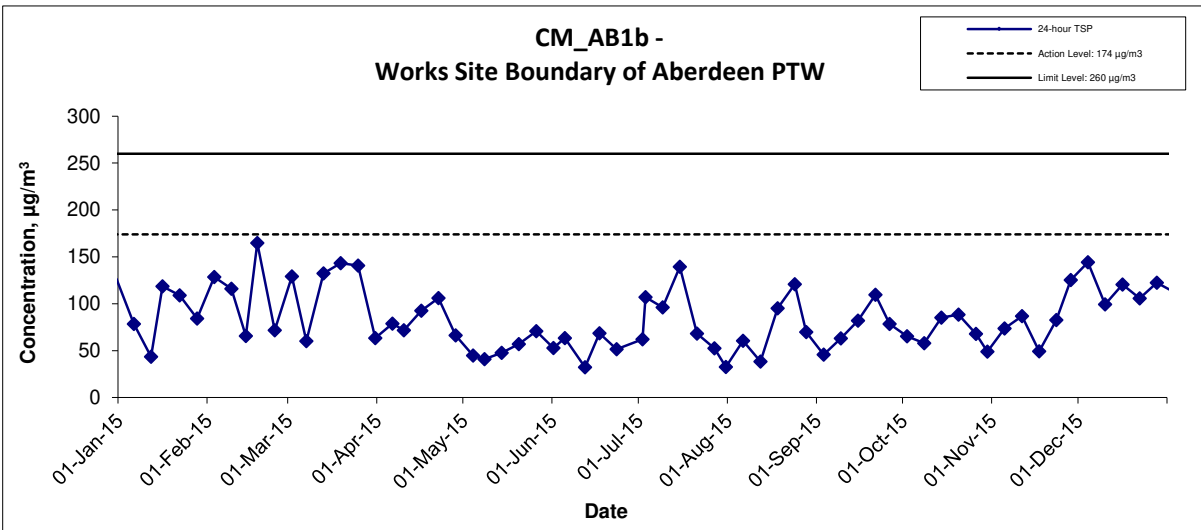
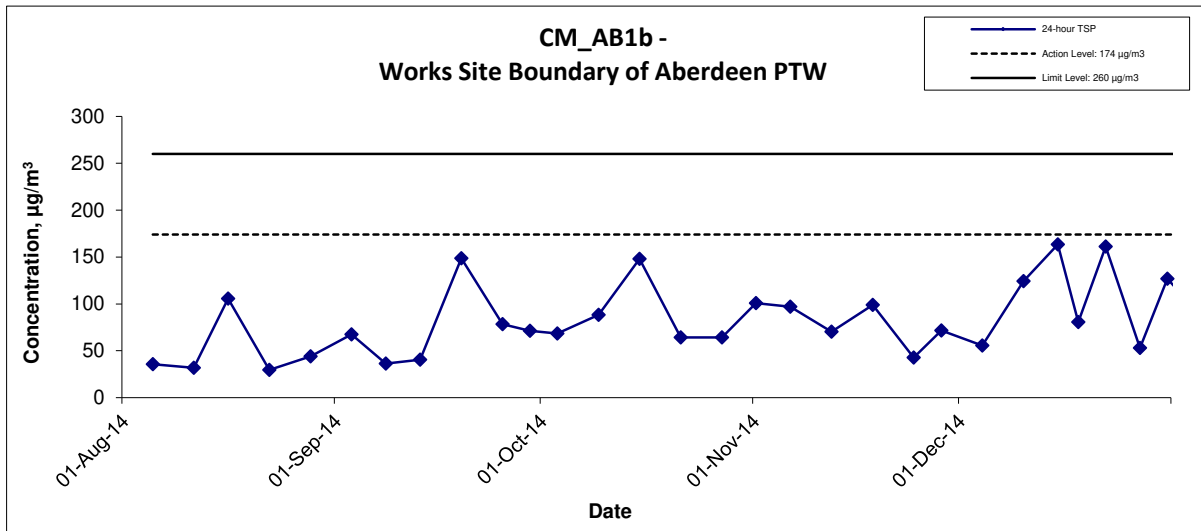
24-hr TSP Concentration Levels



Remark: The 24-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

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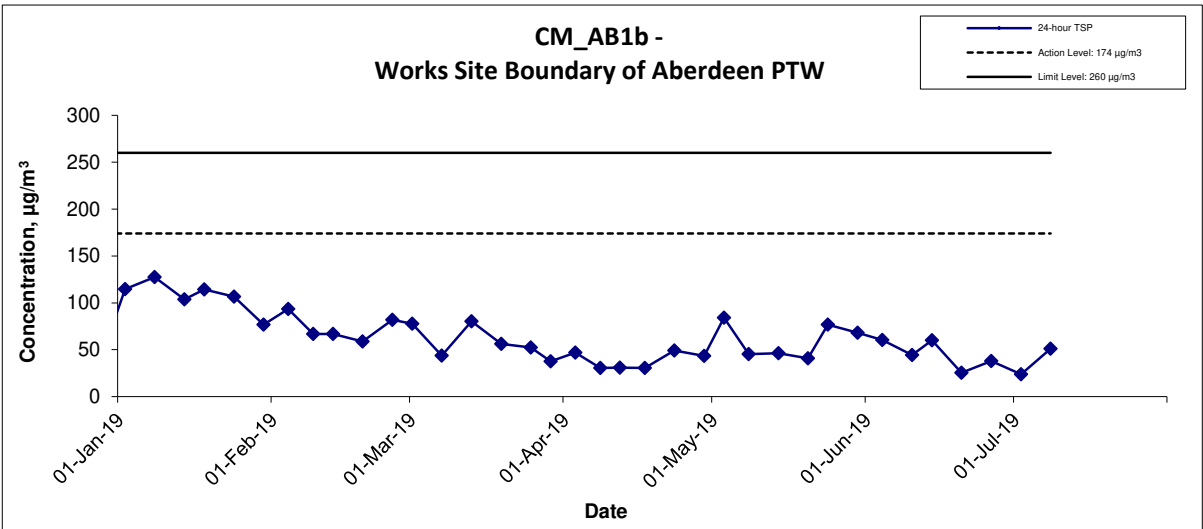
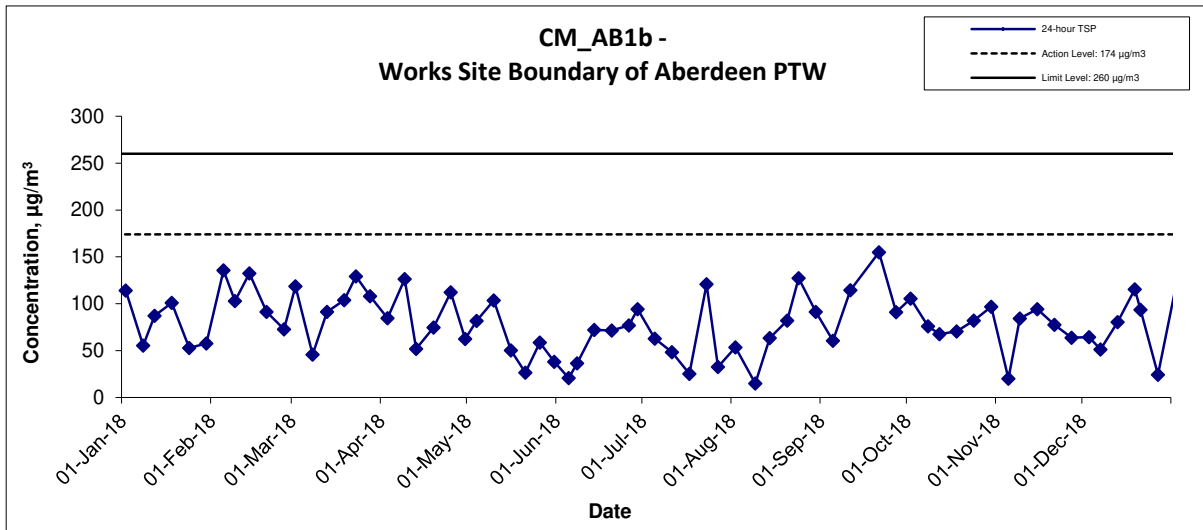
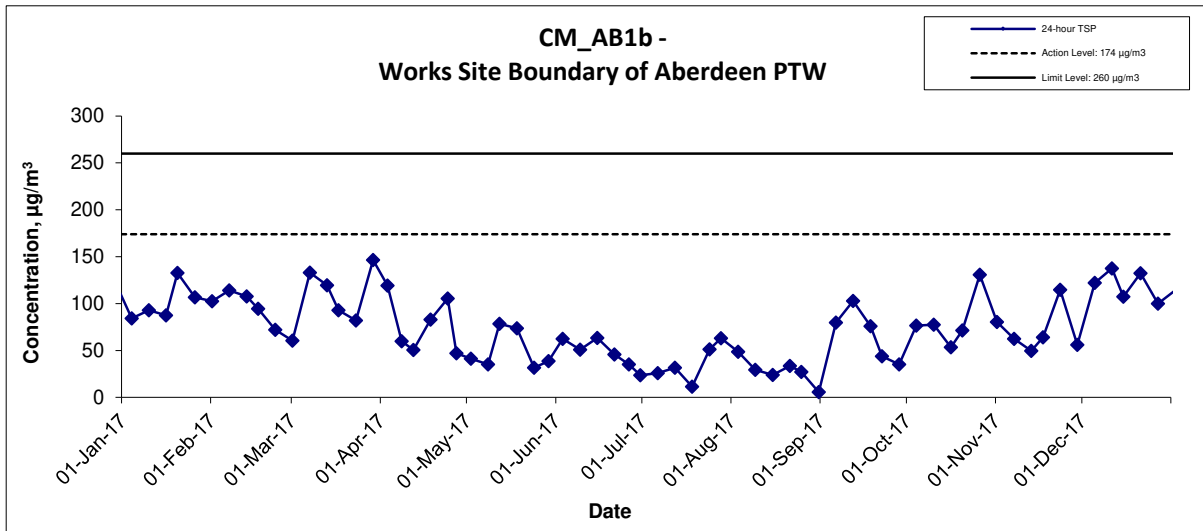
24-hr TSP Concentration Levels



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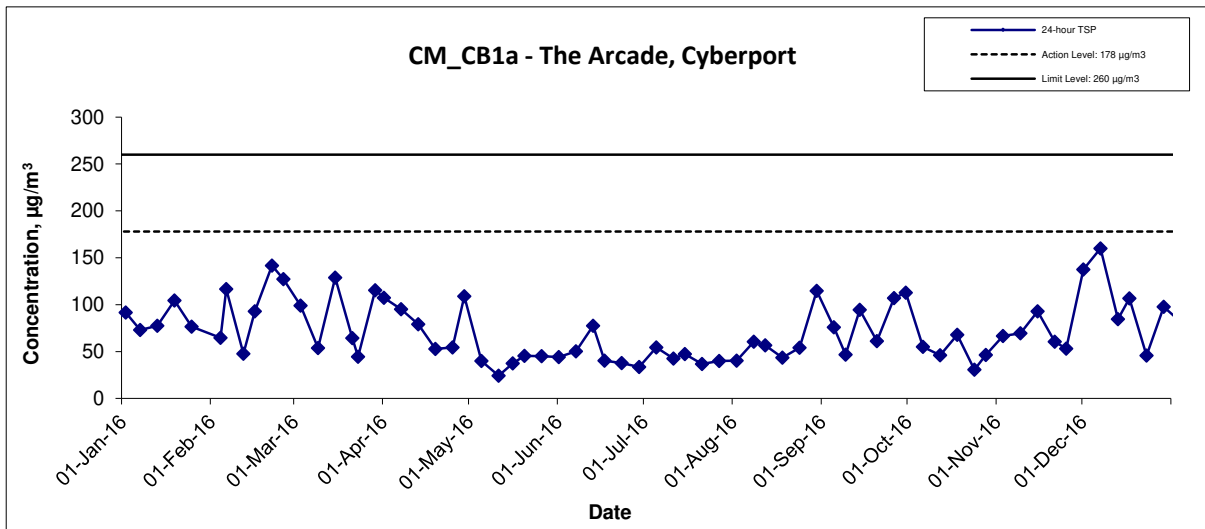
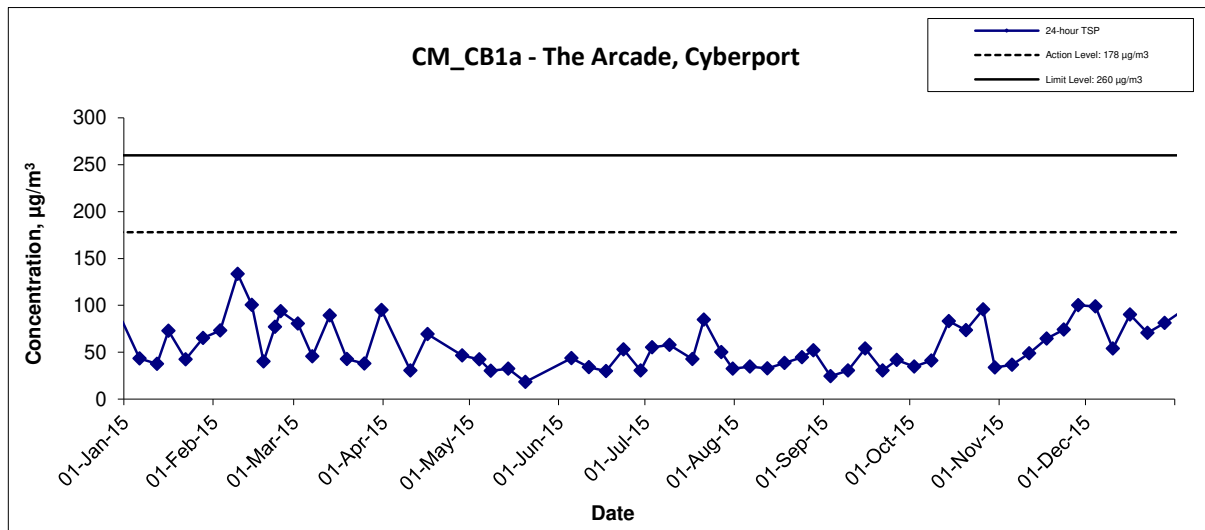
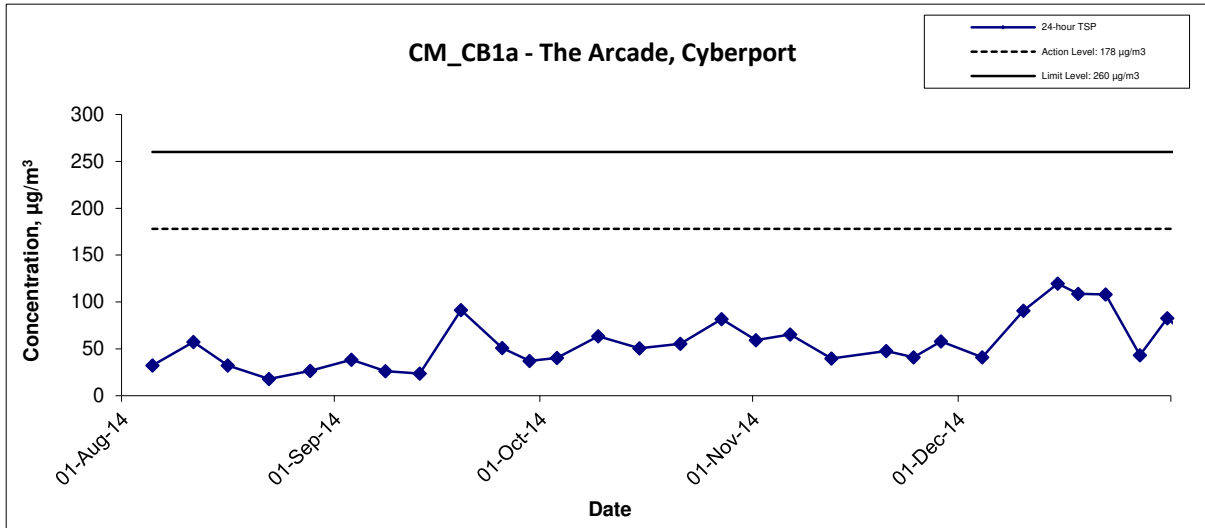
24-hr TSP Concentration Levels



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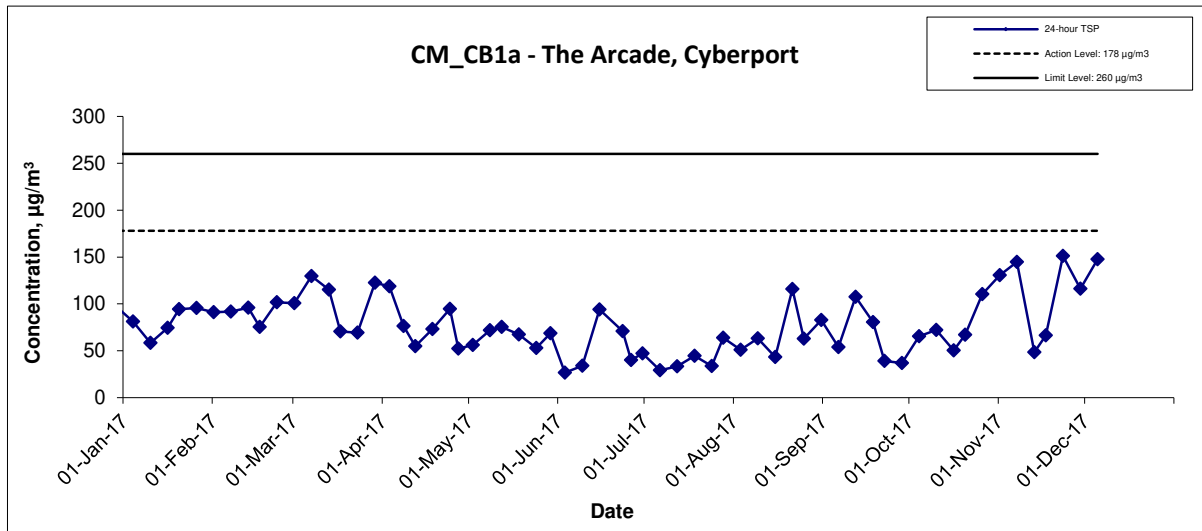
24-hr TSP Concentration Levels




Remark: The 24-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11060	
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24-hr TSP Concentration Levels



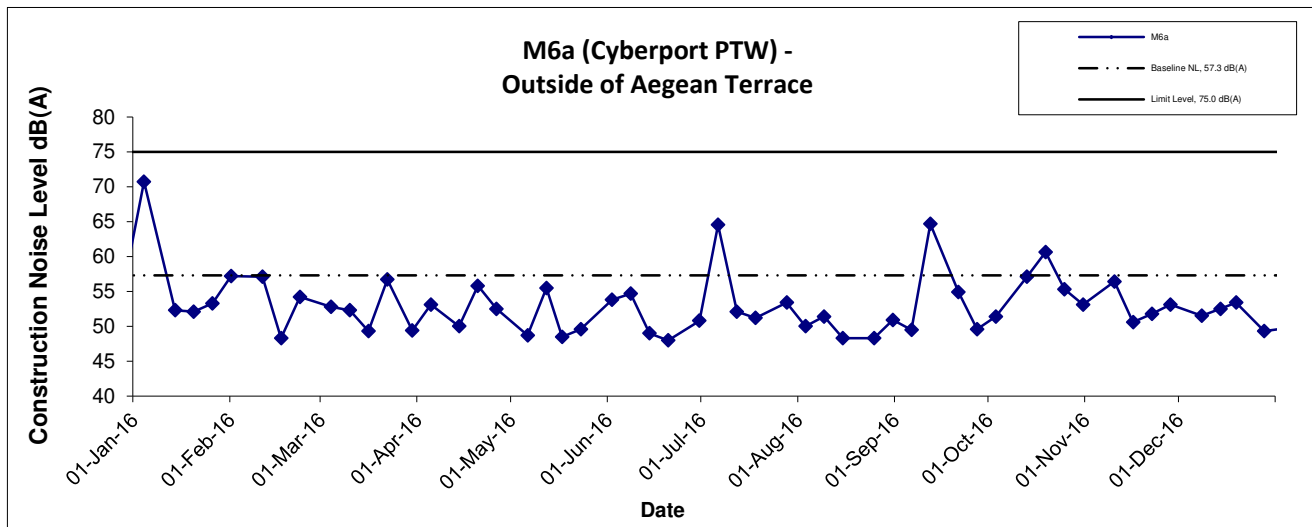
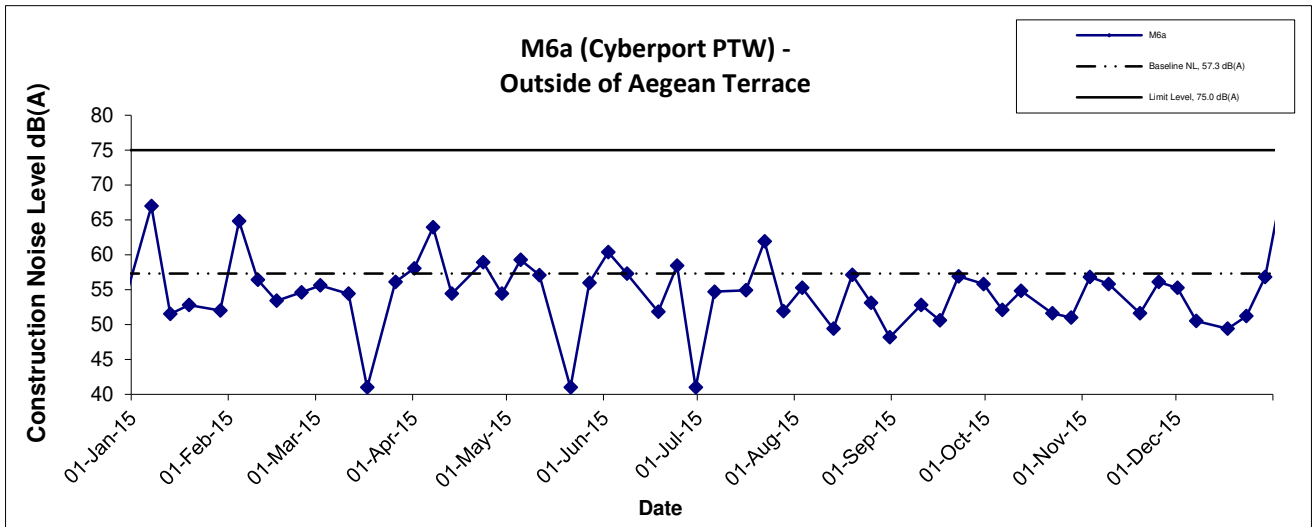
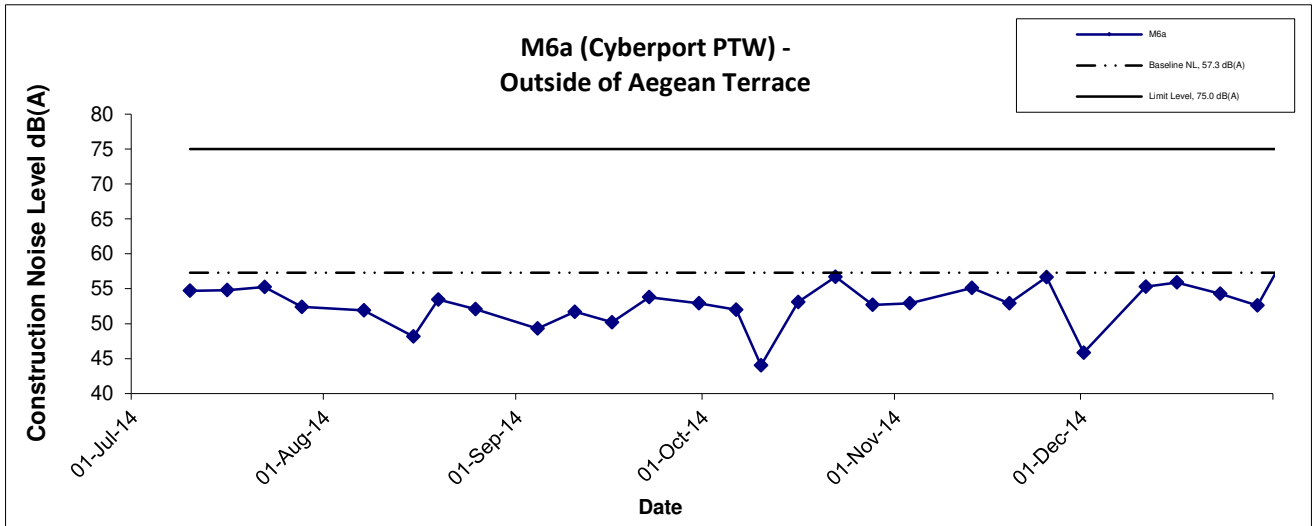
Remark: The 24-hr TSP monitoring results only include July 2014 to July 2019, which is after took over three monitoring stations from Contract No.: DC/2007/24 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Aberdeen and Ap Lei Chau Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA11060	
	Date Aug-20	Appendix B	

**APPENDIX C
NOISE MONITORING RESULTS AND
GRAPHICAL PRESENTATIONS**

Noise Levels

(0700-1900 hrs on Normal Weekdays)

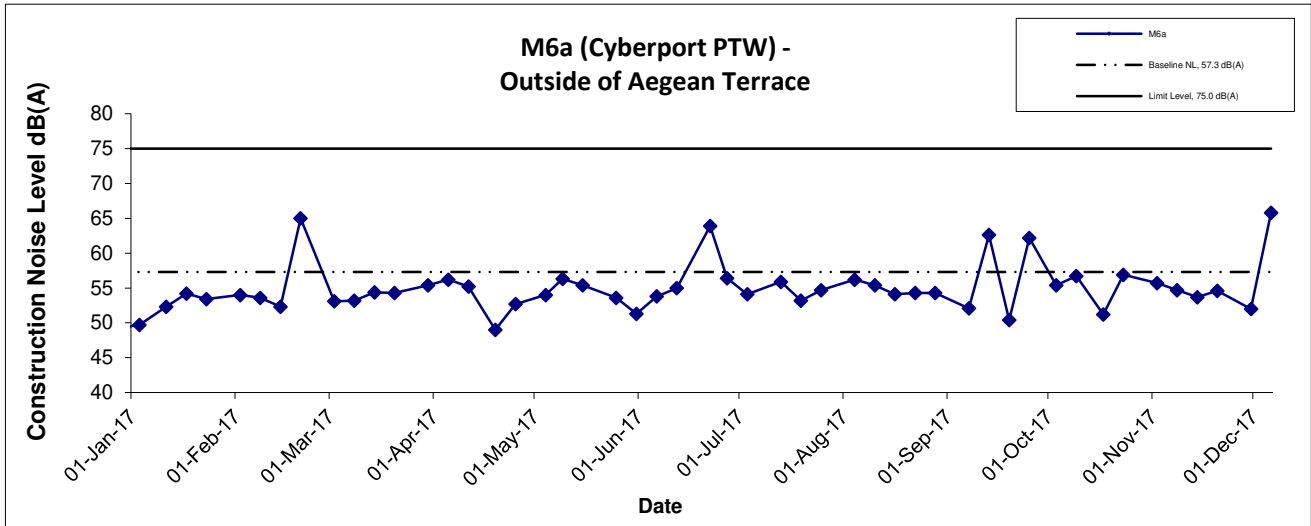


Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale	N.T.S	Project No.	MA11060	匯力 consulting . testing . research
	Date	Aug-20	Appendix	C	

Noise Levels

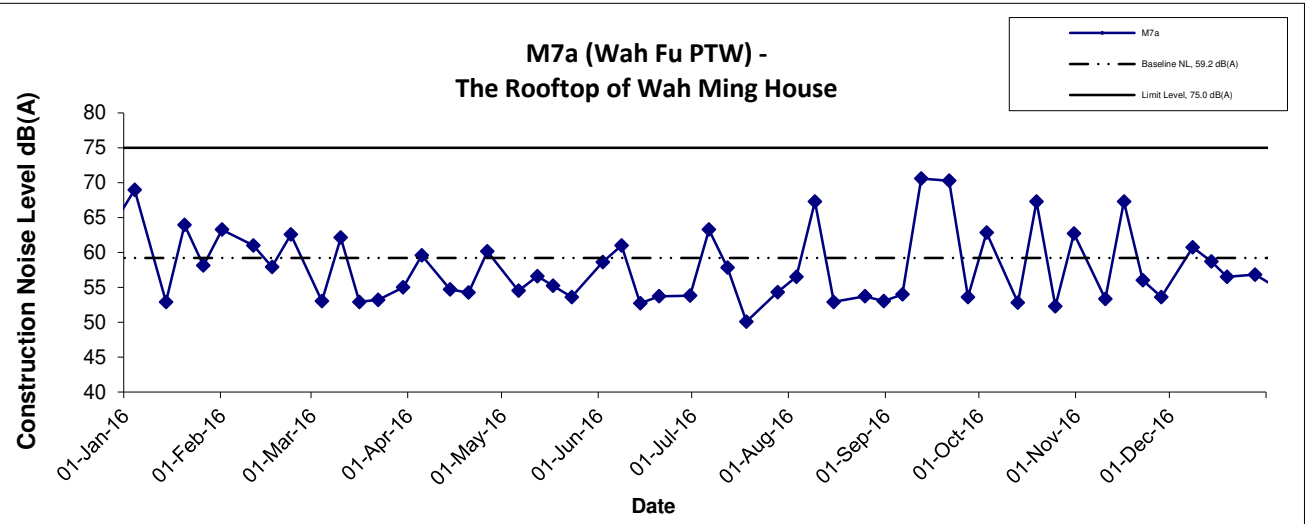
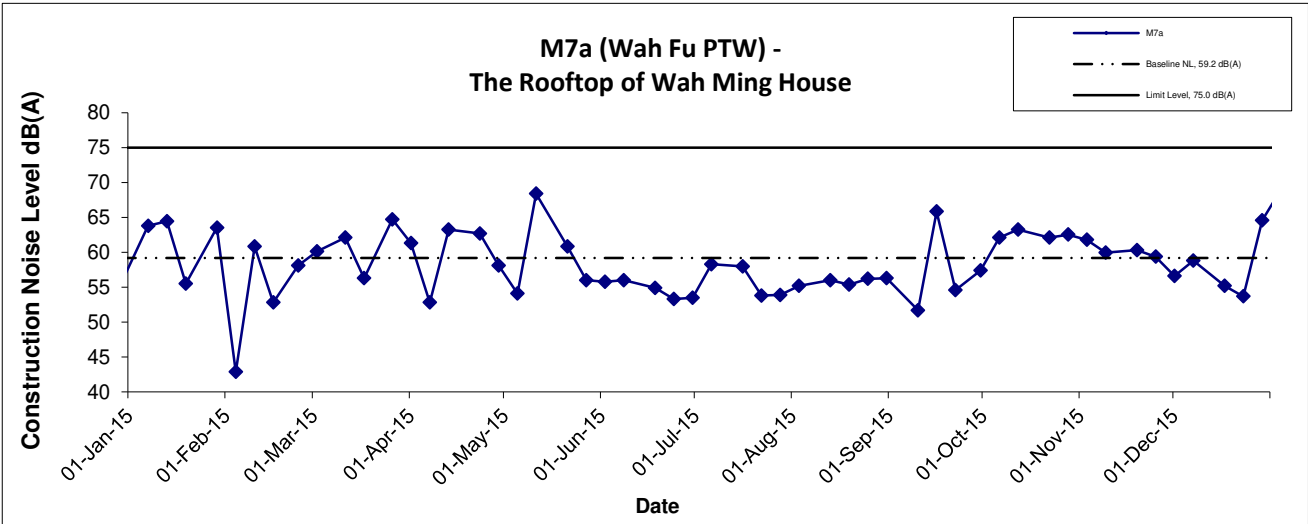
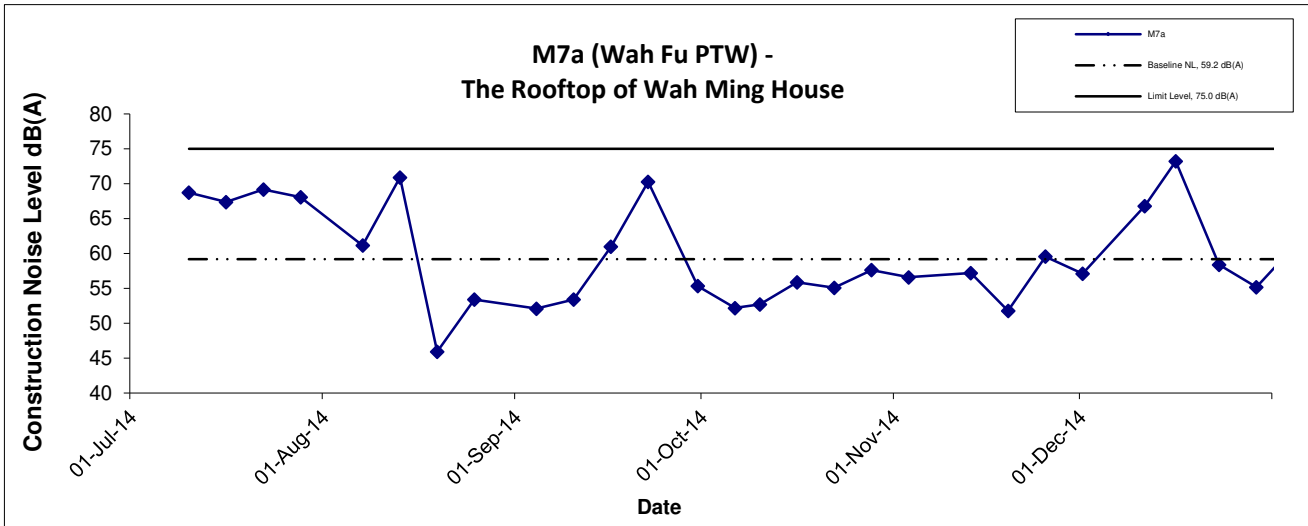
(0700-1900 hrs on Normal Weekdays)



Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeem and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S	Project No. MA11060	
	Date Aug-20	Appendix C	

Noise Levels (0700-1900 hrs on Normal Weekdays)

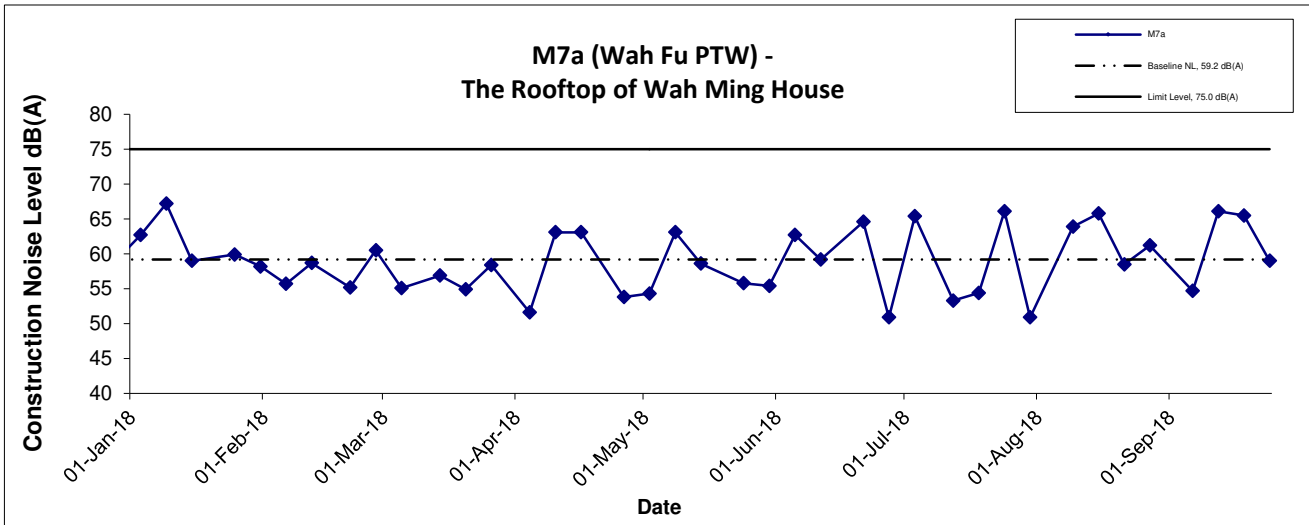
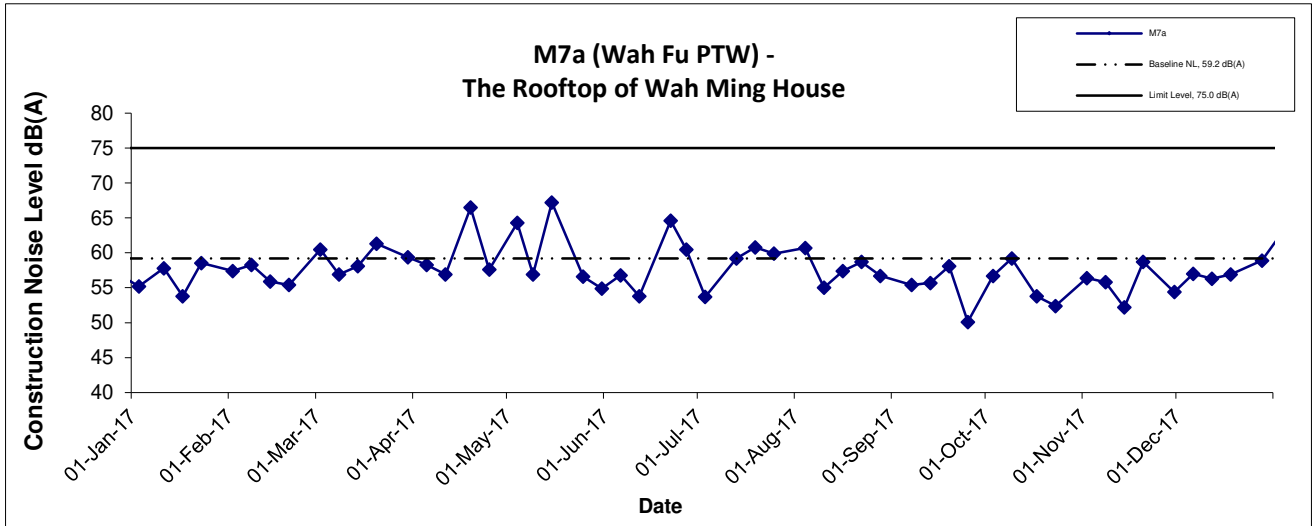


Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale	N.T.S	Project No.	MA11060	
	Date	Aug-20	Appendix	C	

Noise Levels

(0700-1900 hrs on Normal Weekdays)

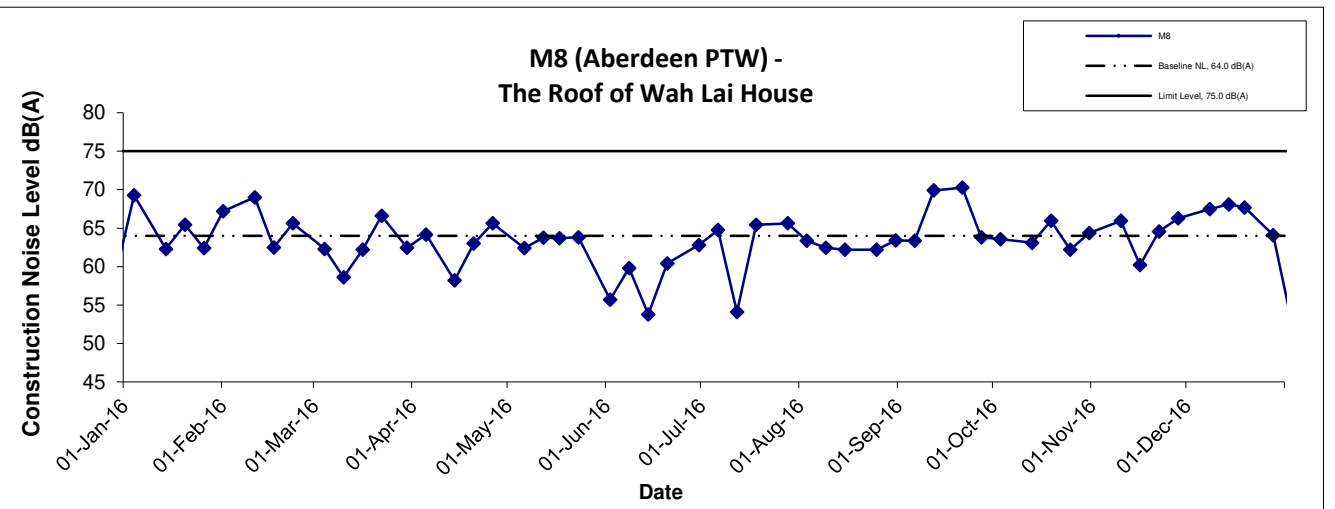
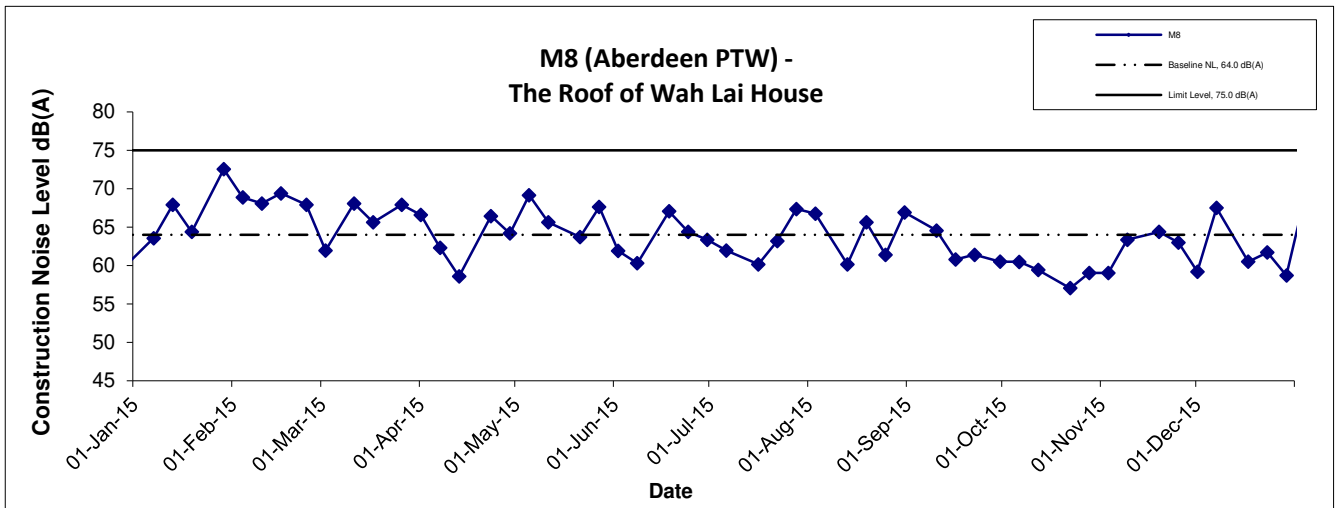
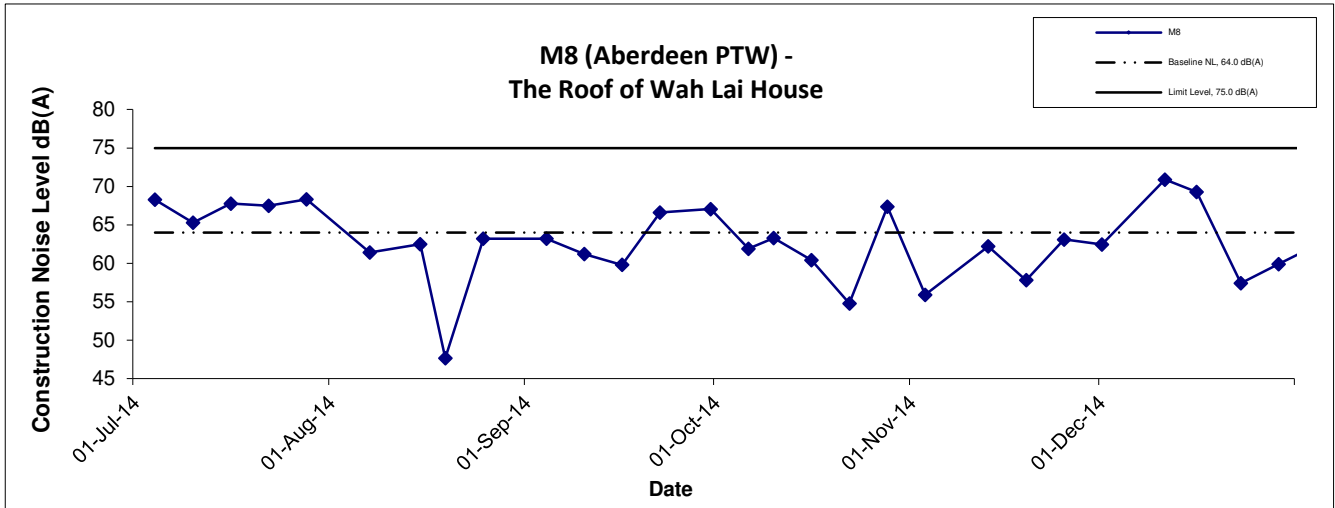


Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeem and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale	N.T.S	Project No.	MA11060	
	Date	Aug-20	Appendix	C	

Noise Levels

(0700-1900 hrs on Normal Weekdays)

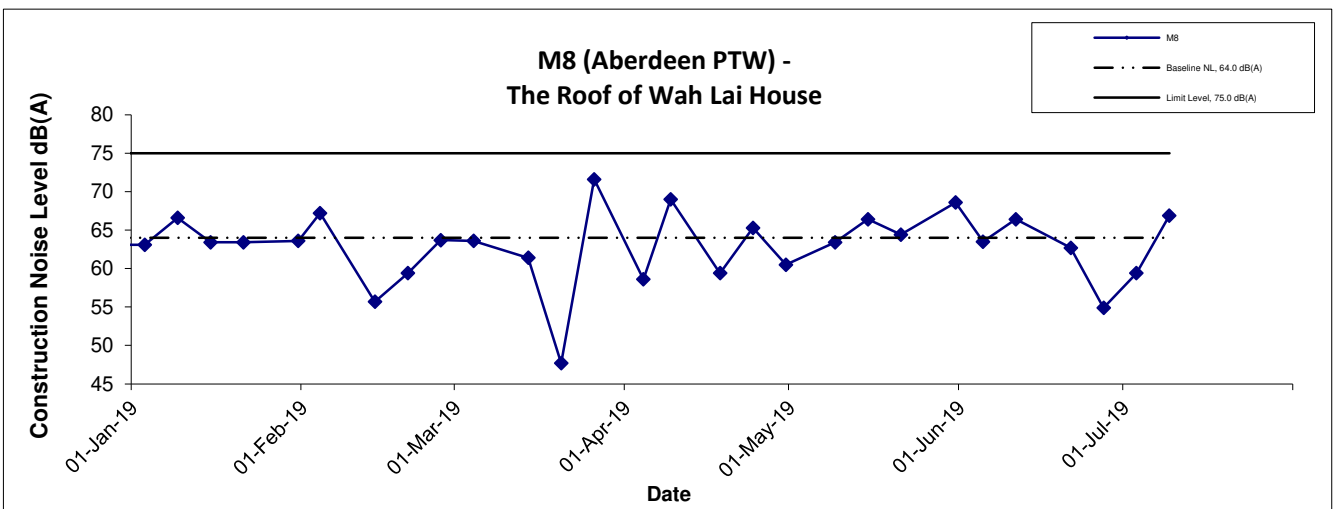
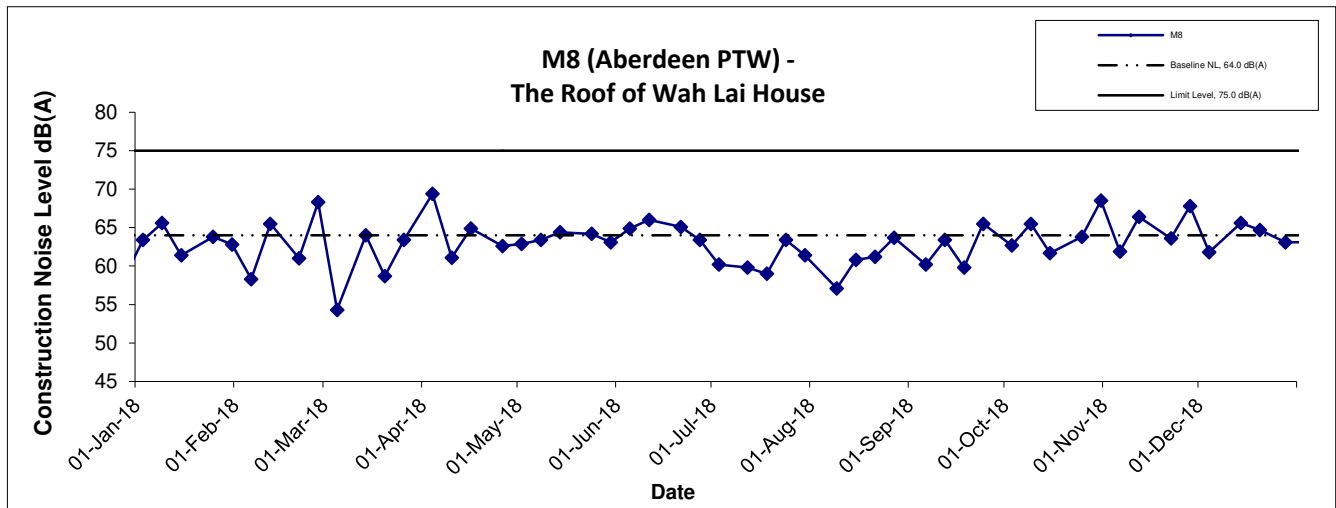
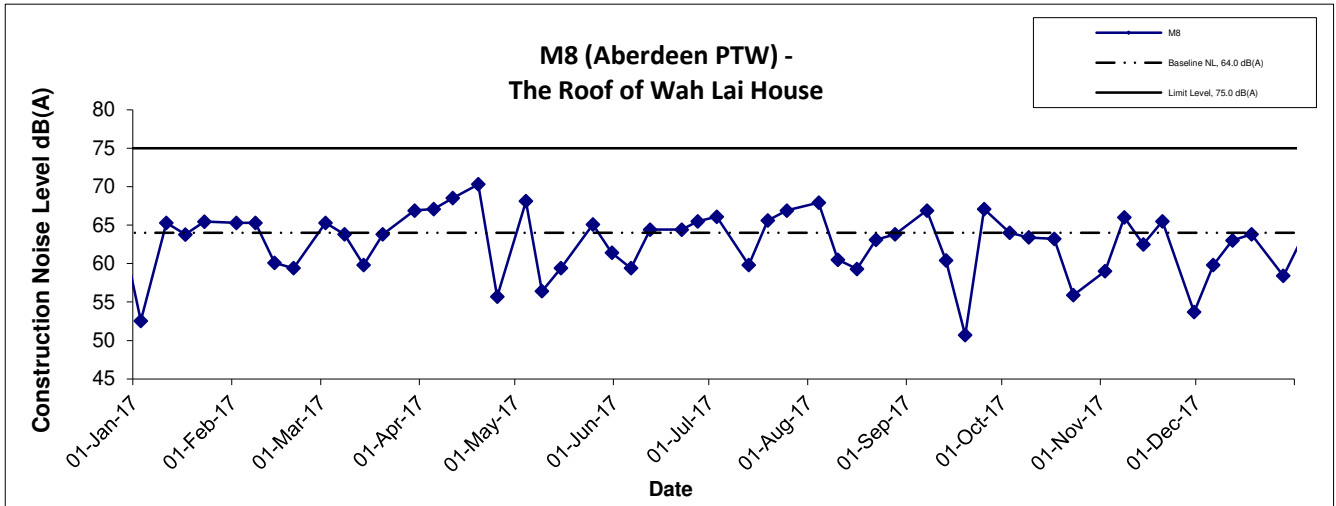


Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.


Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S	Project No. MA11060	
	Date Aug-20	Appendix C	

Noise Levels

(0700-1900 hrs on Normal Weekdays)

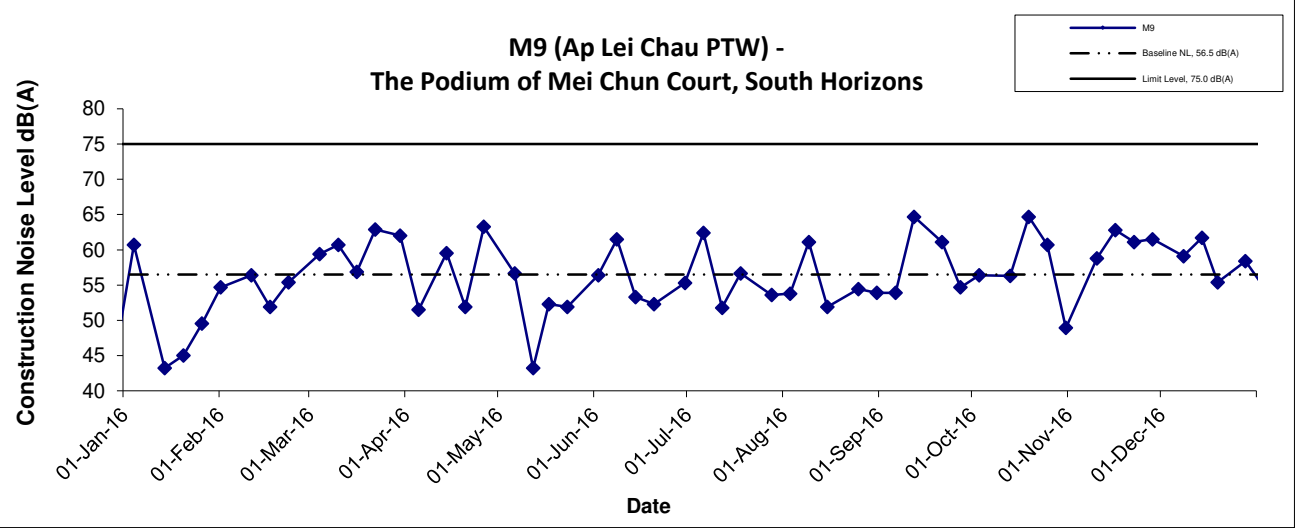
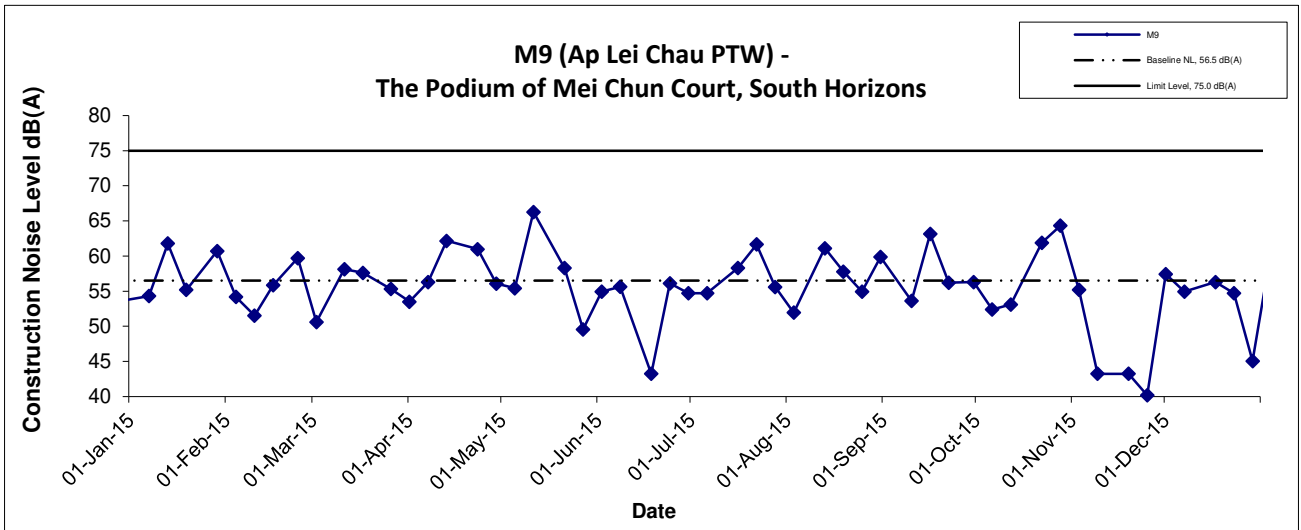
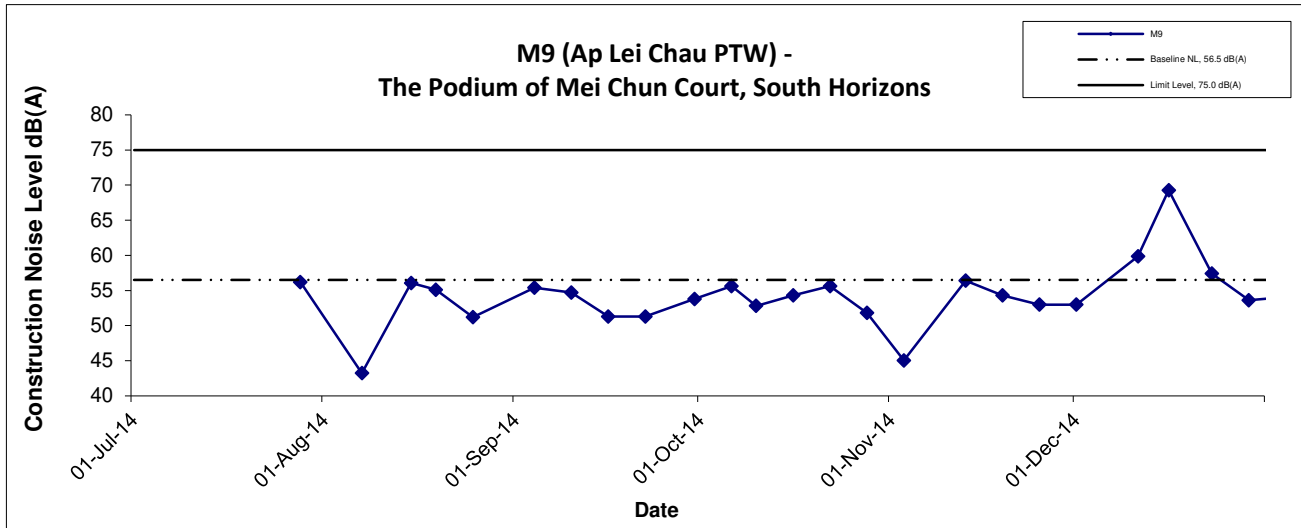


Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S Date Aug-20	Project No. MA11060 Appendix C	
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Noise Levels

(0700-1900 hrs on Normal Weekdays)

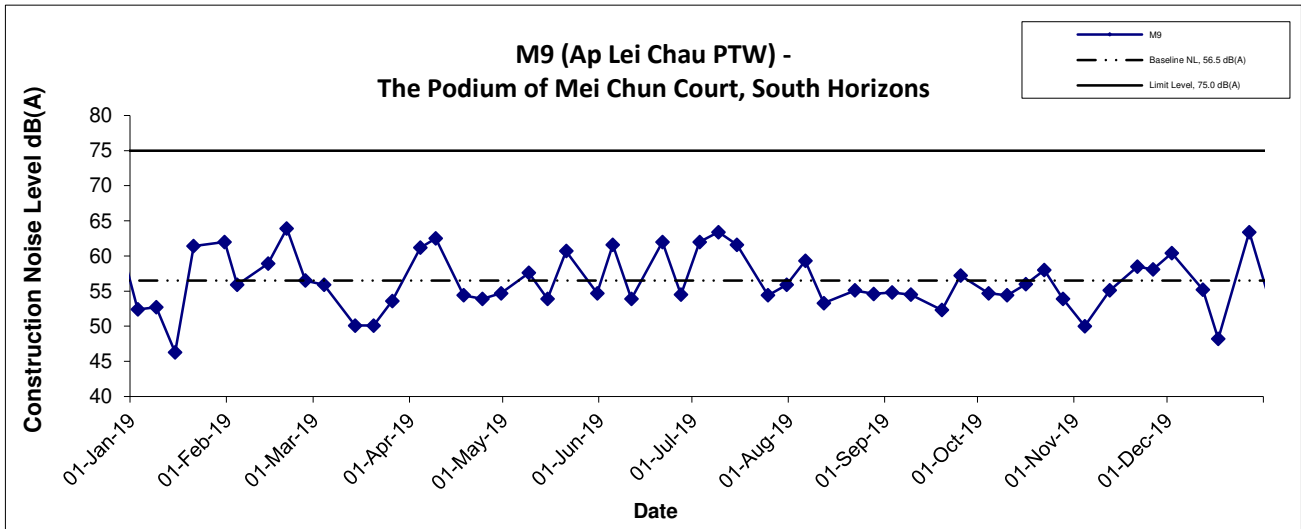
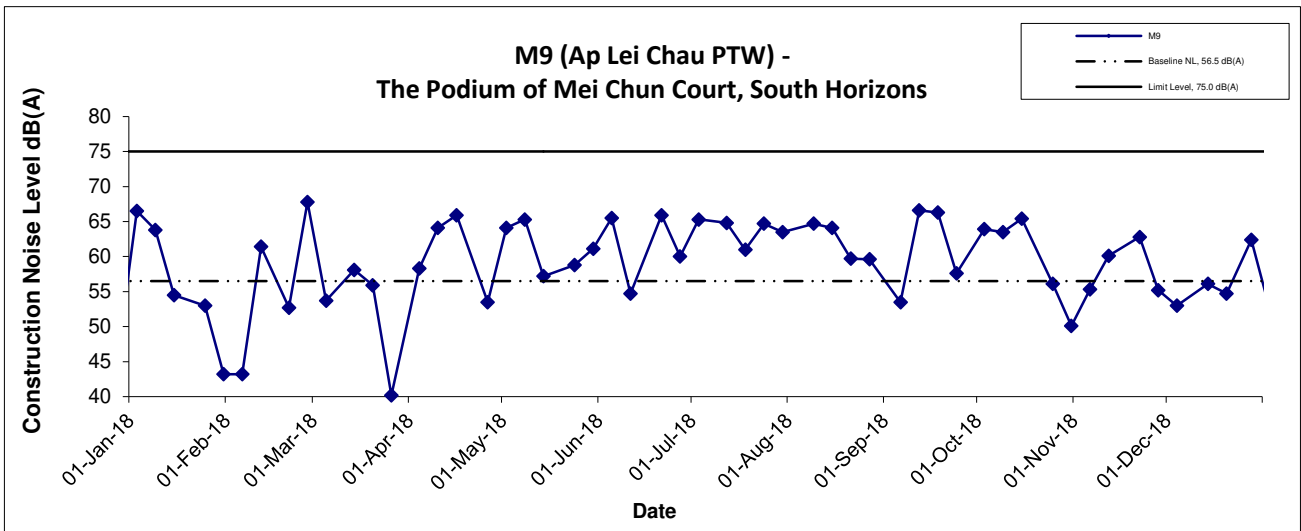
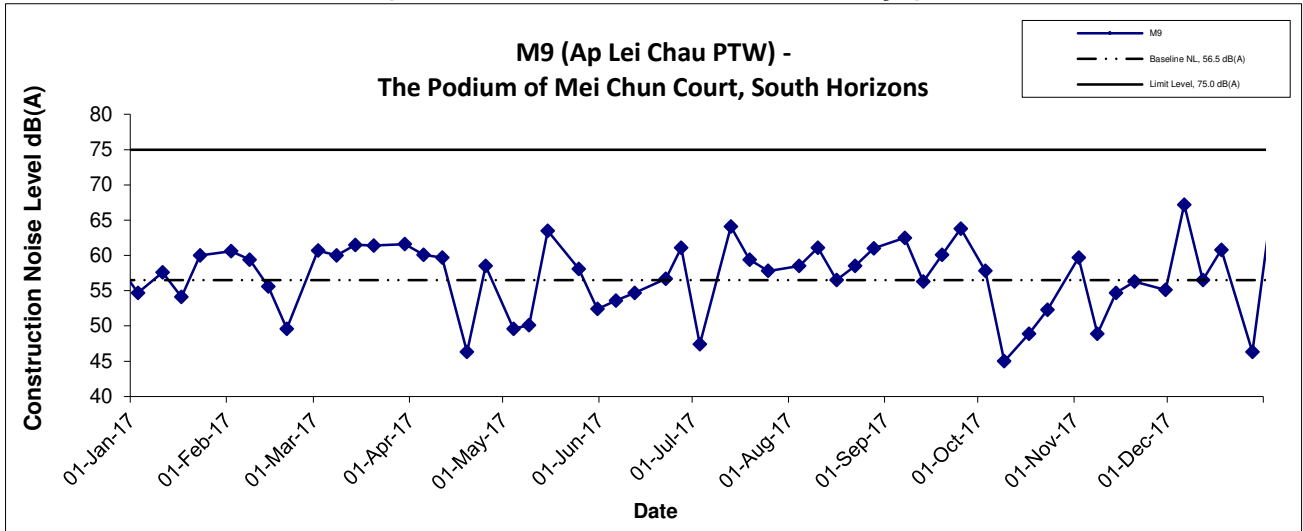


Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale	N.T.S	Project No.	MA11060	匯力 consulting . testing . research
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Noise Levels

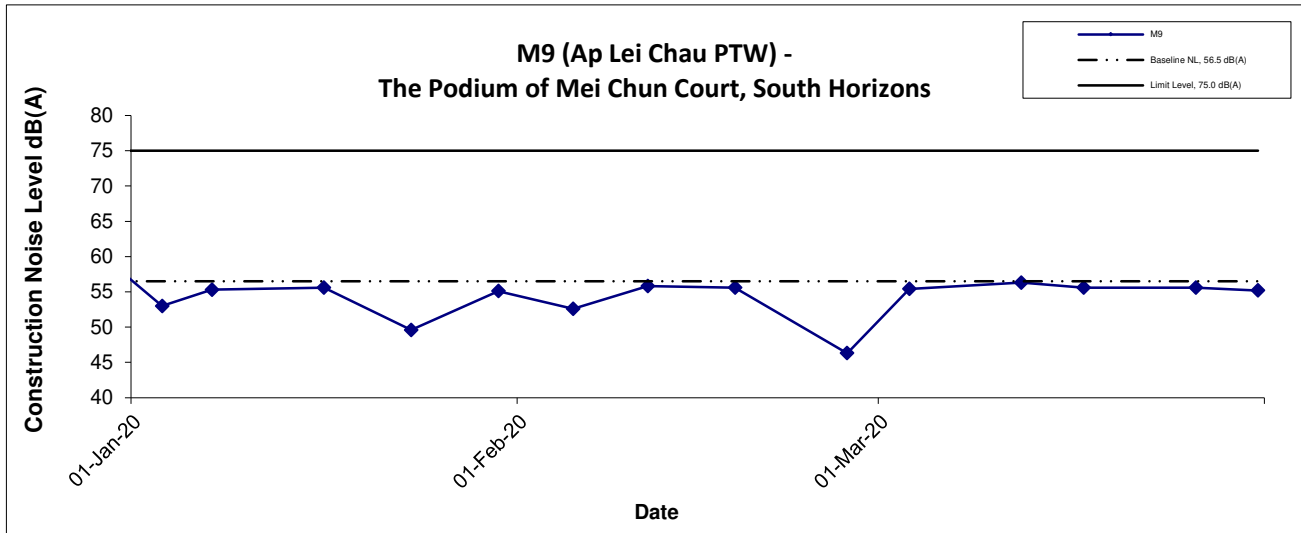
(0700-1900 hrs on Normal Weekdays)



Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S	Project No. MA11060	
	Date Aug-20	Appendix C	

Noise Levels (0700-1900 hrs on Normal Weekdays)



Remark: The noise monitoring results only include July 2014 to March 2020, which is after took over five monitoring stations from Contract No. DC/2007/24 and DC/2008/09 under the same EP.

Title Contract No. DC/2009/24 HATS 2A – Upgrading of Preliminary Treatment Works at Sandy Bay, Cyberport, Wah Fu, Abredeen and Ap Lei Chau Graphical Presentation of Noise Monitoring Result	Scale N.T.S	Project No. MA11060	
	Date Aug-20	Appendix C	

**APPENDIX D
METEOROLOGICAL DATA ON
MONITORING DATES**

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
January 2012	15.1	82.0	42.1	50	16.2
February 2012	15.8	85.0	29.5	90	18.5
March 2012	19.0	83.0	22.1	90	19.9
April 2012	22.0	78.0	77.8	100	20.0
May 2012	24.9	76.0	146.8	100	19.7
June 2012	28.1	83.0	261.5	100	19.3
July 2012	28.8	81.0	467.8	210	17.2
August 2012	29.5	77.0	149.8	210	14.2
September 2012	28.0	75.0	213.0	110	15.4
October 2012	25.6	74.0	46.4	110	16.8
November 2012	22.2	81.0	63.9	100	18.3

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
December 2012	17.8	78.0	56.0	90	19.3
January 2013	16.7	71.0	3.4	90	15.7
February 2013	19.1	80.0	1.5	100	16.8
March 2013	20.5	79.0	130.5	100	17.5
April 2013	21.5	86.0	253.8	90	19.1
May 2013	25.7	86.0	509.3	90	17.1
June 2013	28.2	84.0	438.6	220	17.9
July 2013	28.0	85.0	436.3	110	17.1
August 2013	28.6	83.0	445.4	160	17.3
September 2013	27.5	82.0	454.2	110	18.2
October 2013	25.7	66	2.9	90	23.6

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
November 2013	21.7	72.0	83.1	80	30.5
December 2013	16.1	63.0	88.3	30	24.9
January 2014	16.3	67.0	Trace	40	22.9
February 2014	15.5	82.0	39.5	50	26.6
March 2014	18.7	83.0	207.6	60	24.1
April 2014	22.6	86.0	132.4	80	20.6
May 2014	26.4	86.0	687.3	240	23.7
June 2014	29.0	80.0	436.6	230	18.8
July 2014	29.8	80.0	260.5	220	18.2
August 2014	29.0	81.0	548.2	240	17.7
September 2014	29.0	77.0	140.6	80	17.4

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
October 2014	26.2	71.0	109.8	100	24.3
November 2014	22.6	78.0	31.1	90	25.0
December 2014	16.3	67.0	44.7	20	30.5
January 2015	16.4	72.0	41.7	50	24.3
February 2015	17.5	78.0	32.0	40	22.2
March 2015	19.9	85.0	28.4	50	22.6
April 2015	23.6	77.0	64.5	20	18.2
May 2015	27.5	85.0	513.0	10	20.1
June 2015	29.7	80.0	302.1	220	20.3
July 2015	29.1	79.0	406.2	210	20.4
August 2015	29.3	78.0	143.3	220	12.8

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
September 2015	28.4	78.0	87.9	60	20.0
October 2015	26.0	77.0	168.3	80	23.0
November 2015	24.0	79.0	22.8	80	27.7
December 2015	18.6	76.0	64.3	20	26.2
January 2016	16.0	83.0	266.9	60	29.4
February 2016	15.5	74.0	24.8	20	21.3
March 2016	17.5	84.0	148.7	50	22.8
April 2016	23.6	89.0	211.4	40	17.1
May 2016	26.7	83.0	233.6	70	20.2
June 2016	29.4	82.0	347.4	220	18.0
July 2016	29.8	79.0	175.9	230	19.2

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
August 2016	28.4	84.0	532.7	60	17.1
September 2016	27.9	79.0	323.1	80	18.9
October 2016	26.8	80.0	624.4	70	26.3
November 2016	22.3	79.0	131.3	70	27.0
December 2016	19.6	70.0	6.6	70	26.7
January 2017	18.5	66.0	7.8	70	26.4
February 2017	17.0	65.0	19.9	60	26.7
March 2017	19.3	80.0	48.0	60	26.5
April 2017	23.3	69.0	58.8	70	20.1
May 2017	26.0	77.0	399.3	80	18.6
June 2017	28.8	78.0	656.0	240	23.0

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
July 2017	28.7	79.0	570.7	90	22.1
August 2017	29.3	70.0	489.1	230	20.7
September 2017	29.0	65.0	192.4	80	17.5
October 2017	26.3	57.0	99.6	70	32.8
November 2017	22.2	74.0	31.2	60	28.8
December 2017	17.8	54.0	Trace	70	29.6
January 2018	16.1	77.0	62.2	60	29.6
February 2018	16.8	70.0	4.5	50	23.7
March 2018	19.1	82.0	22.7	60	23.0
April 2018	22.6	83.0	28.1	70	16.1
May 2018	25.9	77.0	57.5	220	19.7

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
June 2018	28.6	80.0	458.8	230	24.8
July 2018	28.8	81.0	341.1	90	24.2
August 2018	28.6	81.0	6151.0	230	20.0
September 2018	28.0	78.0	383.3	90	19.5
October 2018	25.3	69.0	104.3	80	15.5
November 2018	22.9	78.0	73.4	70	17.0
December 2018	19.2	76.0	11.9	360	16.4
January 2019	18.1	76.0	4.7	60	14.1
February 2019	20.1	85.0	68.7	60	19.5
March 2019	21.0	84.0	186.5	60	18.6
April 2019	24.7	84.0	185.8	70	21.6

**APPENDIX C –
WEATHER CONDITIONS DURING THE MONITORING PERIOD**

I. General Information

Month	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Total Precipitation (mm)	Prevailing Wind Direction (Degrees)	Mean Wind Speed (km/h)
May 2019	25.3	86.0	234.6	70	25.9
June 2019	29.0	83.0	429.1	220	21.0
July 2019	29.5	81.0	328.5	230	24.2
August 2019	29	82.0	59.64	240	23.1
September 2019	28.7	73.0	198.9	80	20.1
October 2019	26.6	73.0	149.5	80	24.6
November 2019	23.0	69.0	Trace	70	25.9
December 2019	19.1	69.0	13.5	70	26.1
January 2020	18.6	76.0	14.8	60	26.1
February 2020	18.5	78.0	79.8	60	25.5
March 2020	21.3	84.0	41.3	60	22.2

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

** Trace means rainfall less than 0.05mm

APPENDIX E
SUMMARY OF EXCEEDANCE

APPENDIX E – SUMMARY OF EXCEEDANCE

a) Exceedance Report for 1-hr TSP

- Two Non-Project related Action Level exceedances were record during monitoring in February 2012 and August 2012 by the ET of DC/2007/24 at CM_CB1a.
- Two Non-Project related Action Level exceedances were record during monitoring in February 2012 by the ET of DC/2007/24 at CM_AB1a.
- One Non-Project related Limit level exceedances was recorded at CM_WF1a in February 2012.
- One Non – Project related Action Level exceedances was record during monitoring on 8th August 2012 by the ET of DC/2007/24 at CM_WF1a.

b) Exceedance Report for 24-hr TSP

c) Exceedance Report for Construction Noise on normal week days

- One Project related Limit Level exceedance was recorded during the daytime monitoring on 19th December 2012 by the ET of DC/2007/24 at M7a. According to the site diary, the construction works conducted on 19th December 2012 at Wah Fu Preliminary Treatment Works under the Contract were general electric works, maintenance, handling of plants and demolition work for existing DSD's structure. Noise panels have been installed by the Contractor as a mitigation measure to screen noise away from Wah Ming House of Wah Fu Estate.
- One complaint (Action Level exceedance) was raised by the residents of South Horizons and Ap Lei Chau Estate on 28th December 2012. There was no exceedance report received from Contract DC/2008/09 at noise monitoring stations M9 for Ap Lei Chau PTW in December 2012. According to the information provided by the Contractor, major construction activities that contributed to the noise during the time of complaint include: general site works and safety works; maintenance and handling of plants; and drilling works for pipe pile wall. The Contractor has carried out noise mitigation measure to reduce noise nuisance, which includes:
 - Adopting a relatively low-noise construction method - small drilling rig to install the pipe piles;
 - Equipping noise reducing jacket on the small drilling rig; and
 - Adopting movable noise barrier.
- One Non-Project related Limit Level exceedance was record during day time monitoring on 27th June 2012 by the ET of DC/2007/24 at M5.

APPENDIX F
EVENT ACTION PLANS

APPENDIX F – Event / Action Plans

Table F-1 Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor’s working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial	1. Check monitoring data submitted by ET; 2. Check Contractor’s working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring			
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate

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

Table F-2 Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	<ol style="list-style-type: none"> 1. Notify ER, IEC and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER 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 ER accordingly; 3. Advise the ER 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 ER; 2. Implement noise mitigation proposals
Limit Level being exceeded	<ol style="list-style-type: none"> 1. Inform IEC, ER, 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 ER on remedial measures required; 7. Assess effectiveness of 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 	<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 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC and ER 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

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring		until the exceedance is abated	the ER until the exceedance is abated

**APPENDIX G
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)**

APPENDIX G IMPLEMENTATION SCHEDULE OF ENVIRONMENTAL MITIGATION MEASURES (EMIS)

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
A	Air Quality		
3.74	Skip hoist for material transport should be totally enclosed by impervious sheeting.	All construction sites	N/A
	Vehicle washing facilities should be provided at every vehicle exit point.		*
	The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore.		^
	Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit.		*
	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.		*
	Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines.		*
	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs.		*
	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.		*
	Imposition of speed controls for vehicles on unpaved site roads. Ten kilometers per hour is the recommended limit.		^
	Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in an area sheltered on the top and the 3 sides.		*
	Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.		*
3.74	Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.	All construction sites	*

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
B	Airborne Noise		
4.56– 4.61	Use of quiet PME, movable barriers and acoustic mats.	All construction sites	*
4.67	Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.		*
	Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.		^
	Mobile plant, if any, shall be sited as far away from NSRs as possible.		^
	Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.		^
4.67	Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.		^
	Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities.		^
C	Water Quality		
6.349 to 6.375	Construction Site Runoff and General Construction Activities The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	All construction sites	*
6.376	Effluent Discharge There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality must meet the requirements specified in the discharge licence. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing saltwater intakes.		*
6.377	Accidental Spillage of Chemicals: Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General)		*

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	Regulation should be observed and complied with for control of chemical wastes.		
6.378	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.		*
6.379	<p>Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:</p> <ul style="list-style-type: none"> • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. • Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area. 		*
6.380	<p>Construction Works in Close Proximity of Storm Drains or Seafront:</p> <p>To minimize the potential water quality impacts from the construction works located at or near any watercourse, the practices outlined below should be adopted where applicable.</p> <ul style="list-style-type: none"> • The use of less or smaller construction plants may be specified to reduce the disturbance to the storm water courses or marine environment. • Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. • Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. • Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers. • Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. • Proper shoring may need to be erected in order to prevent soil/mud from slipping into the storm culvert or sea. 	All construction sites	*

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
D	Waste Management		
9.107	Reusable steel or concrete panel shutters, fencing and hoarding and signboard should be used as a preferred alternative to items made of wood, to minimize wastage of wood. Attention should be paid to WBTC No. 19/2001 - Metallic Site Hoardings and Signboards to reduce the amount of timber used on construction sites. Metallic alternatives to timber are readily available and should be used rather than new timber. Precast concrete units should be adopted wherever feasible to minimize the use of timber formwork.	All construction sites	^
9.109	All waste materials should be segregated into categories covering: <ul style="list-style-type: none"> • excavated materials suitable for reuse on-site; • excavated materials suitable for public filling facilities; • remaining C&D waste for landfill; • chemical waste; and • general refuse for landfill. 	All construction sites	*
9.113	Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals. Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. Encourage collection of aluminum cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force. Any unused chemicals or those with remaining functional capacity shall be recycled. Proper storage and site practices to minimize the potential for damage or contamination of construction materials.		* * * * *
9.115	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 waste handling procedures.		* *
9.115	Develop and provide toolbox talk for on-site sorting of C&D materials to enhance worker's awareness in handling, sorting, reuse and recycling of C&D materials. Provision of sufficient waste disposal points and regular collection of waste.		* *

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
	Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.		*
9.125	Bentonite slurries used in diaphragm wall construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage".	All construction sites	N/A
9.131	Adequate number of portable toilets at temporary works areas or the PTWs to ensure that sewage from site staff would be properly collected.		^
9.133	General refuse should be stored in enclosed bins, skips or compaction units separating from C&D material and disposed of at designated landfill.		*
9.135	The recyclable component of the municipal waste generated by the workforce, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.		^
9.137	If chemical wastes are produced at the construction site, the Contractor would 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 shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.		*
9.142	Prior to excavation of the marine deposit layer, the deposit should be tested in accordance with the ETWB TC(W) No. 34/2002 and the results should be presented in a Preliminary Sediment Quality Report. The marine deposit should be disposed of at the disposal site designated by the Marine Fill Committee (MFC) or Director of Environmental Protection (DEP) depending on the test results.		N/A

EIA Ref.	Recommended Mitigation Measures	Location of the measure	Implementation Status
E	Terrestrial Ecology		
10.94	To implement effective noise mitigation measures as recommended in Section 4 of EIA.	All construction sites	N/A
10.95	Dust control practices such as regular watering, complete coverage of any aggregate or dusty material storage piles, and re-schedule of dusty activities during high-wind conditions as well as other measures recommended in Section 3 of EIA, should be implemented.		*
10.96	Fences/hoardings should be erected and installed along the boundary of the works areas.		^
10.97	Standard good site practices as suggested in Section 10 of EIA should be implemented.		N/A
10.98	Provision of proper drainage system and runoff control measures such as use of sand/silt traps, oil/grease separators, sedimentation tanks, etc.		*
F	Landscape and Visual		
Table 13.7	Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.	All construction sites	*
	Existing trees to be retained on site should be carefully protected during construction.		*
	Trees unavoidably affected by the works should be transplanted where practical.		^
	Compensatory tree planting should be provided to compensate for felled trees.		^
	Control of night-time lighting.		^
Table 13.7	Erection of decorative screen hoarding compatible with the surrounding setting.	All construction sites	N/A
G	Marine Ecology		
11.137	To minimize the potential indirect impacts on water quality from construction site runoff and various construction activities, the practices outlined in ProPECC PN 1/94 Construction Site Drainage should be adopted.	All construction sites	*
H	Hazard to Life		
14A.201	Limiting use of cranes in terms of locations, lifting height, swing angle and setting up safety zone.	Exact location will be determined on construction site by the engineer	^

Remarks:	^ Compliance of mitigation measure;
	N/A Not Applicable;
	* Recommendation was made during site audit but improved/rectified by the contractor.
	# Recommendation was made during site audit and to be improved / rectified by the contractor.
	X Non-compliance of mitigation measure;
	• Non-compliance but rectified by the contractor;

**APPENDIX H
COMPLAINT LOG**

APPENDIX H – COMPLAINT LOG

Cumulative complaints received:

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
Wah Fu PTW					
CIR#7_180307	DSD’s Preliminary Treatment Work (PTW) at Wah Fu	7 th March 2018	<p>One anonymous complainant complained about the noise nuisance generated from Contract DC/2009/24 construction site at Wah Fu PTW during midnight. The ETL of the Contract was informed of the complaint through the e-mail on 7th March 2018 and initiated the complaint investigation procedures. According to the information provided by the Contractor, there was no construction activity was conducted and therefore no significant noise due to the construction works was generated at Wah Fu PTW during the time of complaint (during midnight). However, the high alarm from Hydrogen Sulfide Gas Detector was activated due to the fault found on the gas monitoring channels in the control room on 6th March 2018 around 01:30 a.m. and on 7th March 2018 around 05:30 a.m. respectively according to the operation and maintenance records of new Fine Screen and Grit Trap facilities at Wah Fu PTW.</p>	<p>There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in early March 2018. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced. <p>As reported by the Contractor of Contract DC/2009/24 during the site inspection on 9th March 2018, no abnormal alarm was noticed from the Hydrogen Sulfide Gas Detector after the Contractor reset the alarm system and the Contractor was reminded to check and test the alarm system on a regular basis to ensure they are working properly. The Contractor was reminded to regular check and test the alarm system to avoid the re-occurrence of the incident and closely monitor the existing noise mitigation measures are properly implemented at Wah Fu PTW under the Contract DC/2009/24.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#6_151209	DSD's Preliminary Treatment Work (PTW) at Wah Fu	9 th December 2015	<p>One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. According to the complainant, site works had commenced at about 8 am and was considered to be too early. The ETL of the Contract was informed of the complaint through the e-mail on 9th December 2015 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, major construction activity that contributed to the noise at Wah Fu PTW during the time of complaint were breaking and excavation works of flume channel on the pavement, and breaking and excavation works for construction of cable shaft which were conducted and started around 8:20 a.m. and around 1 p.m. respectively on 9th December 2015.</p>	<p>There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in December 2015. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • Operated the machines and plant in intermittent use and shut down between works periods. <p>As reported by the Contractor of Contract DC/2009/24 during the site inspection on 11th December 2015, the Contractor agreed to reschedule the site works and noisy activities would only be started from 9 a.m. at Wah Fu PTW in order to minimize the impact to the nearby noise sensitive receiver.</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#5_151026	DSD’s Preliminary Treatment Work (PTW) at Wah Fu	26 th October 2015	<p>One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 27th October 2015 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, major construction activity that contributed to the noise at Wah Fu PTW during the time of complaint was breaking works</p>	<p>There was no exceedance recorded at noise monitoring stations M7a for Wah Fu PTW in October 2015. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • To install the erected noise absorption screen on top of the FSGT building’s roof located close to the operating PME/noisy works (noise sources). <p>According to the site diary, the Contractor had provided the sound insulating materials to enclose and wrap the breaking tip which could further reduce the noise generated from construction works in Wah Fu PTW.</p>	Closed
CIR#4_150330	DSD’s Preliminary Treatment Work (PTW) at Wah Fu	30 th March 2015	<p>One anonymous complainant complained about the dark smoke emission generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 30th March 2015 and initiated the complaint investigation procedures.</p> <p>According to the information provided by the Contractor, the sheet pile machine was deployed at Wah Fu PTW for sheet piling installation on the day of complaint. However, no dark smoke emission was observed at Wah Fu PTW during the routine</p>	<p>After complaint received, the Contractor has taken initiative to prevent dark smoke emission to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> • Remove the sheet pile machine after finishing the works on 31st March 2015; • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced). <p>The Contractor was reminded to consider to increase the frequency of checking the darkness of smoke generated from mechanical equipment. With comparison to the shade of smoke to the shades on a Ringelmann Chart or other approved devices to ensure the emitting smoke is lighter than shade 1 on the Ringelmann Chart. The Contractor was also reminded to avoid any dark smoke emission generated from mechanical equipment for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			inspection by the Contractor such as the Environmental Officer on the day of complaint. The machine was removed off site after finishing the works.	any one time; and remove the carbon deposits from the muffler and keep the mesh at the inlet of the air blower clear frequently which could further prevent the dark smoke emission generated from construction machines of construction works in Wah Fu PTW.	
CIR#3_131119	DSD's Preliminary Treatment Work (PTW) at Wah Fu	19 th November 2013	One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 29 th November 2013 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activities that contributed to the noise at Wah Fu during the time of complaint include: pipe pile wall construction, grout curtain construction and ELS in progress.	There was no exceedance report received from Contract DC/2007/24 at noise monitoring stations M7a for Wah Fu PTW in November 2013. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: <ul style="list-style-type: none"> • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • To install the erected noise absorption screen located close to the operating PME/noisy works (noise sources). According to the site diary, the Contractor had provided the sound insulating materials to enclose and wrap the breaking tip which could further reduce the noise generated from construction works in Wah Fu PTW.	Closed
CIR#2_130809	DSD's Preliminary Treatment Work (PTW) at Wah Fu	9 th August 2013	One anonymous complainant complained about the noise generated from Contract DC/2009/24 construction site at Wah Fu PTW. The ETL of the Contract was informed of the complaint through the e-mail on 12 th August 2013 and initiated the complaint investigation procedures. According to the information	There was no exceedance report received from Contract DC/2007/24 at noise monitoring stations M7a for Wah Fu PTW in August 2013. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: <ul style="list-style-type: none"> • Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced); • To install movable noise absorption screen located close to the operating PME/noisy works (noise 	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
			provided by the Contractor, major construction activities that contributed to the noise at Wah Fu during the time of complaint include: pipe pile wall construction.	sources); <ul style="list-style-type: none"> To enclose or wrap the breaking tip with sound insulating materials to reduce the noise. According to the complaint, the Contractor had enhanced the movable noise barrier by increasing the height of the noise barrier and adding the upper sloped section which could further reduce the noise generated from construction works in Wah Fu PTW.	
Ap Lei Chau PTW					
CIR#8_180309	DSD's Preliminary Treatment Work (PTW) at Ap Lei Chau	9 th March 2018	A district council member referred multiple complaints from residents concerning the noise in early mornings generated from construction activities at LEE NAM ROAD. The ETL of the Project was informed of the complaint through the e-mail on 9 th March 2018 and initiated the complaint investigation procedures. According to the information provided by the Contractor, there is no construction activity that contributed to the noise at Ap Lei Chau PTW before 8:00 a.m. In addition, only minor concrete breaking for road pavement works outside Ap Lei Chau PTW was carried out after 9:00 a.m. in the early March 2018 to minimize the noise nuisance in the early morning.	During the weekly site inspection on 2 nd , 9 th and 16 th March 2018, there is another construction site nearby at Lee Nam Road carrying out piling works and the significant noise were observed. There was no exceedance recorded at noise monitoring stations M9 for Ap Lei Chau PTW in early March 2018. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below: <ul style="list-style-type: none"> Properly maintained and operated the construction plant (well-greased, damage and worn parts promptly replaced). As reported by the Contractor of Contract DC/2009/24 during the site inspection on 9 th and 16 th March 2018, the Contractor agreed to reschedule the site works and noisy activities at Ap Lei Chau PTW would only be started from from 9:30 a.m. which could minimize the impact of noise nuisance to the nearby noise sensitive receiver in early morning. The Contractor also agreed to provide sound absorption materials to wrap the breaker to minimize the noise impact to the nearby noise sensitive receiver if the concrete breaking works are required to be carried out.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
CIR#1_121228	DSD's Preliminary Treatment Work (PTW) at Ap Lei Chau	28 th December 2012	<p>The residents of South Horizons and Ap Lei Chau Estate complained about the noise generated from our construction site at Ap Lei Chau PTW. The ETL of the Project was informed of the complaint through the e-mail on 31st December 2012 and initiated the complaint investigation procedures. According to the information provided by the Contractor, major construction activities that contributed to the noise at Ap Lei Chau during the time of complaint include: general site works and safety works; maintenance and handling of plants; and drilling works for pipe pile wall.</p>	<p>There was no exceedance report received from Contract DC/2008/09 at noise monitoring stations M9 for Ap Lei Chau PTW in December 2012. Resident site staff also revealed that rock excavation works and other construction activities were being carried out at nearby construction sites on 29 & 31 December 2012. After complaint received, the Contractor has taken initiative to minimize noise nuisance to the nearby residents by implementation of mitigation measures as below:</p> <ul style="list-style-type: none"> • Adopting a relatively low-noise construction method – small drilling rig to install the pipe piles; • Equipping noise reducing jacket on the small drilling rig. <p>The Contractor was recommended to continue the following mitigation measures in order to minimize the potential construction noise nuisance to the nearby community:</p> <ul style="list-style-type: none"> • To adopt movable noise barrier; • To use silenced equipment where practicable; • To avoid concurrent uses of noisy equipment near the sensitive area; • To ensure the equipment are maintaining in good operation condition; and • To turned off any idle equipment on site. 	Closed
Aberdeen PTW					
N/A	N/A	N/A	N/A	N/A	N/A
Sandy Bay PTW					
N/A	N/A	N/A	N/A	N/A	N/A

Log Ref.	Location	Received Date	Details of Complaint	Investigation/Mitigation Action	Status
Cyberport PTW					
N/A	N/A	N/A	N/A	N/A	N/A

**APPENDIX I
SUMMARY OF AMOUNT OF WASTE
GENERATED**

Name of Department: DSD

Name of Contract : Harbour Area Treatment Scheme Stage 2A – Upgrading of Preliminary Treatment Works
at Sandy Bay, Cyberport, Wah Fu, Ap Lei Chau and Aberdeen

Contract No. :DC/2009/24

APPENDIX D MONTHLY SUMMARY WASTE FLOW TABLE FOR 2020 (YEAR)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Hard Rock and Broken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m ³]	[in '000ton]
Year 2012	1.002910	0.000000	0.000000	0.000000	1.002910	0.000000	6.680000	0.070000	0.070000	0.100000	0.014000	2.406456
Year 2013	4.264035	0.000000	0.000000	0.000000	4.264035	0.000000	10.750000	0.000000	0.000000	0.350000	0.064890	2.232710
Year 2014	4.639730	0.000000	0.000000	0.000000	4.639730	0.000000	0.000000	0.000000	0.000000	0.450000	0.145370	1.832460
Year 2015	5.361825	0.000000	0.000000	0.000000	5.361825	0.000000	0.000000	0.000000	0.031000	0.050000	0.461870	1.082870
Year 2016	5.172790	0.000000	0.000000	0.060000	5.112790	0.000000	0.000000	0.000000	0.000000	0.000000	0.757580	0.980878
Year 2017	2.542090	0.000000	0.000000	0.000000	2.542090	0.000000	0.000000	0.000000	0.000000	0.000000	0.383761	1.471460
Year 2018	22.983380	0.000000	0.000000	0.060000	22.923380	0.000000	17.430000	0.070000	0.101000	0.950000	1.827471	10.006834
Year 2019	37.611229	0.000000	0.000000	0.120000	45.846760	0.000000	34.860000	0.140000	0.202000	1.900000	3.654941	20.013668
JAN	8.0538426	0	0	0	8.0538426	0	0	0	0	0	0.005263	0.0863
FEB	0.25349894	0	0	0	0.25349894	0	0	0	0	0	0.011357	0.08468
MAR	0.17667236	0	0	0	0.17667236	0	0	0	0	0	0.0234896	0.09098
APR		0	0	0		0	0	0	0	0		
MAY		0	0	0		0	0	0	0	0		
JUNE		0	0	0		0	0	0	0	0		
SUB-TOTAL	8.484014	0.000000	0.000000	0.000000	8.484014	0.000000	0.000000	0.000000	0.000000	0.000000	0.040110	0.261960
JULY		0	0	0		0	0	0	0	0		
AUG		0	0	0		0	0	0	0	0		
SEPT		0	0	0		0	0	0	0	0		
OCT		0	0	0		0	0	0	0	0		
NOV		0	0	0		0	0	0	0	0		
DEC		0	0	0		0	0	0	0	0		
TOTAL	8.484014	0.000000	0.000000	0.000000	8.484014	0.000000	0.000000	0.000000	0.000000	0.000000	0.040110	0.261960

Forecast of Total Quantities of C&D materials to be Generated from the Contracts *											
Total Quantity Generated	Hard Rock and Broken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse	Special Waste
[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000m ³]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m ³]	[in '000ton]
28.774	1.544	1.73	0.06	25.44	0	30	1	1	4	2.77	12.2

- Notes :
- The performance targets are given in PS Clause 6(14).
 - Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.
 - The contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where to total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000m³. (PS Clause 5(4)(b) refers).
[Delete Note (4) and the table above on the forecast, where inapplicable].

- * (4) The assumed density (kg/m³) for both C&D material and general refuse.
C&D material 2000kg/m³
General refuse 1.0 tonnes/m³
- (5) Conversion factors for reporting purpose:
in-situ: rock = 2.5 tonnes/m³ ; soil = 2.0 tonnes/m³
excavated: rock = 2.0 tonnes/m³ ; soil = 1.8 tonnes/m³
broken concrete and bitumen = 2.5 tonnes/m³
C&D Waste = 1.0 tonnes/m³
bentonite slurry = 2.8 tonnes/m³
Paper = 800kg/m³
Chemical = 800kg/m³
Special waste = 0.6m³ / container