China State Construction Engineering (Hong Kong) Ltd.

Contract No. CV/2007/03

Development at Anderson Road – Site Formation and Associated Infrastructure Works

Quarterly EM&A Summary Report for December 2016 to February 2017

March 2017

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Version: 0	Date: 13 March 2017

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RAMBOLL ENVIRON

Ref.: OAPANDSNEM00_0_1887L.17

13 March 2017

Engineer's Representative
Ove Arup & Partners
Level 5, Festival Walk
80 Tat Chee Avenue
Kowloon Tong, Kowloon
Hong Kong

By Post and Fax: 2407 8382

Attention: Mr. Dennis Leung

Dear Sir,

Re: Contract No. CV/2007/03 (Environmental Permit No. EP-140/2002)
Development at Anderson Road
Site Formation and Associated Infrastructure Works
Quarterly EM&A Report for December 2016 to February 2017

Reference is made to the Environmental Team's submission of the draft Quarterly EM&A Report for December 2016 to February 2017 received by e-mail on 13 March 2017.

Please be informed that we have no adverse comment on the captioned submission and thereby write to verify the captioned submission.

Thank you very much for your kind attention and please do not hesitate to contact the undersigned should you have any queries.

Yours faithfully,

David Yeung
Independent Environmental Checker

c.c.	AECOM	Attn.: Mr. Y.W. Fung	By Fax: 3922 9797
	CSCEC	Attn.: Mr. Holmes Wong	By Email

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EXECUTIVE SUMMARY

The Project "Development at Anderson Road – Site Formation and Associated Infrastructure Works" (hereafter called "the Project") is proposed to form platforms for housing development and associated uses in area of about 20 hectares, and to carry out necessary infrastructural upgrading or improvement works to cater for the proposed development.

China State Construction Engineering (Hong Kong) Limited (CSCE) was commissioned as the Contractor of the Project. AECOM Asia Co. Ltd. (AECOM) was employed by CSCE as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works for the Project.

The impact EM&A for the Project includes air quality and noise monitoring. The EM&A programme for Sau Ming Primary School (ID 4) and Sau Mau Ping Catholic Primary School (ID 5) commenced on 1 May 2008, while for Kwun Tong Government Secondary School (ID 1A), On Yat House (ID 2) and Sau Nga House (ID 3) commenced on 1 June 2008.

The monitoring stations ID 4 & ID 5 will serve both the entire Development of Anderson Road (Schedule 3 Designated Project (DP)) project as well as the Widening of Po Lam Road (Schedule 2 DP) project.

The construction for the Widening of Po Lam Road (Schedule 2 DP) project was commenced in this reporting period, i.e. on 21 September 2011.

This report documents the findings of EM&A works for ID 1A, ID 2, ID 3, ID 4 and ID 5 conducted in the period from 1 December 2016 to 28 February 2017. As informed by the Contractor, construction activities in the reporting quarter were:

- Cement decoration works at Footbridge A and subway
- Demolition of site hoarding
- E & M works at Footbridge A & Storm water tank
- Erection of PVC pipes at Footbridge and RE wall
- Granite stone works for retaining wall at R15b, R16b, R22 &R26
- Installation of drain downpipe on slope
- Installation of permanent railings at main site, slope berm and Footbridge A
- Installation of stainless steel ladder on slope
- Landscaping works at footpath, slope and public area
- Lift installation works at Footbridge A
- Public road drain at Sewer D
- Reinstatement works of brick laying at footpath of main site area
- Slope stabilization and upgrading works at Portion E and G
- Storm water tank and main site drainage clearing and remedial works
- T& C works for Lift services at Footbridge A
- Temporary traffic arrangement and road work at Po Lam Road, Sau Mau Ping Road and Lee On Road
- Toe / Berm planter and platform drainage construction on slope
- Trench excavation and drainage works at Branch M

Environmental Monitoring Works

EM&A Programme

A summary of monitoring and audit activities conducted in the reporting quarter is listed below:

24-hour TSP monitoring	16 sessions
1-hour TSP monitoring	48 sessions
Daytime Noise monitoring	12 sessions
Environmental Site Inspection	13 sessions

Breaches of Action and Limit Levels

All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting period.

According to the information provided by the Contractor, no Action Level exceedance was recorded since no noise related complaint was received in the reporting period.

No exceedance of Limit Level of noise was recorded in the reporting period.

Complaint, Notification of Summons and Successful Prosecution

No complaint, notification of summons or successful prosecution was received in the reporting quarter. The cumulative statistics on complaints has been updated in Appendix F.

1 INTRODUCTION

1.1 Scope of Report

1.1.1 This is the quarterly Environmental Monitoring and Audit (EM&A) Report for the reporting period from 1 December 2016 to 28 February 2017 under the Project "Contract CV/2007/03 - Development at Anderson Road – Site Formation and Associated Infrastructure Works" (hereafter called "the Project"), which serving for both the entire Development of Anderson Road (Schedule 3 Designated Project (DP)) project as well as the Widening of Po Lam Road (Schedule 2 DP) project (which was commenced on 21 September 2011).

1.1.2 This report presents a summary of the EM&A works, list of activities and mitigation measures proposed by the Environmental Team (ET) for the Project during the reporting period.

1.2 Project Organization

1.2.1 The project organization structure is shown in Appendix A. The key personnel contact names and numbers are summarized in Table 1.1.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone	Fax
ER (Ove Arup)	Chief Resident Engineer	Dennis Leung	2407 0300	2407 8382#
	Senior Resident Engineer	Cliff Ko	2407 0300	2407 8382#
	Assistant Resident Engineer (Civil)	Brian Wan*	2407 0300	2407 8382#
IEC (Ramboll Environ)	Independent Environmental Checker	David Yeung	3465 2888	3465 2899
Contractor (CSCE)	Site Agent	Holmes Wong	2704 2095	2702 6553
	Environmental Officer	Thomas Cheung	2704 2095	2702 6553
ET (AECOM)	ET Leader	Yiu Wah Fung	3922 9366	3922 9797

* Brian Wan became the Assistant Resident Engineer (Civil) of the Project from January 2017.
# Fax number of ER (Ove Arup) was changed from January 2017.

1.3 Summary of Construction Works

1.3.1 The Contactor has carried out major activities in the reporting quarter. Details of the works undertaken in this reporting period are listed below:

- Cement decoration works at Footbridge A and subway
- Demolition of site hoarding
- E & M works at Footbridge A & Storm water tank
- Erection of PVC pipes at Footbridge and RE wall
- Granite stone works for retaining wall at R15b, R16b, R22 &R26
- Installation of drain downpipe on slope
- Installation of permanent railings at main site, slope berm and Footbridge A
- Installation of stainless steel ladder on slope
- Landscaping works at footpath, slope and public area
- Lift installation works at Footbridge A
- Public road drain at Sewer D
- Reinstatement works of brick laying at footpath of main site area
- Slope stabilization and upgrading works at Portion E and G
- Storm water tank and main site drainage clearing and remedial works
- T& C works for Lift services at Footbridge A
- Temporary traffic arrangement and road work at Po Lam Road, Sau Mau Ping Road and Lee On Road
- Toe / Berm planter and platform drainage construction on slope
- Trench excavation and drainage works at Branch M

1.3.2 The general layout plan of the Project site showing the contract area is shown in Figure 1.1.

1.3.3 The environmental mitigation measures implementation schedule (EMIS) are presented in Appendix B.

2 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

2.1 Monitoring Parameters

2.1.1 The EM&A Manual designated five monitoring stations to monitor environmental impacts on air quality and noise due to the Project. The monitoring locations are depicted in Figure 2.1.

2.1.2 The monitoring stations ID 4 & ID 5 will serve both the entire Development of Anderson Road (Schedule 3 Designated Project (DP)) project as well as the Widening of Po Lam Road (Schedule 2 DP) project.

2.2 Environmental Quality Performance Limits (Action/Limit Levels)

2.2.1 The environmental quality performance limits (i.e. Action/Limit Levels) were derived from the baseline air quality and noise monitoring results of Kwun Tong Government Secondary School (ID 1A), On Yat House (ID 2), Sau Nga House (ID 3), Sau Ming Primary School (ID 4) and Sau Mau Ping Catholic Primary School (ID 5) and / or as defined in the EM&A Manual for air quality and noise impacts.

2.2.2 The baseline condition of air quality (for ID 1A, ID 2 & ID 3) in the Project site was reviewed in August 2008 upon agreed by ER and IEC. Reviewed Action Levels for air quality at ID 1A, ID 2 and ID 3 were established in September 2008. The latest Action and Limit Levels (established in September 2008) for all monitoring parameters are summarized in Appendix C.

2.3 Environmental Mitigation Measures

2.3.1 Relevant environmental mitigation measures were stipulated in the Particular Specification and EP (No.: EP-140/2002) for the Contractor to adopt. A list of environmental mitigation measures and their implementation statuses are given in Appendix B.

3 MONITORING RESULTS

3.1 Air Quality

3.1.1 Air quality monitoring, including 1-hr and 24-hr TSP, was conducted for at least three times every 6 days and for at least once every 6 days respectively at the 5 monitoring stations (ID 1A, ID 2, ID 3, ID 4 and ID 5), in accordance with the EM&A Manual.

3.1.2 Forty-eight (48) sessions of 1-hr TSP monitoring and sixteen (16) sessions of 24-hr TSP monitoring were conducted for the 5 monitoring stations (ID 1A, ID 2, ID 3, ID4 & ID5) in the reporting quarter.

3.1.3 The weather was mostly sunny, occasionally cloudy and fine in the reporting quarter. The trend of impact air quality monitoring results for the reporting quarter is given in Appendix D. Major dust source included construction activities of the Project, concurrent construction activities of another project carried out in the vicinity and nearby traffic emissions.

3.1.4 All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting period.

3.1.5 Table 3.1 presents the number of exceedances recorded in each month of the reporting quarter. The number of monitoring events included regular impact monitoring events and additional ones, if any.

Table 3.1 Summary of Number of Exceedances for 1-hr and 24-hr TSP Concentration

Monitoring Parameter	Location	Level of Exceedance	Month		
			Dec 16	**Jan 17**	**Feb 17**
1-hr TSP	ID 1A	No. of monitoring events	18	15	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 2	No. of monitoring events	18	15	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 3	No. of monitoring events	18	15	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 4	No. of monitoring events	18	15	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 5	No. of monitoring events	18	15	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	Total number of exceedance		**0**	**0**	**0**
24-hr TSP	ID 1A	No. of monitoring events	6	5	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 2	No. of monitoring events	6	5	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 3	No. of monitoring events	6	5	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 4	No. of monitoring events	6	5	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 5	No. of monitoring events	6	5	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	Total number of exceedance		**0**	**0**	**0**

3.2 Construction Noise

3.2.1 Noise was conducted at the 5 monitoring stations (ID 1A, ID 2, ID 3, ID 4 and ID 5) for at least once per week during the construction phase (0700 – 1900) of the Project.

3.2.2 Twelve (12) noise monitoring events were carried out for all monitoring stations in the reporting quarter.

3.2.3 According to the information provided by the Contractor, no noise complaint was received in the reporting quarter; hence, no Action Level exceedance was received in the reporting quarter.

3.2.4 No Limit Level exceedance of noise was recorded in the reporting quarter.

3.2.5 The graphical plots of trends of the noise monitoring results in the reporting quarter are provided in Appendix E. Major noise source included construction activities of the Project, concurrent construction activities of another project carried out in the vicinity, nearby traffic emissions and noise from school activities and community noise.

3.2.6 Table 3.2 presents the number of exceedances recorded in each month of the reporting quarter. The number of monitoring events included regular monitoring events and additional ones, if any.

Table 3.2 Summary of Number of Exceedances for Construction Noise

Monitoring Parameter	Location	Level of Exceedance	Month		
			Dec 16	**Jan 17**	**Feb 17**
Construction Noise	ID 1A	No. of monitoring events	4	4	4
		Limit	0	0	0
	ID 2	No. of monitoring events	4	4	4
		Limit	0	0	0
	ID 3	No. of monitoring events	4	4	4
		Limit	0	0	0
	ID 4	No. of monitoring events	4	4	4
		Limit	0	0	0
	ID 5	No. of monitoring events	4	4	4
		Limit	0	0	0
	Total Action Level*		**0**	**0**	**0**
	Total Limit Level		**0**	**0**	**0**

Remarks: * Number of Action Level exceedance for construction noise is the number of documented noise related complaint received in the reporting period from any one of the sensitive receivers.

3.3 Environmental Site Inspection

3.3.1 There were 13 site inspections conducted in the reporting quarter to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. The major concerns for the Project are air quality, noise, water quality and chemical and waste management. Particular observations and non-compliances, and their statuses are described below.

3.3.2 The Contractor has rectified most of the observations as identified during environmental site inspection in the reporting period within agreed time frame. Rectifications of remaining identified items are undergoing by the Contractor. Follow-up inspections on the status on provision of mitigation measures will be conducted to ensure all identified items are mitigated properly.

3.3.3 Air Quality Impact

- Exposed stockpiles of dusty materials were observed at Portion G. The Contractor was advised to cover them with impervious sheeting, or spray them with water or dust suppression chemical to minimise windblown dust emission.
- Mud trail was found on public road at the CSCEC site office entrance near On Tat Estate. The Contractor was advised to remove the dusty materials and improve the efficiency of wheel washing facilities at every designated vehicle exit point for dust suppression.
- Temporary exposed slopes were found at R16. The Contractor was advised to cover them with impervious sheeting to avoid windblown dust emission.
- Dusty materials were observed on the road surface and during work at Sewer D. The Contractor was advised to remove the dusty materials or spray water to them for dust suppression.
- Exposed work surfaces were observed at R16 and R16b. The Contractor was advised to spray water to the road surface to avoid windblown dust emission.
- Open site area that generated fugitive dust was observed at Sewer D. The Contractor was advised to cover the area with impervious sheeting to prevent windblown air emission.
- An exposed stockpile of dusty materials and an exposed stock of more than 20 bags of cement were observed on On Sau Road. The Contractor was advised to cover them entirely by impervious sheeting for dust suppression.

3.3.4 Construction Noise Impact

- Nil

3.3.5 Water Quality Impact

- General refuse, construction wastes and debris were found in drainage at R16, Slope A7/A8, and on Shun On Road. The Contractor was advised to remove the materials to ensure water flows without obstruction.
- Debris was found entering drainage system on the road at CSCEC site office entrance near Po Tat Estate. The Contractor was advised to remove the materials to ensure entry of water to the gully without obstruction, and implement measures to prevent debris, soil, sand from entering public drains.
- Temporary exposed slopes were found at R16. The Contractor was advised to cover them with impervious sheeting to prevent surface runoff from washing across the exposed soil surfaces which carries sediment downslope.

- Flow of water and debris produced by concrete pavement cutting to public road was observed at Sewer D. The Contractor was advised to implement measures to prevent muddy water from entering drainage systems in roads.

3.3.6 Chemical and Waste Management

- Debris was found scattered on the ground at R16b. The Contractor was advised to remove the materials to keep the site clean and tidy.
- Chemical containers without secondary containment were observed at Sewer D on Po Lam Road and R22. The Contractor was advised to store containers that are not in use in a designated area, and provide them with drip trays to prevent potential leakage.
- Construction wastes were found outside designated area on Lee On Road and R22. The Contractor was advised to remove the materials to keep the site clean and tidy.
- Stagnant water was found in drip tray of generator at R22. The Contractor was advised to remove the water to prevent overflow of chemical in case of leakage.
- Unclosed chemical containers placed improperly were observed at Sewer D. The Contractor was advised to provide them with lids and secondary containment; and store them properly when not in use to prevent potential leakage.
- Patches of oil stain were observed on the ground at Sewer D. The Contractor was advised to clean up the leaks with absorption materials, and the waste generated from the cleanup operation should be treated and disposed of as chemical waste. The Contractor should also implement preventive measures to avoid future chemical spillage.

3.3.7 Landscape and Visual Impact

- Nil

3.3.8 Miscellaneous

- Nil

4 ADVICE ON SOLID AND LIQUID WASTE MANAGEMENT STATUS

4.1 Summary of Solid and Liquid Waste Management

4.1.1 The Contractor is registered as a chemical waste producer for this Project. C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.

4.1.2 As advised by the Contractor, quantity of waste for disposal in the reporting quarter is summarized in the Table 4.1.

Table 4.1 Summary of Quantity of Waste for Disposal

Type of waste	Month		
	Dec 16	**Jan 17**	**Feb 17**
Total C&D materials (m^3)	3764.94 m^3	3088.78 m^3	1079.97 m^3
Hard Rocks and Large Broken Concrete	0 m^3	0 m^3	0 m^3
Amount Reused in the Project	0 m^3	0 m^3	0 m^3
Amount Reused in other Projects	0 m^3	0 m^3	0 m^3
Disposed of to TKO 137	3764.94 m^3	3088.78 m^3	1079.97 m^3
Metals	0 kg	0 kg	0 kg
Paper cardboard packing	10 kg	10 kg	10 kg
Plastics	10 kg	10 kg	10 kg
Chemical waste	0 L	0 L	0 L
General refuse	290.05 tonnes	333.61 tonnes	331.58 tonnes

4.1.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

4.1.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practise on the Packaging, Labelling and Storage of Chemical Wastes.

5 SUMMARY OF NON-COMPLIANCE (EXCEEDANCES) OF ENVIRONMENTAL QUALITY

5.1 Summary of Exceedances and Review of the Reasons for Non-compliance

5.1.1 All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting period.

5.1.2 According to the information provided by the Contractor, no Action Level exceedance was recorded since no noise related complaint was received in the reporting period.

5.1.3 No exceedance of Limit Level of noise was recorded in the reporting period.

6 COMPLAINT, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTION

6.1 Summary of Environmental complaints, notification of summons and successful prosecutions

6.1.1 No environmental complaint and no notification of summons and successful prosecution were received in the reporting quarter. The cumulative statistics on complaints has been updated in Appendix F.

6.1.2 Table 6.1 summarized the complaint, summons and successful prosecution received in the reporting period.

Table 6.1 Summary of Environmental Complaints, Summons and Prosecutions

	Dec 16	Jan 17	Feb 17	Total
Complaint Logged	0	0	0	**0**
Summons Served	0	0	0	**0**
Successful Prosecution	0	0	0	**0**

6.1.3 Cumulative Statistics on Exceedances, Complaints, Notification of Summons and Successful Prosecutions recorded since the commencement of the Project are given in Appendix F.

7 COMMENTS, RECOMMENDATIONS AND CONCLUSIONS

7.1 Comments on Mitigation Measures

7.1.1 According to the environmental site inspections performed in the reporting quarter, the following comments are provided:

7.1.2 Air Quality Impact

- The Contractor was advised to cover exposed stockpiles of dusty materials with impervious sheeting, or spray them with water or dust suppression chemical to minimise windblown dust emission.
- The Contractor was advised to remove mud trails and improve the efficiency of wheel washing facilities at every designated vehicle exit point for dust suppression.
- The Contractor was advised to cover temporary exposed slopes with impervious sheeting to avoid windblown dust emission.
- The Contractor was advised to remove dusty materials on the road surface or spray water during work for dust suppression.
- The Contractor was advised to spray water to exposed work surfaces to avoid windblown dust emission.
- The Contractor was advised to cover open site area with impervious sheeting to prevent windblown air emission.
- The Contractor was advised to cover exposed stocks of more than 20 bags of cement entirely by impervious sheeting for dust suppression.

7.1.3 Construction Noise Impact

- Nil

7.1.4 Water Quality Impact

- The Contractor was advised to remove general refuse, construction wastes and debris in drainage to ensure water flows without obstruction.
- The Contractor was advised to remove the debris entering drainage system on the road to ensure entry of water to the gully without obstruction, and implement measures to prevent debris, soil, sand from entering public drains.
- The Contractor was advised to cover temporary exposed slopes with impervious sheeting to prevent surface runoff from washing across the exposed soil surfaces which carries sediment downslope.
- The Contractor was advised to implement measures to prevent muddy water produced by concrete pavement cutting from entering drainage systems in roads.

7.1.5 Chemical and Waste Management

- The Contractor was advised to remove the debris on the ground to keep the site clean and tidy.
- The Contractor was advised to store chemical containers that are not in use in a designated area, and provide them with drip trays to prevent potential leakage.

- Contractor was advised to remove the construction wastes outside designated area to keep the site clean and tidy.
- The Contractor was advised to remove the stagnant water in drip trays to prevent overflow of chemical in case of leakage.
- The Contractor was advised to provide chemical containers with lids and secondary containment; and store them properly when not in use to prevent potential leakage.
- The Contractor was advised to clean up the oil leaks with absorption materials, and the waste generated from the cleanup operation should be treated and disposed of as chemical waste. The Contractor was also advised to implement preventive measures to avoid future chemical spillage.

7.1.6 Landscape and Visual Impact

- Nil

7.1.7 Miscellaneous

- Nil

7.2 Recommendations on EM&A Programme

7.2.1 The impact air quality and noise monitoring programme ensured that any environmental impact to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental acceptability of the Project. The weekly site inspection ensured that all the environmental mitigation measures recommended in the EIA report were effectively implemented.

7.2.2 The EM&A programme effectively monitored the environmental impacts from the construction activities and no particular recommendation was advised for the improvement of the programme.

7.3 Conclusions

7.3.1 Air quality and noise monitoring and weekly site inspection were carried out from December 2016 to February 2017, in accordance with the EM&A Manual.

7.3.2 All 1-hour TSP and 24-hour TSP results were below the Action and Limit Levels in the reporting period.

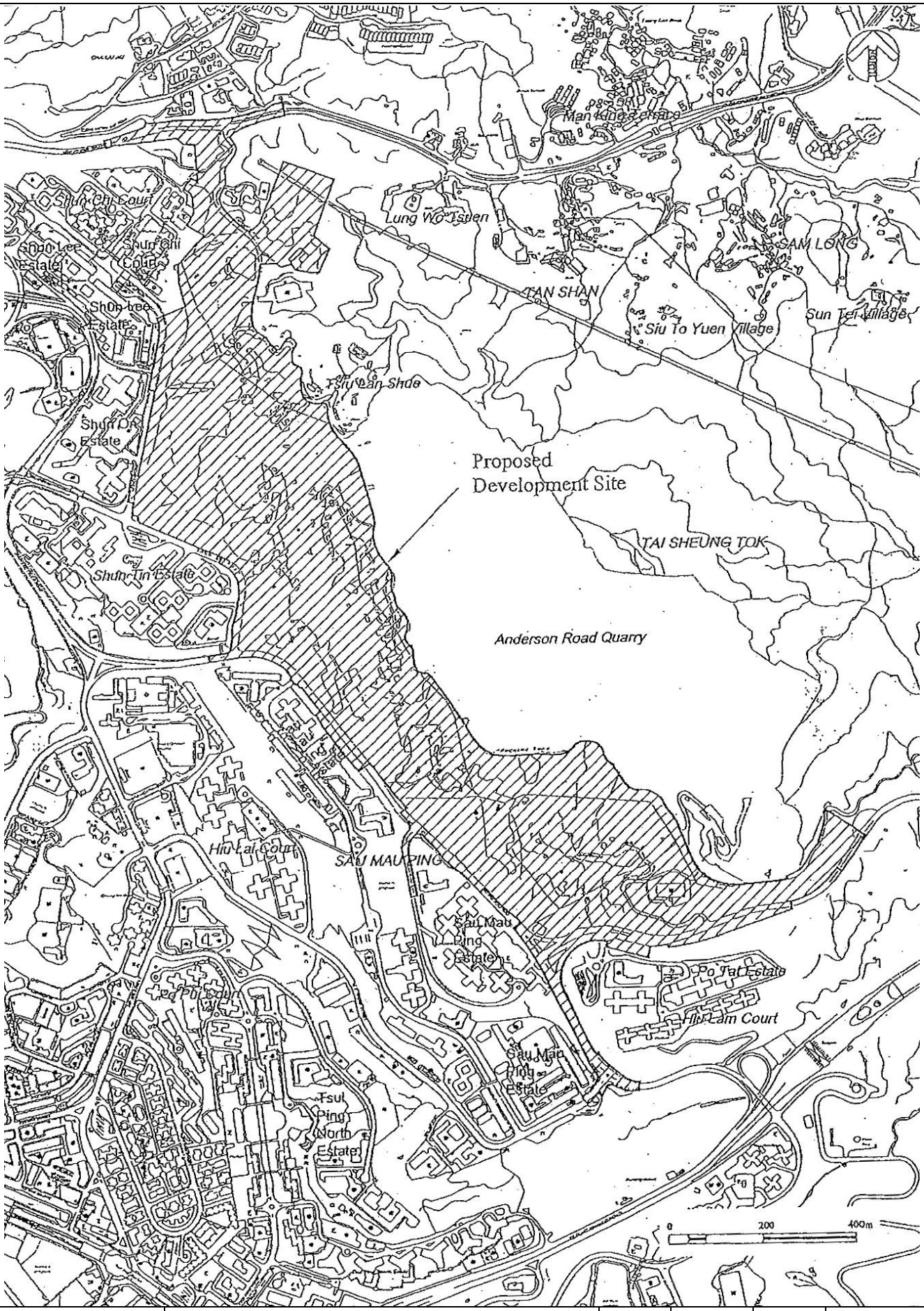
7.3.3 According to the information provided by the Contractor, no Action Level exceedance was recorded since no noise related complaint was received in the reporting period.

7.3.4 No exceedance of Limit Level of noise was recorded in the reporting period.

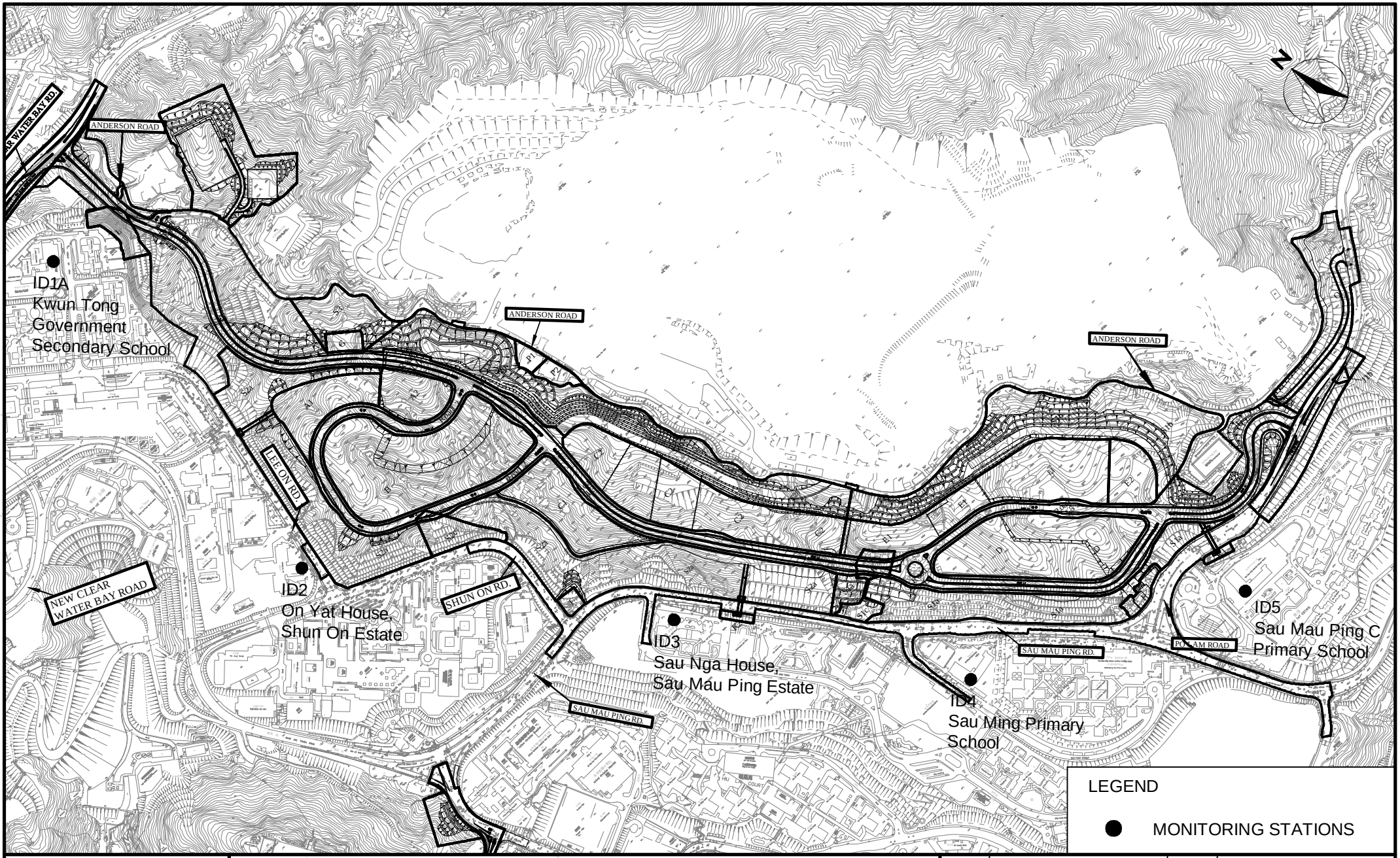
7.3.5 No complaint, notification of summons and successful prosecution were received in the reporting quarter.

7.3.6 Environmental site inspections were carried out 13 times in the reporting period. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

FIGURES



AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Nov-09
		CHECK	ENFL	DRAWN	LCHC
	GENERAL LAYOUT PLAN	JOB NO.	60043155	**DRAWING No.** FIG 1.1	**Rev.** -



AECOM

DEVELOPMENT AT ANDERSON ROAD
SITE FORMATION AND ASSOCIATED INFRASTRUCTURE WORKS

MONITORING LOCATIONS

SCALE	N.T.S.	DATE	APR 08
CHECK	CWHY	DRAWN	RWHW
JOB No.	60043155	DRAWING No. FIG 2.1	REV –

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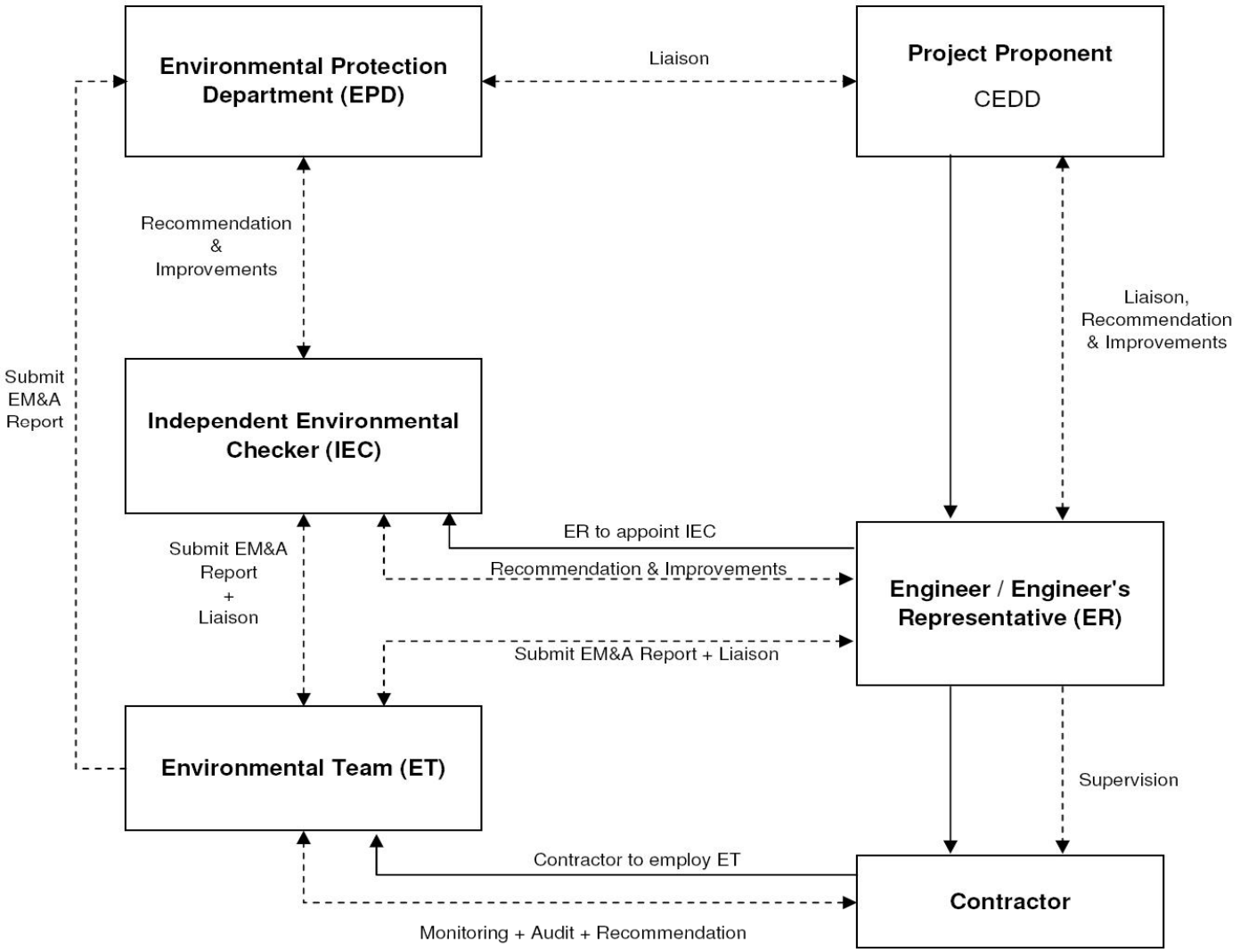
APPENDIX A

Project Organization Structure



Employment Relationship

Working Relationship

AECOM	Contract No. CV/2007/03 Development at Anderson Road – Site Formation and Associated Infrastructure Works **Project Organization Structure**	SCALE	N.T.S.	DATE	2009
		CHECK	ENFL	DRAWN	LCHC
		JOB NO.	60043155	APPENDIX A	Rev -

APPENDIX B

Implementation Schedule of Environmental Mitigation Measures (EMIS)

Appendix B - Implementation Schedule of Environmental Mitigation Measures (EMIS)

Environmental Mitigation Measures		Location	Implementation Status		
			Dec 16	**Jan 17**	**Feb 17**
Construction Noise Impact					
Site Formation	Silenced powered mechanical equipment (PME) for most equipment (including drill rig, backhoe, dump truck, breaker and crane) and the decrease of percentage on time usage of drill rig among the Central Area from 50% to 40% is proposed.	All construction sites	V	V	V
	Temporary movable noise barrier shall be used to shield the noise emanating from the drilling rig in order to provide adequate shielding for the affected NSRs.	All construction sites	V	V	V
Construction Air Quality Impact					
General Site Practice	Mean vehicle speed of haulage trucks at 10km/hr.	All construction sites	V	V	V
	Twice daily watering of all open site areas.	All construction sites	V	@	@
	Regular watering (once every 1 hour) of all site roads and access roads with frequent truck movement.	All construction sites	V	V	V
	During road transportation of excavated spoil, vehicles should be covered to avoid dust impact. Wheel washing facilities should be installed at all site exits together with regular watering of the site access roads.	All construction sites	V	V	V
	Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	All construction sites	V	V	V
	Establishment and use of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads were necessary.	Site exits	V	@	V
	Suitable side and tailboards on haulage vehicles.	All construction sites	V	V	V

Environmental Mitigation Measures		Location	Implementation Status		
			Dec 16	**Jan 17**	**Feb 17**
General Site Practice	Watering of temporary stockpiles.	All construction sites	@	V	@
Blasting	Use of select aggregate and fines to stem the charge with drill holes and watering of blast face.	All construction sites	N/A	N/A	N/A
	Use of vacuum extraction drilling methods.	All construction sites	N/A	N/A	N/A
	Carefully sequenced blasting.	All construction sites	N/A	N/A	N/A
Crushing	Fabric filters installed for the crushing plant.	All construction sites	V	V	V
	Water sprays on the crusher.	All construction sites	V	V	V
Loading and Unloading Points, and conveyor Belt System	Water sprays at all fixed loading and unloading points (at the crusher and conveyor belts).	All construction sites	V	V	V
	The loading point at the crusher is enclosed with dust collection system installed.	All construction sites	V	V	V
	When transferring materials from conveyor belt or crusher to the dump trucks, chutes or dust curtains are used for controlling dust.	All construction sites	V	V	V
	Cover the conveyor belts with steel roof and canvas sides.	All construction sites	V	V	V
Construction Water Quality Impact					
Construction Phase	All active working areas should be bounded to retain storm water with sufficient retention time to ensure that suspended solids are not discharged from the site in concentrations above those specified in the TM for the Victoria Harbour (Phase I) WCZ. All fuel storage areas should be bounded with drainage directed to an oil interceptor.	Site drainage system	V	V	V
	Separate treatment facilities may be required for effluent from site offices, toilets (unless chemical toilets are used) and canteens.	Site drainage system	V	V	V
Construction	Discharged wastewater from the construction sites to surface water and/or	All works area	V	V	V

Environmental Mitigation Measures		Location	Implementation Status		
			Dec 16	**Jan 17**	**Feb 17**
Phase	public drainage systems should be controlled through licensing. Discharge should follow fully the terms and conditions in the licenses.				
	Relevant practice for dealing with various type of construction discharges provided in EPD's ProPECC Note PN 1/94 should be adopted.	All works area	V	V	V
Waste Management					
Waste Disposal	Difference types of wastes should be segregated, stored, transported and disposed of separately in accordance with the relevant legislative requirements and guidelines as proper practice of waste management.	All construction sites	V	V	V
	Sorting of wastes should be done on-site. Different types of wastes should be segregated and stored in different stockpiles, containers or skips to enhance recycling of materials and proper disposal of spoil.	All construction sites	V	V	V
	Excavated spoil should be used as much as possible to minimize off-side fill material requirements and disposal of spoil.	All construction sites	V	V	V
	Chemical waste should be recycled on-site or removed by licenced companies. It should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical wastes. When off-site disposal is required, it should be collected and delivered by licenced contractors to Tsing Yi Chemical Waste Treatment Facility and disposed of in accordance with the Chemical Waste (General) Regulation.	All construction sites	V	V	V
	Necessary mitigation measures should be adopted to prevent the uncontrolled disposal of chemical and hazardous waste into air, soil, surface waters and ground waters.	All construction sites	@	@	@
Waste Storage	Chemical material storage areas should be bounded and constructed of impervious materials, and have the capacity to contain 120 percent of the	All construction sites	V	V	V

Environmental Mitigation Measures		Location	Implementation Status		
			Dec 16	**Jan 17**	**Feb 17**
	total volume of the containers. Indoor storage areas must have sufficient ventilation to prevent the build-up of fumes, and must be capable of evacuating the space in the event of an accidental release. Outdoor storage areas must be covered with a canopy or contain provisions for the safe removal of rainwater. In both cases, storage areas must not be connected to the foul or stormwater sewer system.				
	Dangerous materials as defined under the DGO, including fuel, oil and lubricants, should be stored and properly labelled on site in accordance with the requirements in the DGO. If transportation of hazardous materials is necessary, hazardous materials, chemical wastes and fuel should be packed or stored in containers or vessels of suitable design and construction to prevent leakage, spillage or escape.	All construction sites	V	V	V
	Human waste should be discharged into septic tanks provided by the contractors and removed regularly by a hygiene services company. Refuse containers such as open skips should be provided at every work site for use by the workforce. On-site refuse collection points must also be provided.	All construction sites	V	V	V
Landscape and Visual					
Additional Measures	Planting and vegetation restoration (including transplanted trees) on soil slopes including restoration of grassland, scrub and woodland on slopes around the development platforms and access road. Restoration would be undertaken using predominantly native species.	Whole development	N/A	N/A	N/A
Additional Measures	Screen planting along the access roads, to limit impacts of elevated structures and rock slopes.	Whole development	N/A	N/A	N/A

Environmental Mitigation Measures		Location	Implementation Status		
			Dec 16	**Jan 17**	**Feb 17**
	Colouring of shotcrete slopes.	Whole development	N/A	N/A	N/A
	Limited planting on shotcrete slopes.	Whole development	V	V	V
	Landscape buffers and planting in and around the development itself to screen partially close views of the site.	Whole development	N/A	N/A	N/A
	Screen planting in front of retaining walls / granite cladding to those walls to reduce glare and visual impacts.	Whole development	N/A	N/A	N/A
	Careful design of road elevated structure and abutments, to limit visual impacts.	Whole development	V	V	V
	Roadside landscape features / hardworks to limit visual impacts.	Whole development	V	V	V
	Conservation of CDG or CDV recovered from the site for re-use in the landscape restoration.	Whole development	N/A	N/A	N/A
	Preservation (by transplanting if necessary) of any trees identified as being of particular landscape value.	Whole development	V	V	V
Ecology					
	Woodland planting on soft cut slopes available (about 13.4ha) within the development site. Native species, preferably with documented ecological utility, should be used.	Soft cut slopes	N/A	N/A	N/A
	Seeds of the native species when possible should be added into the hydroseeding mix. Seedings should be pit planted with placement of slow release fertilizer.	Soft cut slopes	N/A	N/A	N/A
	Maintenance and service, including weeding, fertilizing, replacement of dead plants, etc. should be performed during the first 1 years of planting to enhance the survival rate of the plants.	Soft cut slopes	N/A	N/A	N/A

Environmental Mitigation Measures		Location	Implementation Status		
			Dec 16	**Jan 17**	**Feb 17**
Contaminated Land					
	In accordance with the approved Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) in Nov 2006, it is recommended that cement solidification / stabilization prior to on-site backfill for heavy metal contaminated soil and excavation followed by disposal at designated landfill for organic contaminated soil. Upon the completion of the proposed remediation exercise as outlined in CAR & RAP, a Remediation Report will be complied for submission to EPD to demonstrate that the proposed soil remediation has been carried out properly and satisfactorily. Results from the confirmation tests will also be included in the Remediation Report. Photos showing the area of excavation, the solidification process, and remediated soil and site shall also be included in the report for reference.	Locations specified in CAR	N/A (Works In Progress)	N/A (Works In Progress)	N/A (Works In Progress)
Landfill Gas Hazard					
	Further site investigation should be carried out during the detailed design stage in order to measure landfill gas around the perimeter of the site, to re-confirm that there is no preferential pathway for landfill gas migration and to assess the potential for landfill gas hazards on the future development. If a landfill gas hazard is identified, mitigation measures should be proposed and implemented to address the hazard.	The whole development site	N/A	N/A	N/A

Legend: V = implemented;
x = not implemented;
@ = partially implemented;
N/A = not applicable

APPENDIX C

Summary of Action and Limit Levels

Appendix C - Summary of Action and Limit Levels

Table 1 – Action and Limit Levels for 1-hour TSP

Location	Action Level	Limit Level
ID 1A	201.5	500
ID 2	197.0	500
ID 3	203.7	500
ID 4	264.6	500
ID 5	267.4	500

Table 2 – Action and Limit Levels for 24-hour TSP

Location	Action Level	Limit Level
ID 1A	170.2	260
ID 2	200.0	260
ID 3	200.0	260
ID 4	181.3	260
ID 5	180.8	260

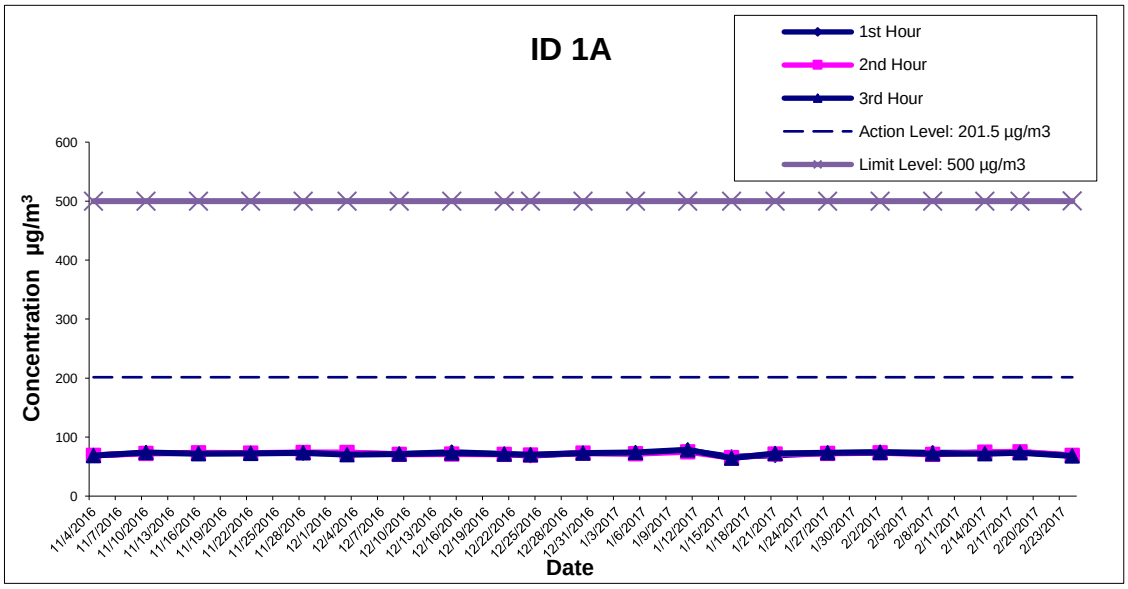
Table 3 – Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

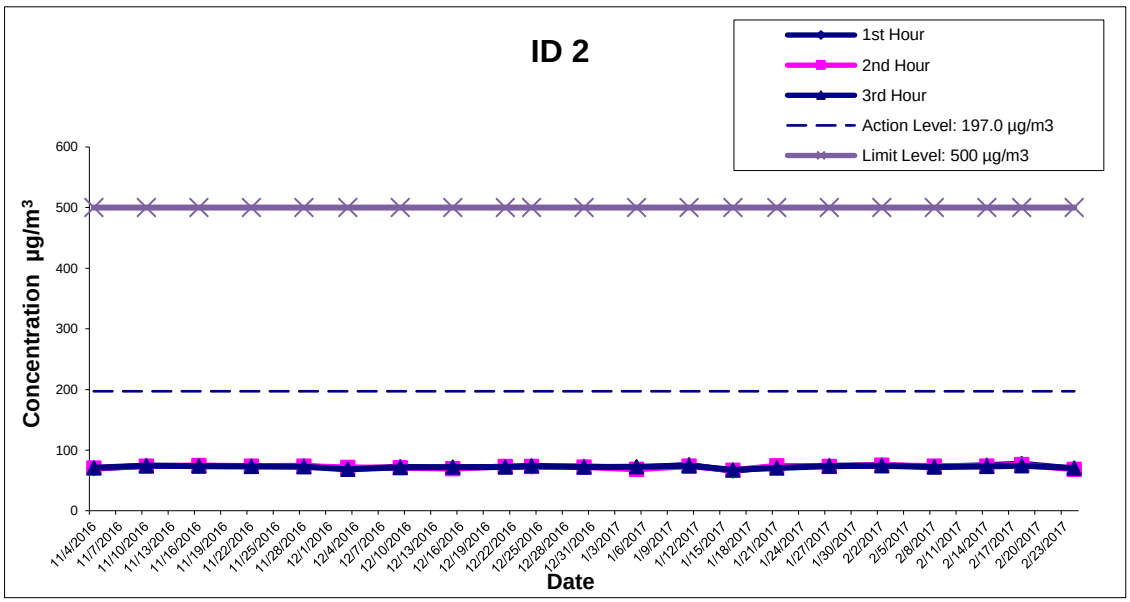
Location	Action Level	Limit Level
ID 1A	When one documented complaint is received from any one of the sensitive receivers	*65 / 70 dB(A)
ID 2		75 dB(A)
ID 3		75 dB(A)
ID 4		*65 / 70 dB(A)
ID 5		*65 / 70 dB(A)

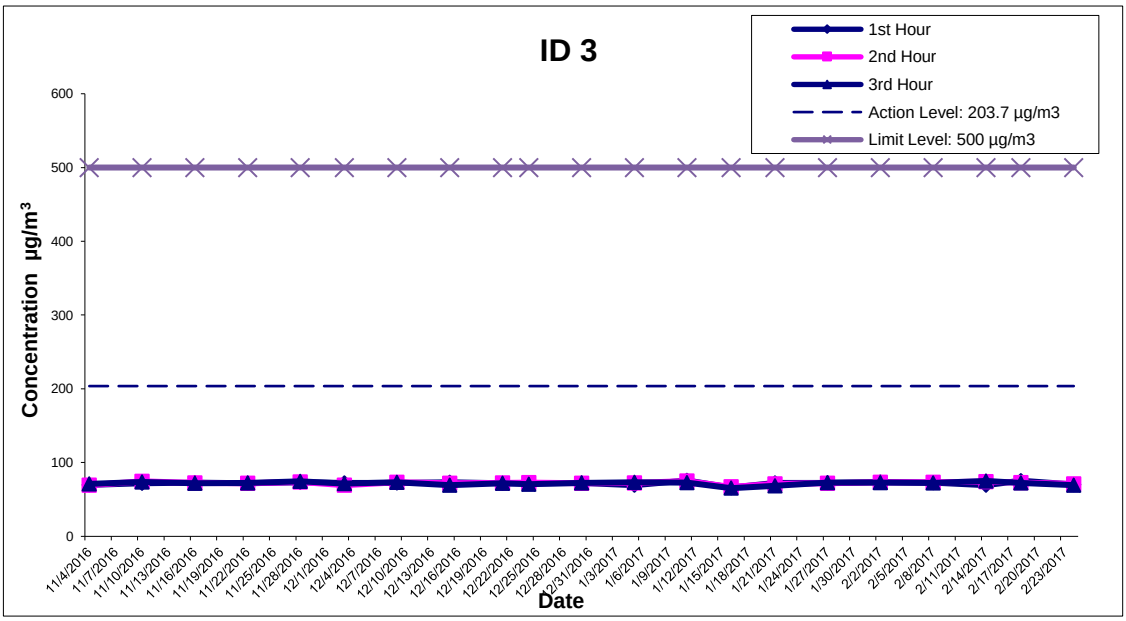
*Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period

APPENDIX D

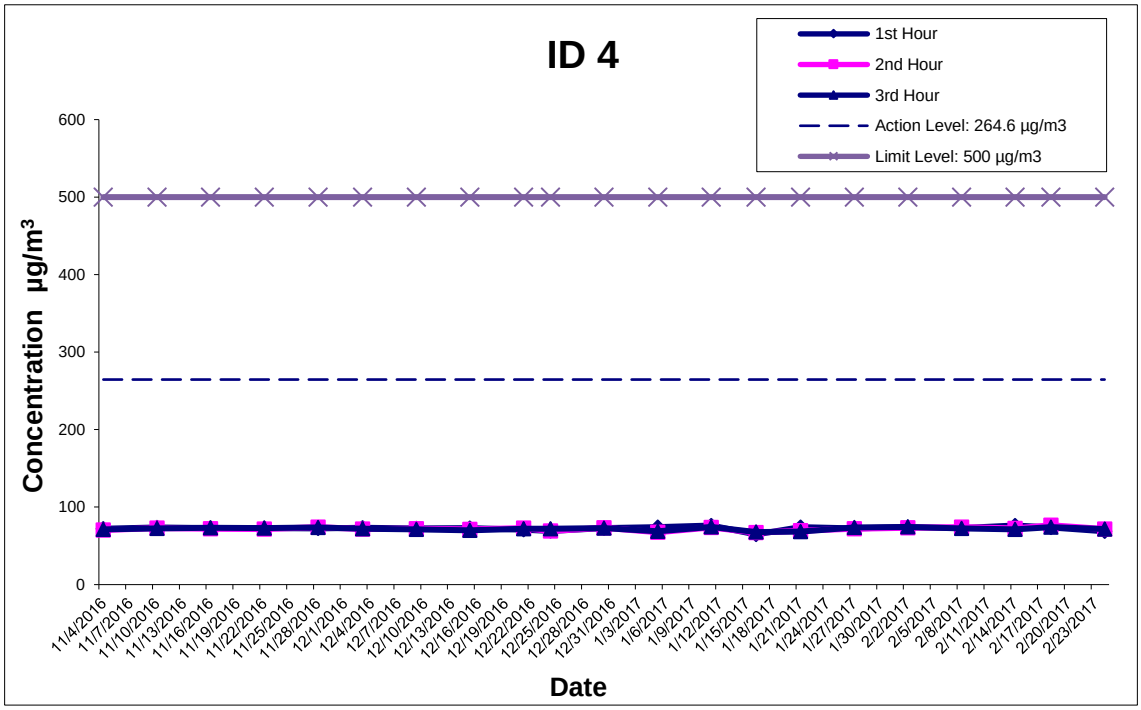
Graphical Presentation of Impact Air Quality Monitoring Results over the Past Four Months

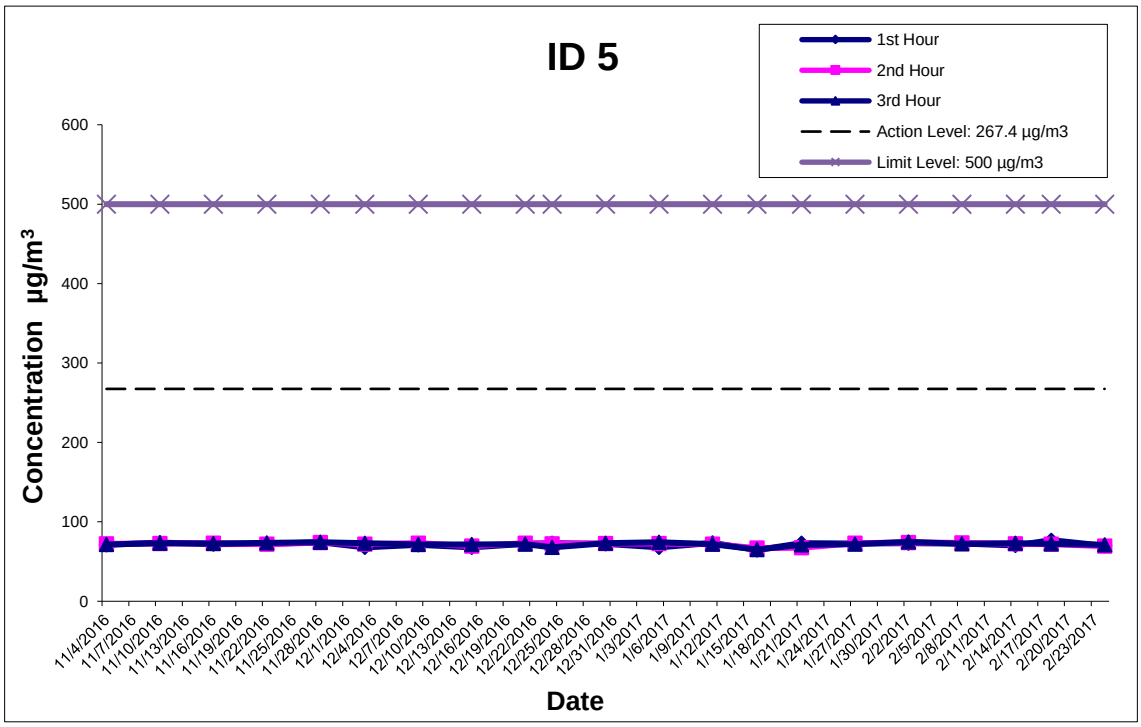




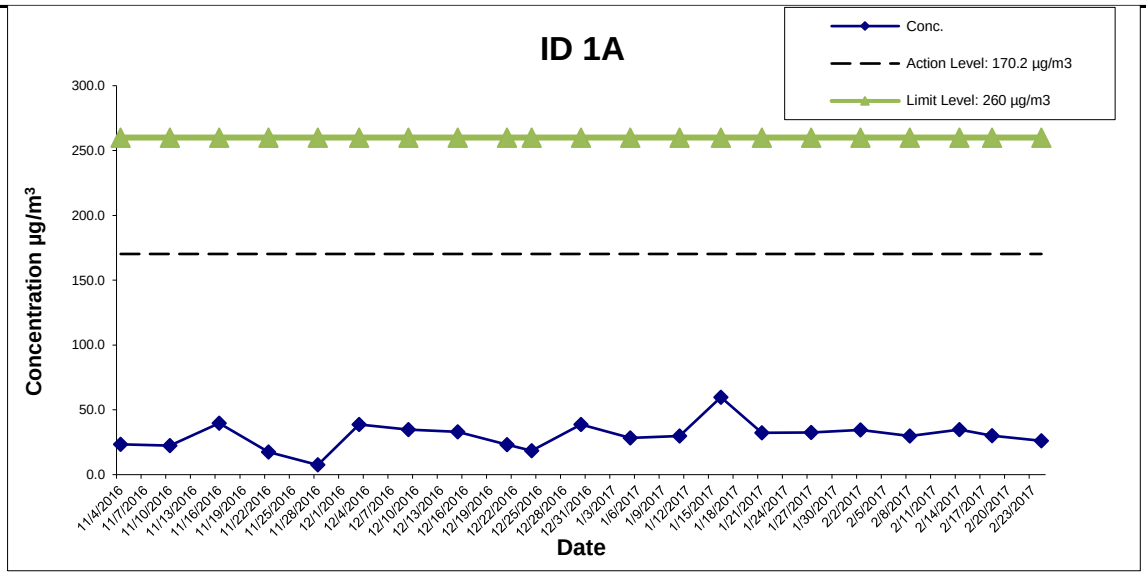


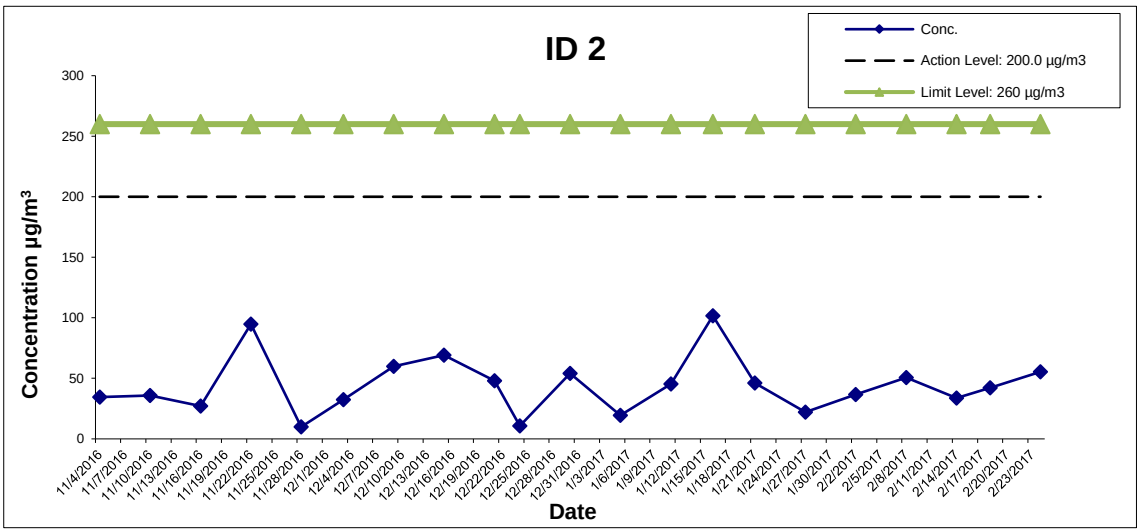
AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Mar-17
		CHECK	FYW	DRAWN	DTTW
	Graphical Presentations of Impact 1-hour TSP Monitoring Results	JOB NO.	60043155	**APPENDIX No.** D	**Rev.** -

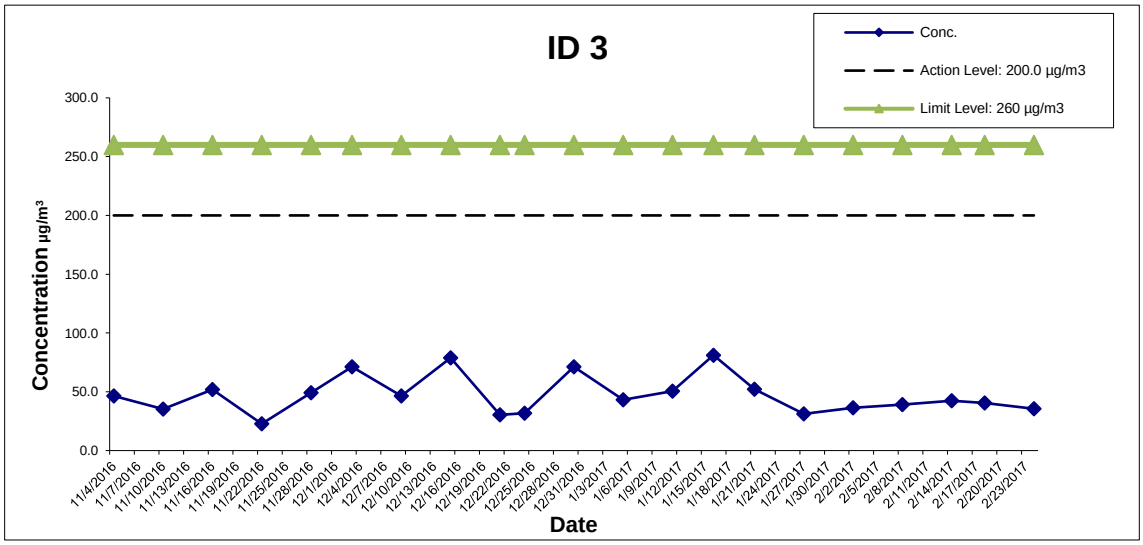




AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works** **Graphical Presentations of Impact 1-hour TSP Monitoring Results**	SCALE	N.T.S.	DATE	Mar-17
		CHECK	FYW	DRAWN	DTTW
		JOB NO.	60043155	**APPENDIX No.** D	**Rev.** -







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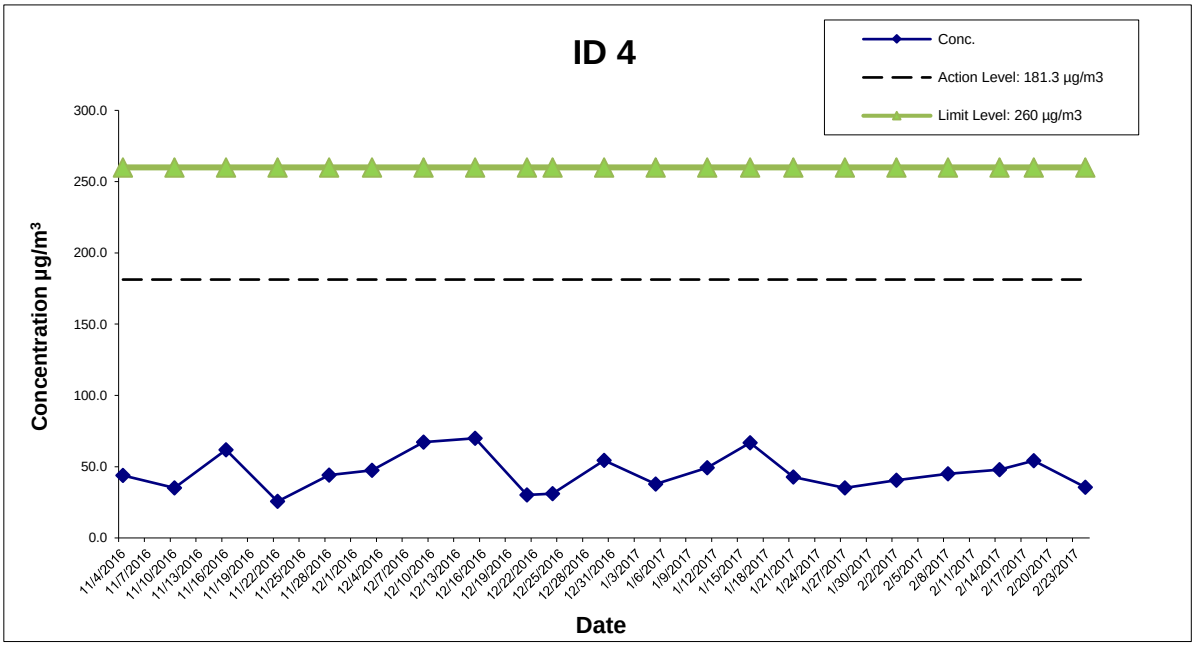
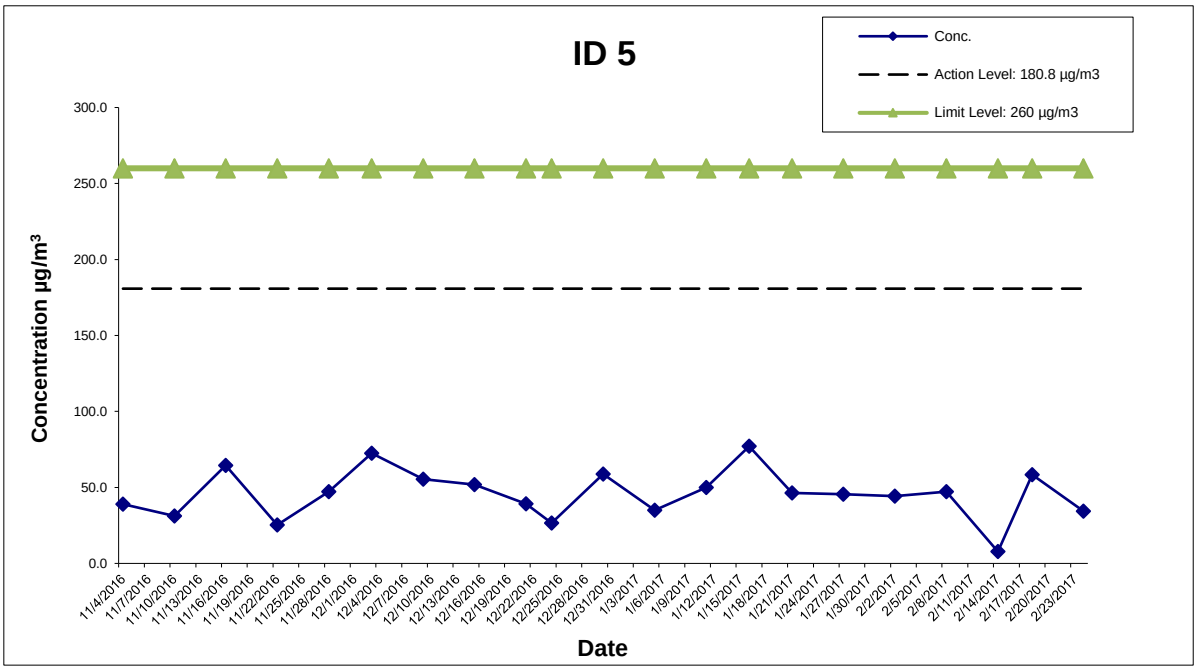
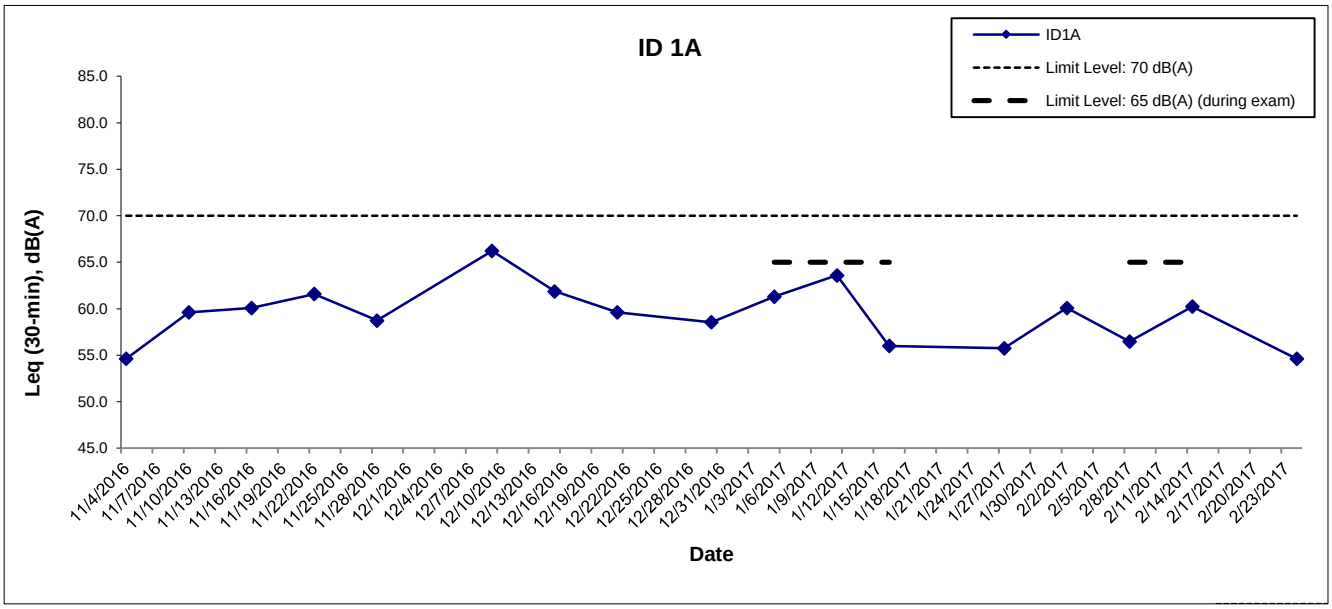


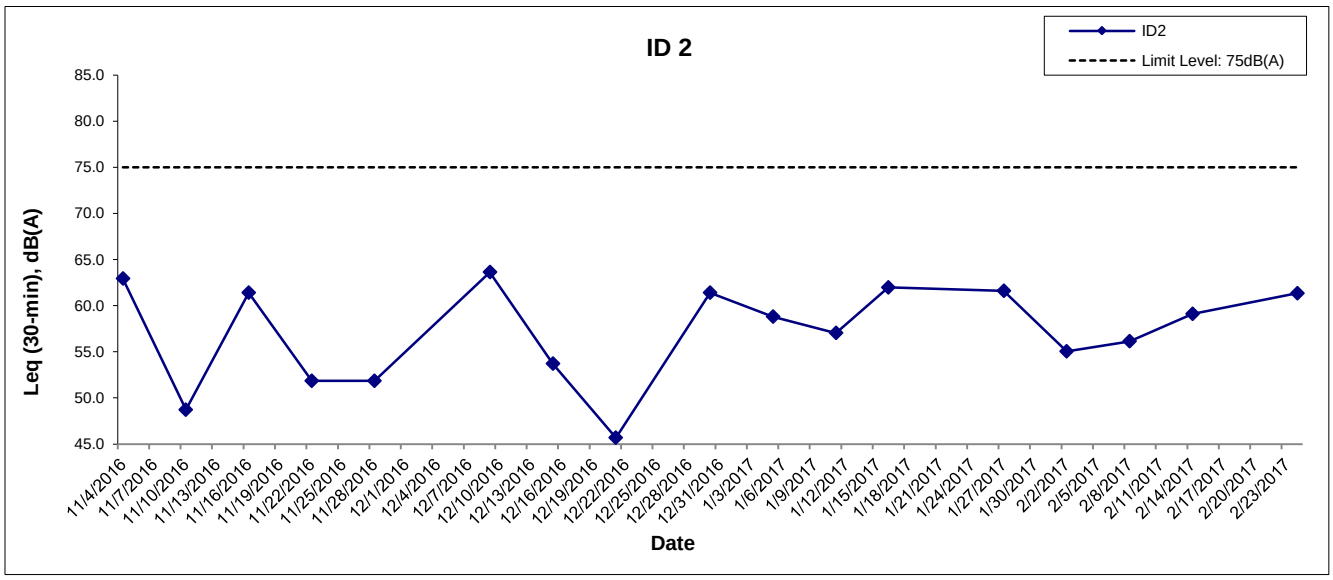


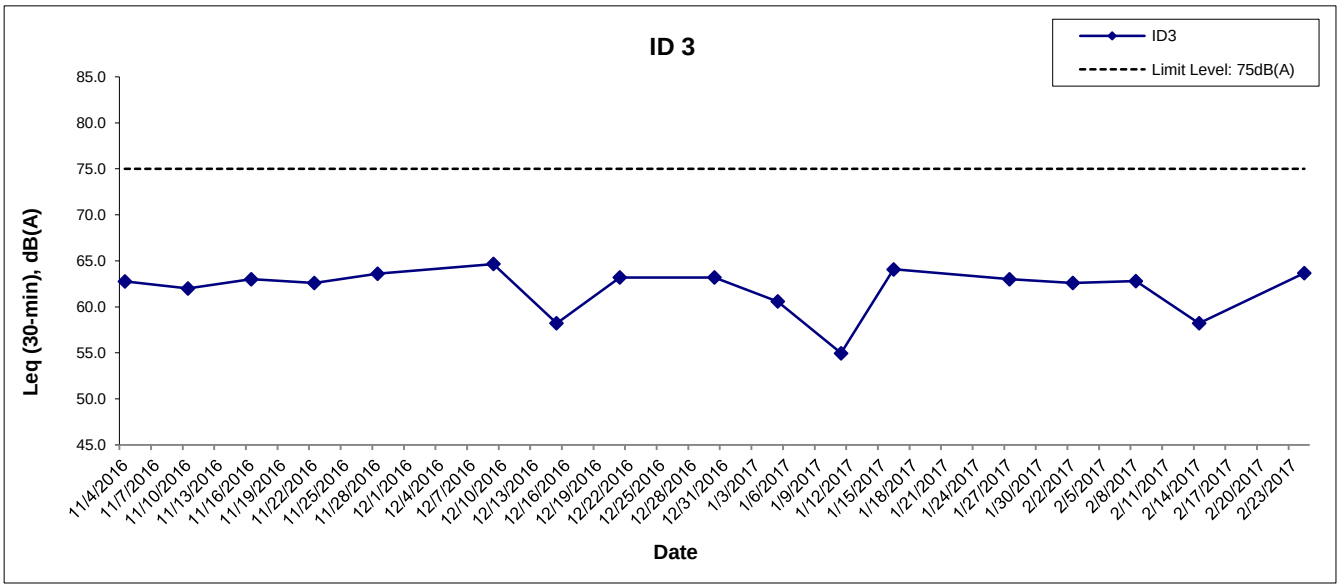
AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works** **Graphical Presentations of Impact 24-hour TSP Monitoring Results**	SCALE	N.T.S.	DATE	Mar-17
		CHECK	FYW	DRAWN	DTTW
		JOB NO.	60043155	**APPENDIX No.** D	**Rev.** -

APPENDIX E

Graphical Presentation of Noise Monitoring Results over the Past Four Months







AECOM

Development at Anderson Road - Site Formation and Associated Infrastructure Works

Graphical Presentations of Noise Monitoring Results

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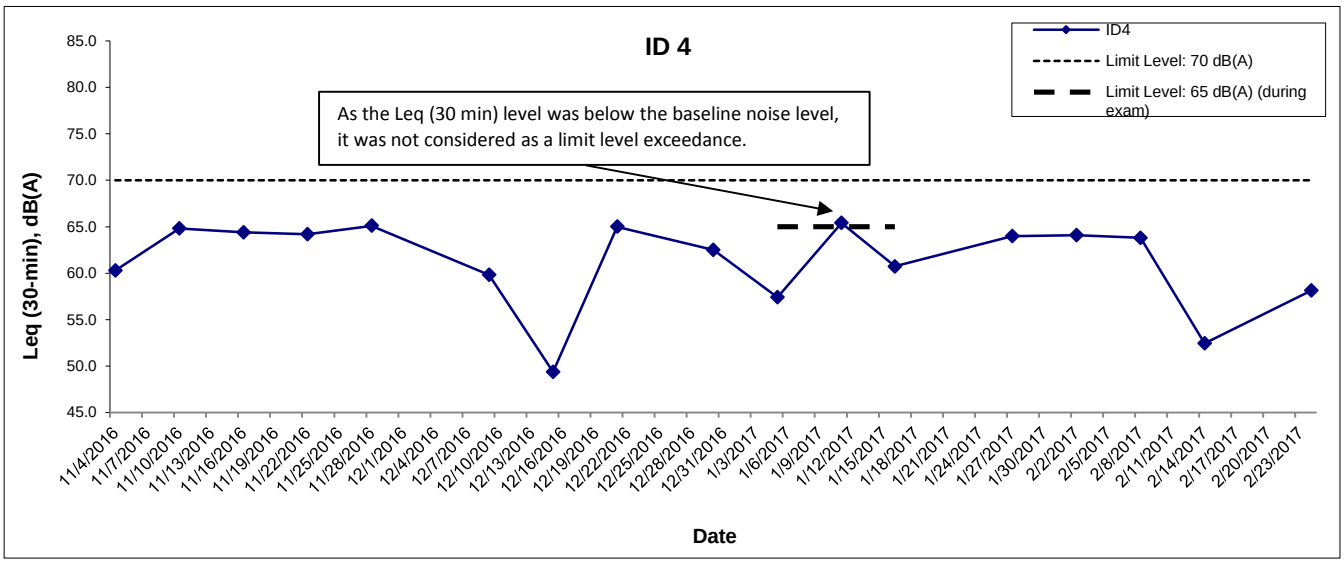
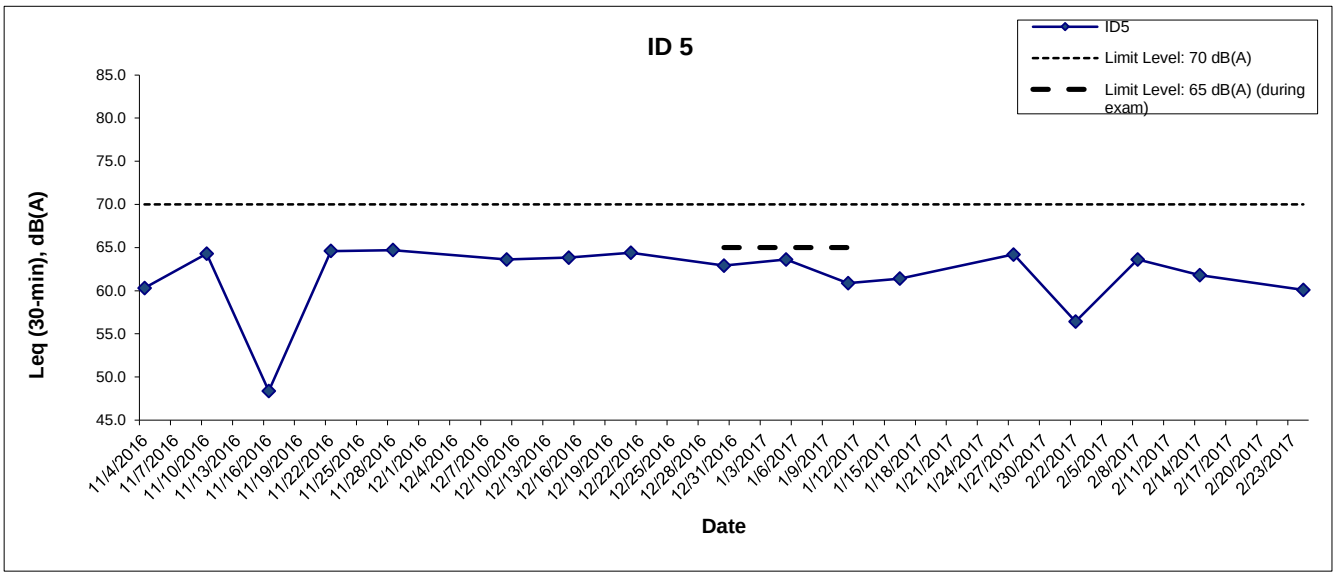
CHECK	FYW	DRAWN	DTTW
JOB NO.	60043155	APPENDIX	E
		Rev	-





AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Mar-17
		CHECK	FYW	DRAWN	DTTW
	Graphical Presentations of Noise Monitoring Results	JOB NO.	60043155	APPENDIX E	Rev -

APPENDIX F

Cumulative Statistics on Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Appendix F - Cumulative Statistics on Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Cumulative statistics on Exceedances

		Total no. recorded in this quarter	Total no. recorded since project commencement
1-Hour TSP	Action	-	-
	Limit	-	-
24-Hour TSP	Action	-	15
	Limit	-	1
Noise	Action	-	32
	Limit	-	1

Cumulative statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. recorded in this quarter	Total no. recorded since project commencement
Environmental complaints	-	-	-	-	74
Notification of summons	-	-	-	-	6
Successful Prosecutions	-	-	-	-	2