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 September to November 2015

December 2015

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Version: 0	Date: 9 December 2015

Disclaimer

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RAMBOLL ENVIRON

Ref.: OAPANDSNEM00_0_1602L.15

9 December 2015

By Post and Fax: 2407 8382

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

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 September to November 2015

Reference is made to the Environmental Team's submission of the draft Quarterly EM&A Report for September to November 2015 received by e-mail on 9 December 2015.

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	Fax: 3922 9797
	CSCEC	Attn.: Mr. Holmes Wong	Fax: 2702 6553

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Table of Content

Page

List of Tables

List of Figures

List of Appendices

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 September to 30 November 2015. As informed by the Contractor, construction activities in the reporting quarter were:

- Slope stabilization and upgrading works at Portion C and E
- Earthwork and C&D stockpile at Portion A and C
- Temporary traffic arrangement and road work at J/O Po Lam Road, J/O Sau Mau Ping Road, J/O Shun On Road and J/O Po Lam Road
- Toe / Berm planter and platform drainage construction on slope
- Retaining wall structural works and backfilling works at R16b
- Structural works at Footbridges A
- Trench excavation and drainage works at main site and public road
- Watermain works at main site, Branch M and public road
- Installation of Granite Stone Facing at Skin Wall R15
- Installation of metal barriers at main site and footbridge
- Installation of permanent railings at main site and footbridge
- Asphalt laying at L1 – L6 road
- Brick laying at footpath at L1- L6 road
- Landscaping works at main site, slope and public area
- Storm Water tank and main site drainage clearing and remedial works
- Installation of watermain downpipe at Po Lam Road CP2, Lee On Road Sewer A and Sau Mau Ping Road Sewer B
- Lift installation works at footbridge B & C
- E & M works at footbridge B & C
- Erection/dismantle of bamboo scaffoldings works at footbridge A, B and C
- Cement decoration works at footbridge B & C
- Installation glazing works at footbridge B & C
- Installation of metal canopy of bus stop station

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	18 sessions
1-hour TSP monitoring	54 sessions
Daytime Noise monitoring	13 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 September 2015 to 30 November 2015 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	3656 3000	3656 3100
	Senior Resident Engineer	Michael Wright	3656 3000	3656 3100
	Assistant Resident Engineer (Civil)	Heidi Fung	2407 0300	3656 3100
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

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:

- Slope stabilization and upgrading works at Portion C and E
- Earthwork and C&D stockpile at Portion A and C
- Temporary traffic arrangement and road work at J/O Po Lam Road, J/O Sau Mau Ping Road, J/O Shun On Road and J/O Po Lam Road
- Toe / Berm planter and platform drainage construction on slope
- Retaining wall structural works and backfilling works at R16b
- Structural works at Footbridges A
- Trench excavation and drainage works at main site and public road
- Watermain works at main site, Branch M and public road
- Installation of Granite Stone Facing at Skin Wall R15
- Installation of metal barriers at main site and footbridge
- Installation of permanent railings at main site and footbridge
- Asphalt laying at L1 – L6 road
- Brick laying at footpath at L1- L6 road
- Landscaping works at main site, slope and public area
- Storm Water tank and main site drainage clearing and remedial works
- Installation of watermain downpipe at Po Lam Road CP2, Lee On Road Sewer A and Sau Mau Ping Road Sewer B
- Lift installation works at footbridge B & C
- E & M works at footbridge B & C
- Erection/dismantle of bamboo scaffoldings works at footbridge A, B and C
- Cement decoration works at footbridge B & C
- Installation glazing works at footbridge B & C
- Installation of metal canopy of bus stop station

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 Fifty-four (54) sessions of 1-hr TSP monitoring and eighteen (18) 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, with occasionally fine, cloudy and rainy days 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		
			Sep 15	**Oct 15**	**Nov 15**
1-hr TSP	ID 1A	No. of monitoring events	21	18	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 2	No. of monitoring events	21	18	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 3	No. of monitoring events	21	18	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 4	No. of monitoring events	21	18	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 5	No. of monitoring events	21	18	15
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	Total		**0**	**0**	**0**
24-hr TSP	ID 1A	No. of monitoring events	7	6	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 2	No. of monitoring events	7	6	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 3	No. of monitoring events	7	6	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 4	No. of monitoring events	7	6	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	ID 5	No. of monitoring events	7	6	5
		Action	**0**	**0**	**0**
		Limit	**0**	**0**	**0**
	Total		**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 Thirteen (13) 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		
			Sep 15	**Oct 15**	**Nov 15**
Construction Noise	ID 1A	No. of monitoring events	5	4	4
		Limit	0	0	0
	ID 2	No. of monitoring events	5	4	4
		Limit	0	0	0
	ID 3	No. of monitoring events	5	4	4
		Limit	0	0	0
	ID 4	No. of monitoring events	5	4	4
		Limit	0	0	0
	ID 5	No. of monitoring events	5	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

- Open stockpiles were observed at Footbridge B. The Contractor should cover them by tarpaulin sheet entirely.
- Dust was blown up at J1 during earth moving operation. The Contractor should spray the working area with water or dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- The breaker at R16a was observed without wrapping acoustic-resistant material. The Contractor should wrap the breaker with acoustic-resistant material to reduce noise nuisance. The Contractor should also spray water during rock breaking.
- Dusty stockpiles without cover were observed at R16a. The Contractor should cover them with tarpaulin or any impermeable sheeting.
- Dusty stockpile was observed without cover at Footbridge B. The Contractor should cover it with tarpaulin or any impermeable sheeting.
- Dusty stockpile without cover was observed at Footbridge C. The Contractor should cover it with tarpaulin or other impermeable sheeting for dust suppression.
- The Contractor was reminded to spray water over haul roads and access roads to prevent dust drifting. (Reminder)

3.3.4 Construction Noise Impact

- The Contractor should wrap the breaker tip with acoustic-resistant materials or provide noise barriers for the noisy equipment and activities to reduce noise nuisance.
- The breaker at R16a was observed without wrapping acoustic-resistant material. The Contractor should wrap the breaker with acoustic-resistant material to reduce noise nuisance. The Contractor should also spray water during rock breaking.
- The breaker at Footbridge A was observed without wrapping acoustic-resistant material. The Contractor should wrap the breaker with acoustic-resistant material to reduce noise nuisance.
- The breaker at Lee On Road Sewer A was observed without wrapping acoustic-resistant material. The Contractor should wrap it with acoustic-resistant material to reduce noise nuisance.
- The Contractor should close the flaps of air compressor outside the ER's site office to suppress noise emission. (Reminder)

- It is reminded that the flag of air compressor at Slope C1 should be closed to reduce noise nuisance if operation starts. (Reminder)

3.3.5 Water Quality Impact

- Accumulated silt was observed in the U-channel near Footbridge A. The Contractor should remove the silt to ensure a smooth water flow.
- Stagnant muddy water was found in a trough under the Footbridge A. The Contractor should remove the water and filter out the sand before discharge.
- The slope near to the Bridge D was inspected to be lack of preventive measures against surface runoff. The Contractor should direct the foreseeable runoff towards discharge points with desilting.
- Stagnant water was observed in between the stockpiles besides Road L2. The Contractor should remove the water or fill it up with sands.
- Stagnant water was found inside the lifting eyes of concrete blocks at CP2. The Contractor should remove the water or fill up the holes to prevent accumulation.
- Rubbish was found inside the manhole at the subway located at Road L1. The Contractor should remove them to maintain environmental hygiene and to prevent mosquito breeding. And the Contractor should ensure that the contaminated surface runoff is treated before discharge.

3.3.6 Chemical and Waste Management

- Construction waste was observed accumulated on ground under Footbridge C. The Contractor should remove the waste to improve the housekeeping.
- Oil drums at Slope C1 and an air compressor at Branch M without drip trays were observed. The Contractor should provide drip trays or utilize other anti-leakage measures.
- Oil stain existed at Branch M. The Contractor should get rid of the stain and treat it as chemical waste.
- Open stockpile and construction debris were observed next to the tree at CP2. The Contractor should remove the stockpile and debris to avoid plant damage.
- Oil drums at R16a were observed to be placed without any drip trays. The Contractor should provide drip trays to any chemical containers in order to avoid chemical leakage.
- Garbage was observed around the trees situated at R16a. The Contractor should remove the garbage for better tree protection.
- The air compressor at R16a was observed to be placed without drip tray. The Contractor should provide a drip tray to the generator to prevent any oil leakage.
- The oil drum at Slope C1, the air compressor at Footbridge B and the generator at Footbridge B were observed without placing drip trays. The Contractor should provide drip trays to those equipment to avoid leaked oil from entering the drainage system.
- Rubbish and debris were observed inside the U-channel at Lee On Road Sewer A. The Contractor should remove them to maintain proper environmental hygiene and suppress mosquito breeding.
- The oil drum at R16a, and the generator and chemical containers at Lee On Road Sewer A were found without placing drip trays. Oil-water mixture was also found in the drip tray at Lee

On Road Sewer A. The Contractor should remove any empty chemical containers, provide drip trays to any filled containers, and treat the mixture before discharge.

- An oil drum at Road L2 was observed to be placed without drip trays. The Contractor should provide drip trays to any oil drums to prevent from oil leakage.
- Oil stain was found at J1. The Contractor should remove the oil stain.
- Empty oil drums were observed at Footbridge A. The Contractor should either remove them or store them in designated storage area.
- The generators and air compressors at Slope C1 were observed without placing drip trays. The Contractor should provide drip trays to them to prevent oil leakage.

3.3.7 Landscape and Visual Impact

- No specific observation was identified in the reporting quarter.

3.3.8 Miscellaneous

- The Contractor should implement tree protection measures at R16a.
- Stagnant water was observed in the U-channel at Footbridge A. The Contractor should remove the water to prevent mosquito breeding.
- The Contractor should tidy up the construction materials at Footbridge A to maintain good housekeeping.
- Construction materials were observed to be placed untidily near Footbridge B. The Contractor should tidy up them to maintain proper housekeeping.
- Construction debris and rubbish were found near the subway located at Road L1. The Contractor should remove them to maintain proper housekeeping.
- Rubbish was found inside the manhole at the subway located at Road L1. The Contractor should remove them to maintain environmental hygiene and to prevent mosquito breeding. And the Contractor should ensure that the contaminated surface runoff is treated before discharge.
- Stagnant water and sludge were found inside the drip tray at R16a. The Contractor should remove them to maintain good environmental hygiene. (Reminder)

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		
	Sep 15	**Oct 15**	**Nov 15**
Total C&D materials (m^3)	2105.57 m^3	5712.58 m^3	10921.08 m^3
Hard Rocks and Large Broken Concrete	1376.33 m^3	1323.27 m^3	2994.45 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	729.24 m^3	4389.31 m^3	7926.63 m^3
Metals	0 kg	0 kg	25000 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	404.88 tonnes	241.39 tonnes	2056.91 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

	Sep 15	Oct 15	Nov 15	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

- Dusty stockpile at R16a, Footbridge B and Footbridge C should be covered with tarpaulin or any impermeable sheeting entirely for dust suppression.
- Water or dust suppression chemical should be sprayed over the working area immediately before, during and immediately after the operation at J1 so as to maintain the entire surface wet.
- The Contractor should spray water during rock breaking at R16a.
- It was reminded to spray water over haul roads and access roads to prevent dust drifting. (Reminder)

7.1.3 Construction Noise Impact

- The breaker tip should be wrapped with acoustic-resistant materials for noisy equipment or noise barriers should be provided for noisy activities to reduce noise nuisance.
- The breaker at R16a, Footbridge A and Lee On Road Sewer A should be wrapped with acoustic-resistant material to reduce noise nuisance.
- It was reminded that the flag of air compressor at Slope C1 and outside the ER's site office should be closed to reduce noise nuisance if operation starts. (Reminder)

7.1.4 Water Quality Impact

- Stagnant water inside the lifting eyes of concrete blocks at CP2 should be removed to prevent accumulation.
- Accumulated silt in the U-channel near Footbridge A should be removed to ensure a smooth water flow.
- Stagnant muddy water in a trough under the Footbridge A should be removed. And the water should be filtered out the sand before discharge.
- The Contractor should direct the foreseeable runoff at the slope near to the Bridge D towards discharge points with desilting.
- Stagnant water in between the stockpiles besides Road L2 should be removed or filled up with sands.
- The contaminated surface runoff at the subway located at Road L1 should be treated before discharge.

7.1.5 Chemical and Waste Management

- Construction waste on ground under Footbridge C should be removed to improve the housekeeping.
- Oil drums at Slope C1 and an air compressor at Branch M should be placed with drip trays.

- Oil stain at Branch M and J1 should be removed and treated as chemical waste.
- Open stockpile and construction debris next to the tree at CP2 should be removed to avoid plant damage.
- Oil drums at R16a and Road L2 should be provided with drip trays in order to avoid chemical leakage.
- Garbage around the trees situated at R16a should be removed.
- The air compressor at R16a should be placed on top of drip trays to prevent any oil leakage.
- The oil drum at Slope C1, the air compressor at Footbridge B and the generator at Footbridge B should be provided with drip trays to avoid leaked oil from entering the drainage system.
- Rubbish and debris inside the U-channel at Lee On Road Sewer A should be removed to maintain proper environmental hygiene and to suppress mosquito breeding.
- The oil drum at R16a, and the generator and chemical containers at Lee On Road Sewer A should be provided with drip trays. Oil-water mixture in the drip tray at Lee On Road Sewer A should be also treated as chemical waste.
- Empty oil drums at Footbridge A should be removed or stored in designated storage area either.
- The generators and air compressors at Slope C1 should be provided with drip trays to prevent oil leakage.

7.1.6 Landscape and Visual Impact

- No specific observation was identified in the reporting quarter.

7.1.7 Miscellaneous

- The Contractor should implement tree protection measures at R16a.
- Stagnant water in the U-channel at Footbridge A should be removed to prevent mosquito breeding.
- Construction materials at Footbridge A and near Footbridge B should be tidied up to maintain good housekeeping.
- Construction debris and rubbish near the subway located at Road L1 should be removed to maintain proper housekeeping.
- Rubbish inside the manhole at the subway located at Road L1 should be removed to maintain environmental hygiene and to prevent mosquito breeding.
- It was reminded that stagnant water and sludge inside the drip tray at R16a should be removed to maintain good environmental hygiene. (Reminder)

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 September to November 2015, 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.

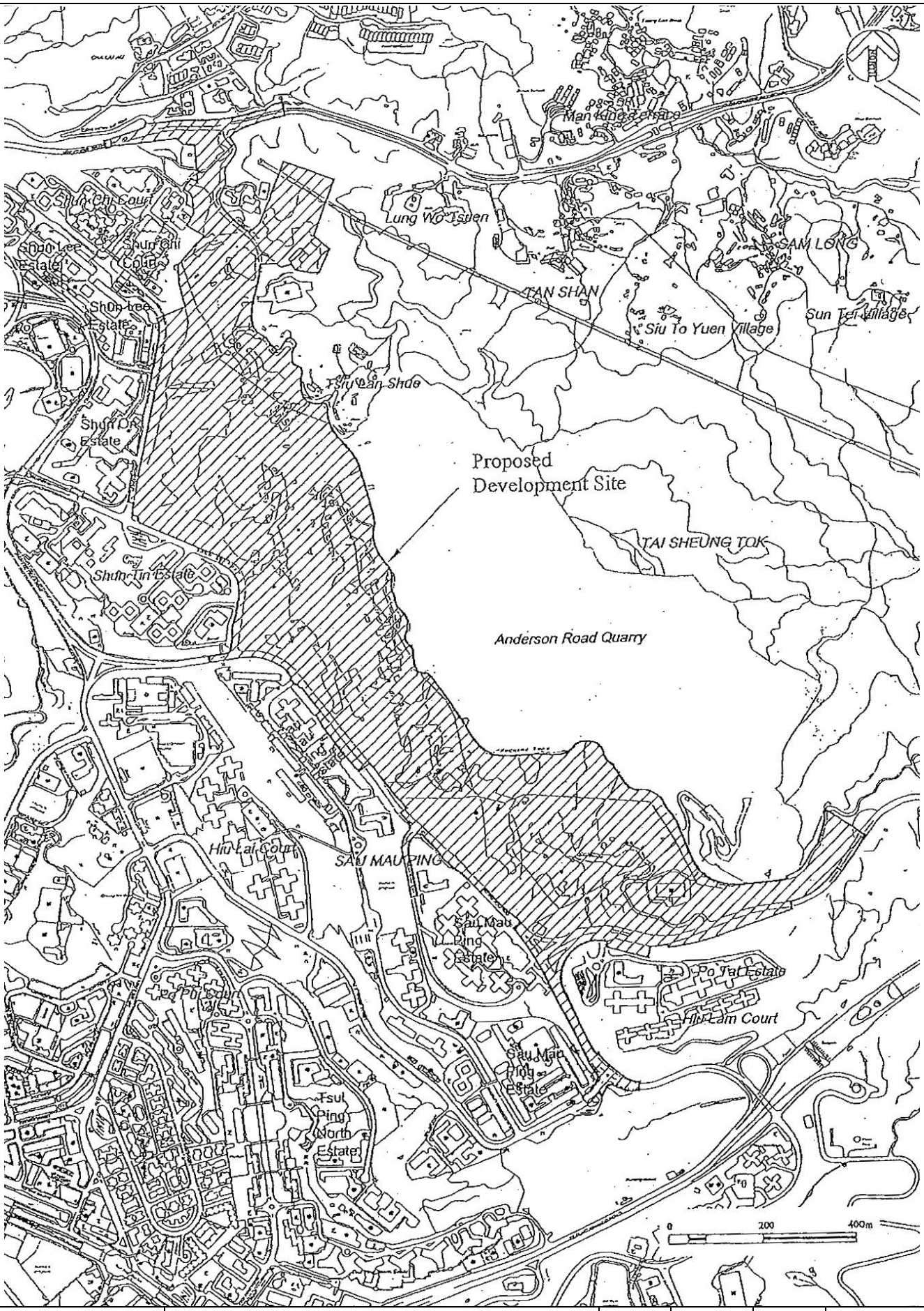
7.3.3 According to the information provided by the Contractor, no Action Level exceedance was recorded since no noise related complaint was received in the reporting period.

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
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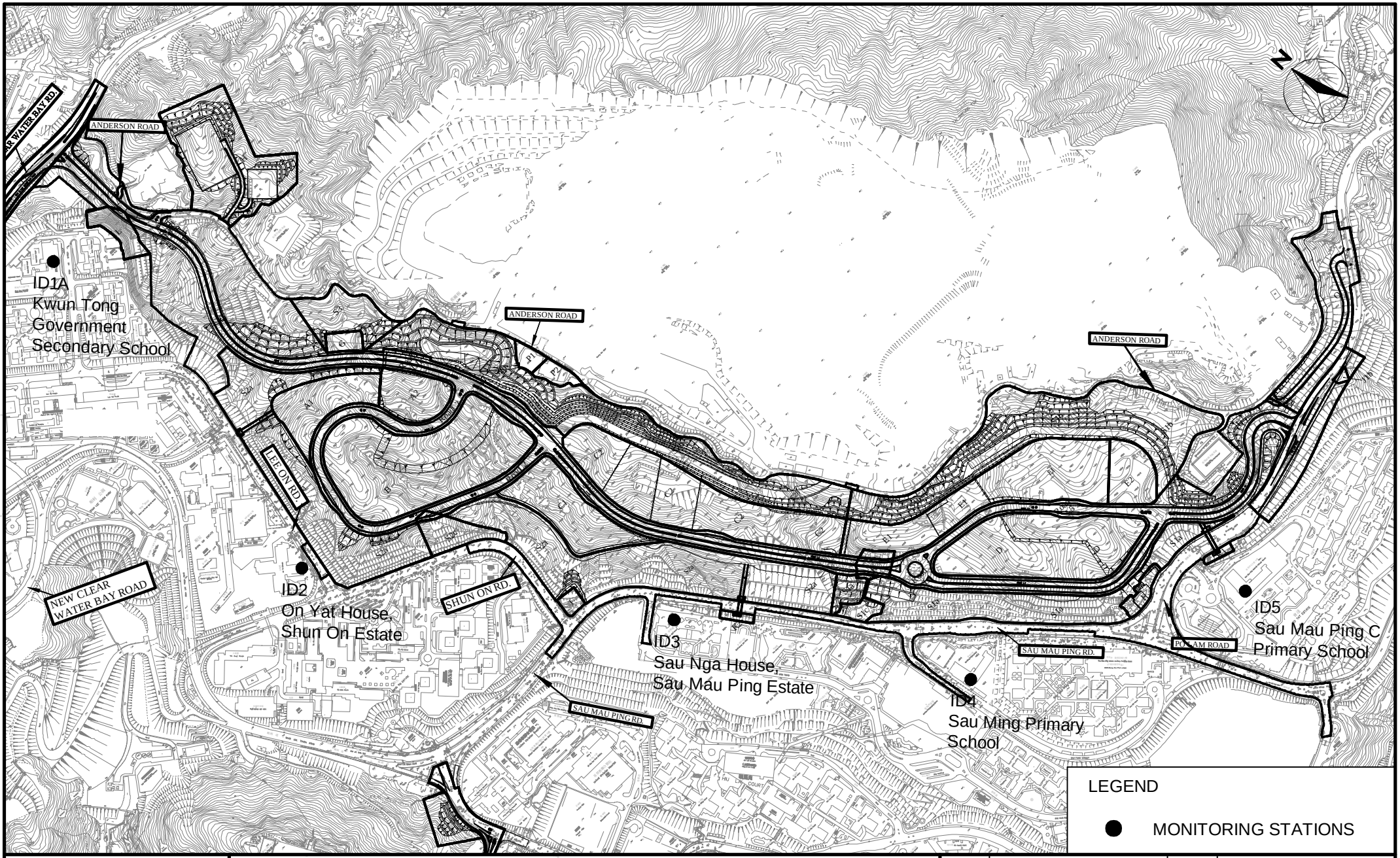
	GENERAL LAYOUT PLAN	JOB NO.	60043155	**DRAWING No.** FIG 1.1	**Rev.** -



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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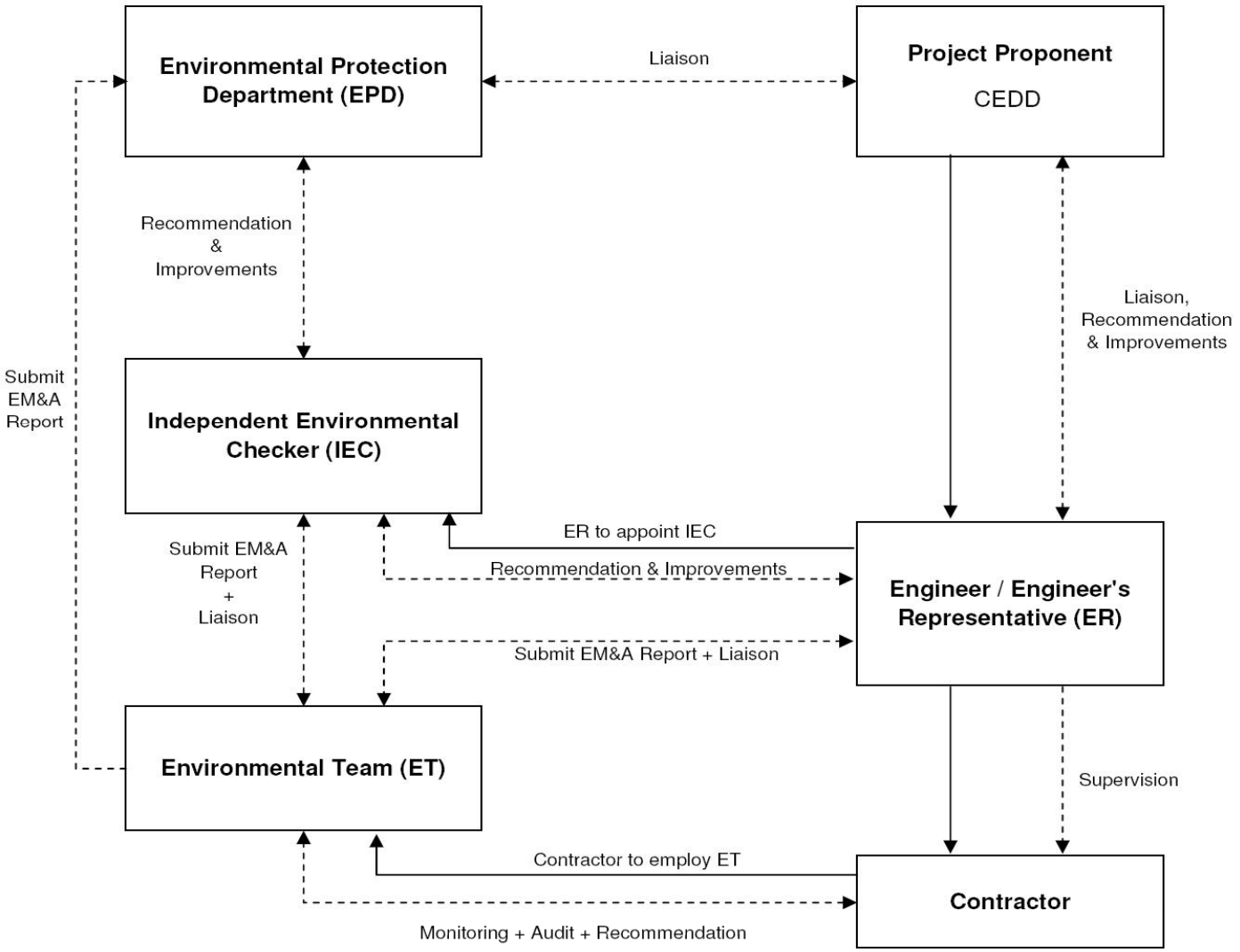
APPENDIX A

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		
			Sep 15	**Oct 15**	**Nov 15**
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
	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	V	V
	Regular watering (once every 1 hour) of all site roads and access roads with frequent truck movement.	All construction sites	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	@	@	@
	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	V
	Suitable side and tailboards on haulage vehicles.	All construction sites	V	V	V

Environmental Mitigation Measures		Location	Implementation Status		
			Sep 15	**Oct 15**	**Nov 15**
General Site Practice	Watering of temporary stockpiles.	All construction sites	@	@	@
Blasting	Use of select aggregate and fines to stem the charge with drill holes and watering of blast face.	All construction sites	V	V	V
	Use of vacuum extraction drilling methods.	All construction sites	V	V	V
	Carefully sequenced blasting.	All construction sites	V	V	V
Crushing	Fabric filters installed for the crushing plant.	All construction sites	V	V	V
	Water sprays on the crusher.	All construction sites	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		
			Sep 15	**Oct 15**	**Nov 15**
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	@	@	@
	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	@

Environmental Mitigation Measures		Location	Implementation Status		
			Sep 15	**Oct 15**	**Nov 15**
	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		
			Sep 15	**Oct 15**	**Nov 15**
	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
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		
			Sep 15	**Oct 15**	**Nov 15**
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

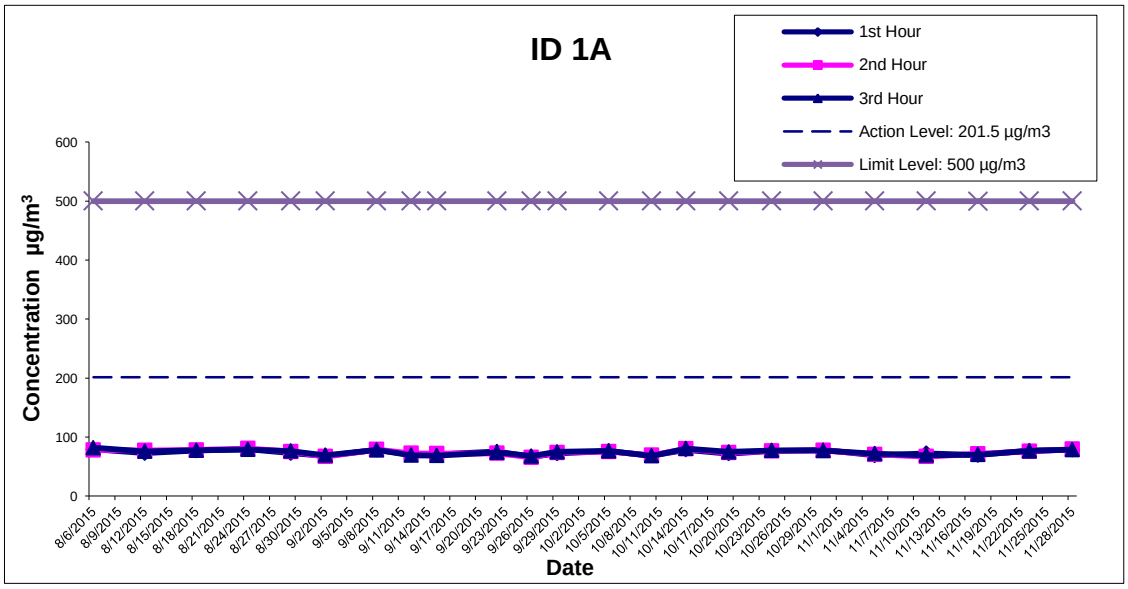
Table 3 – Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

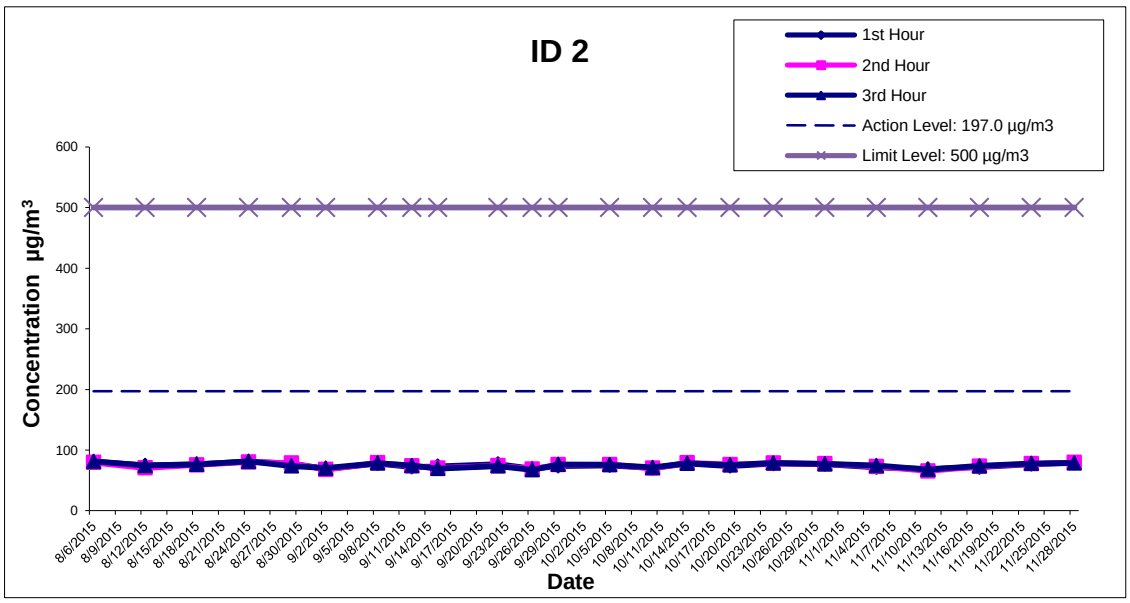
Location	Action Level	Limit Level
ID 1A	When one documented complaint is received from any one of the sensitive receivers	*65 / 70 dB(A)
ID 2		75 dB(A)
ID 3		75 dB(A)
ID 4		*65 / 70 dB(A)
ID 5		*65 / 70 dB(A)

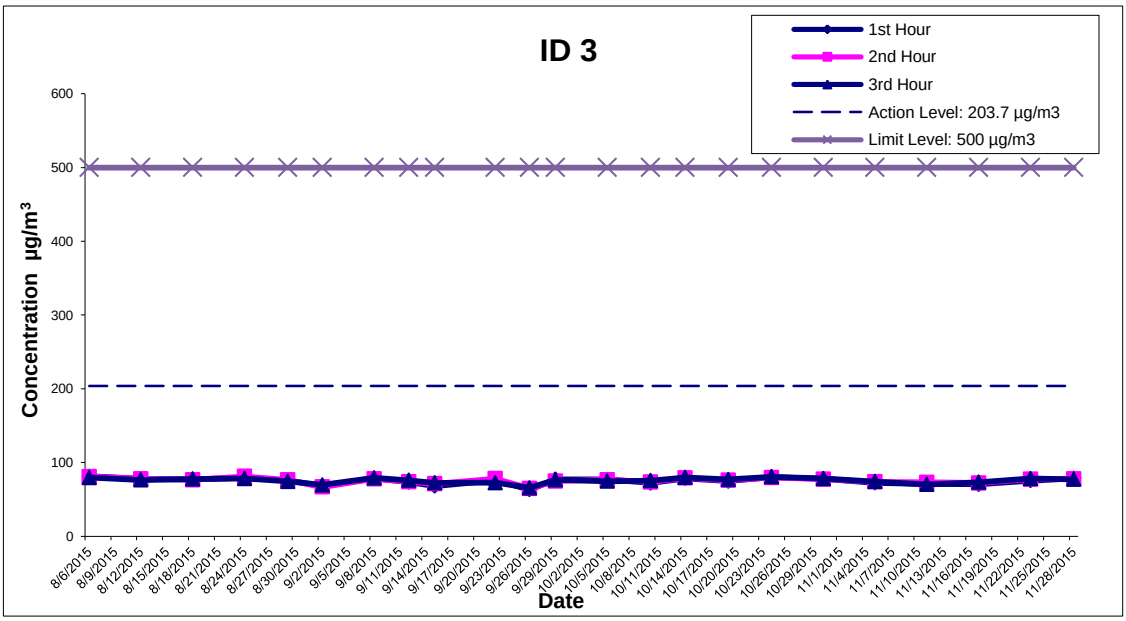
*Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period

APPENDIX D

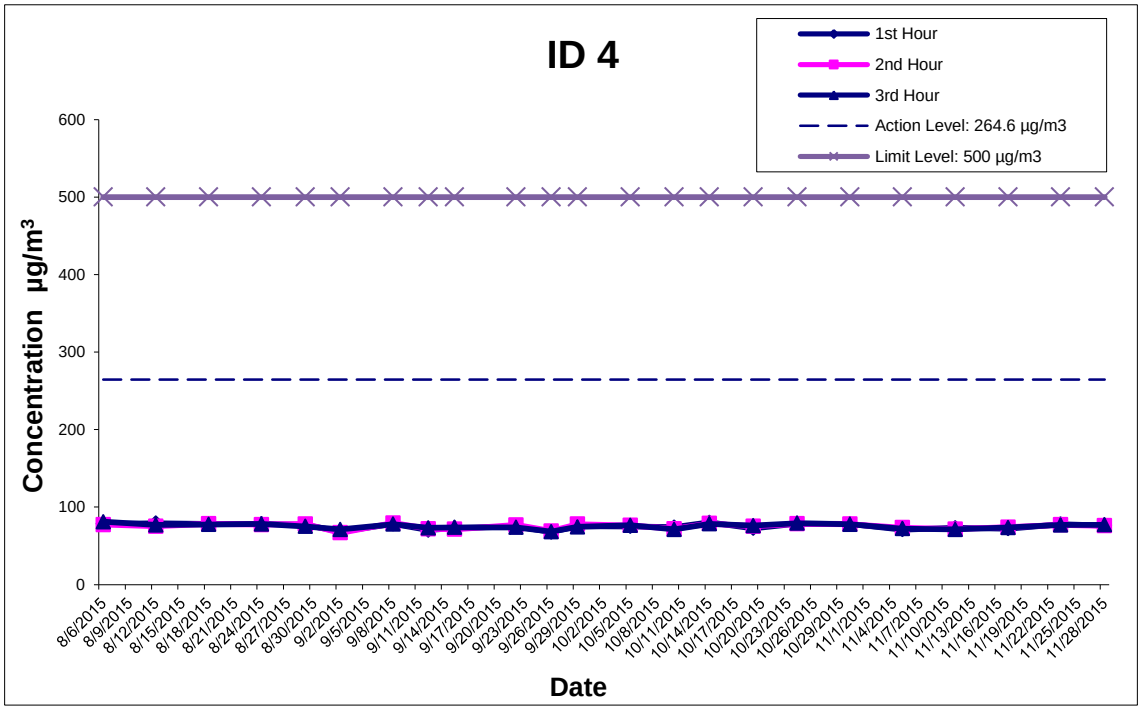
Graphical Presentation of Impact Air Quality Monitoring Results over the Past Four Months

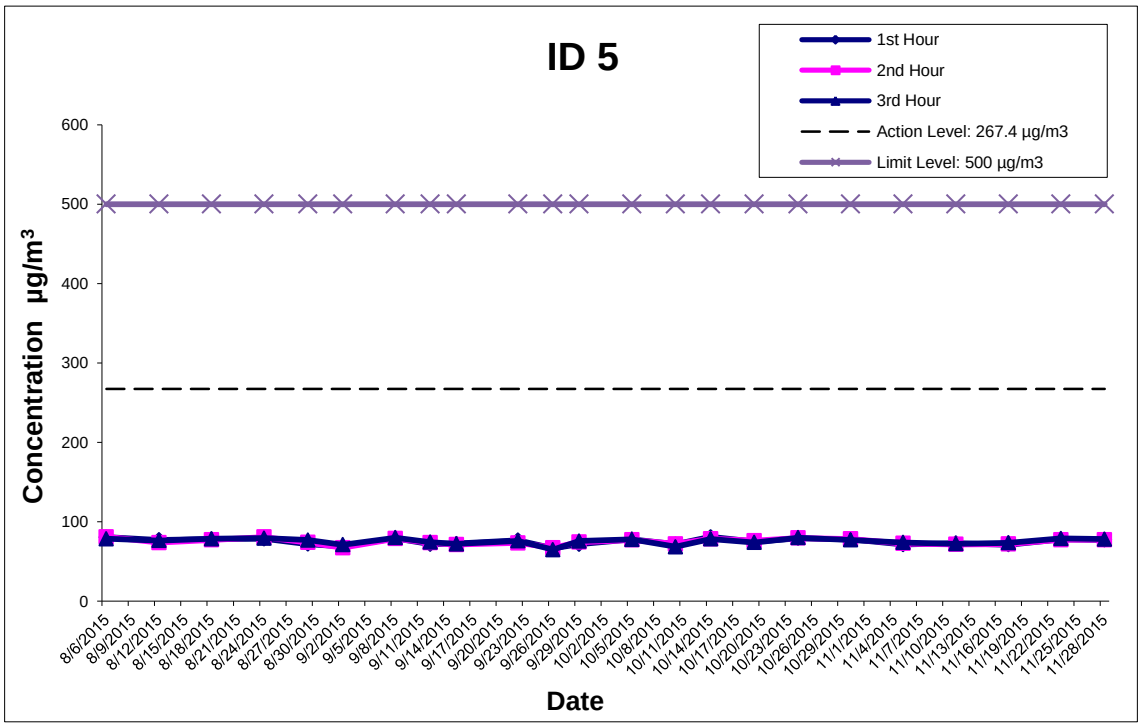






AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works** **Graphical Presentations of Impact 1-hour TSP Monitoring Results**	SCALE	N.T.S.	DATE	Dec-15
		CHECK	FYW	DRAWN	DTTW
		JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -





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	Dec-15
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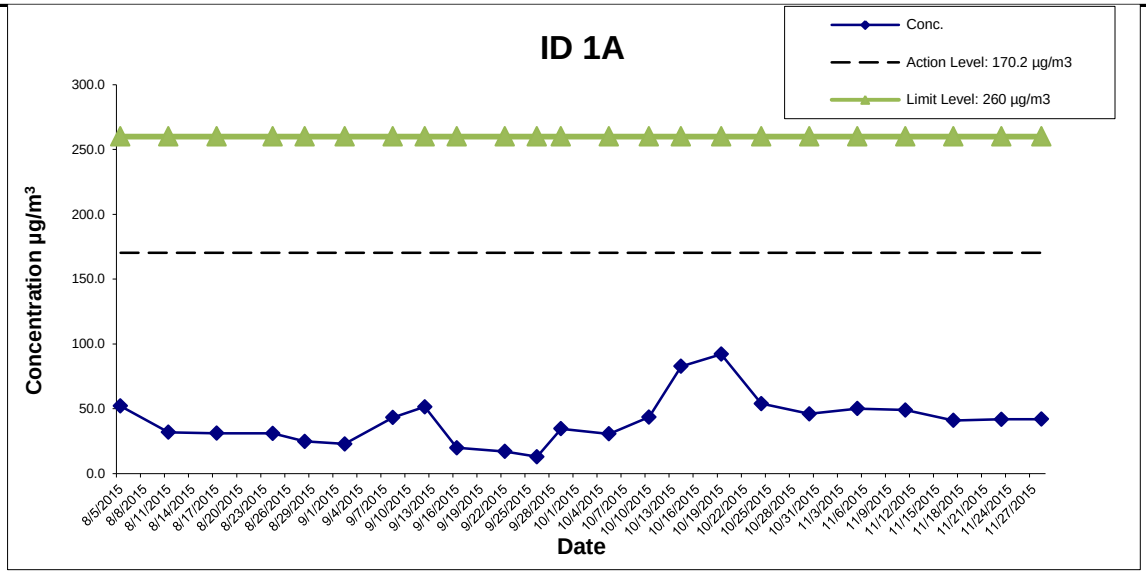
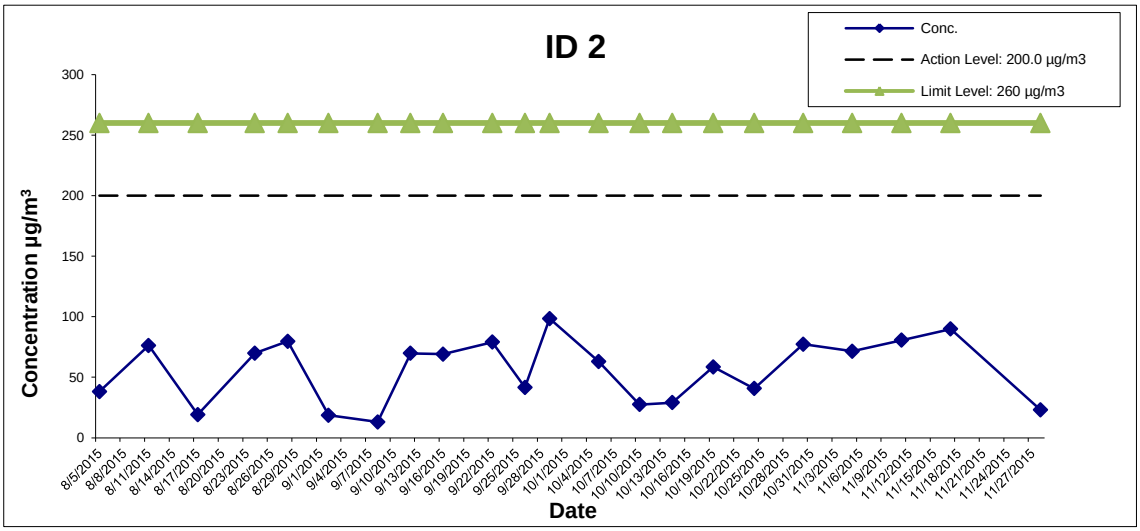
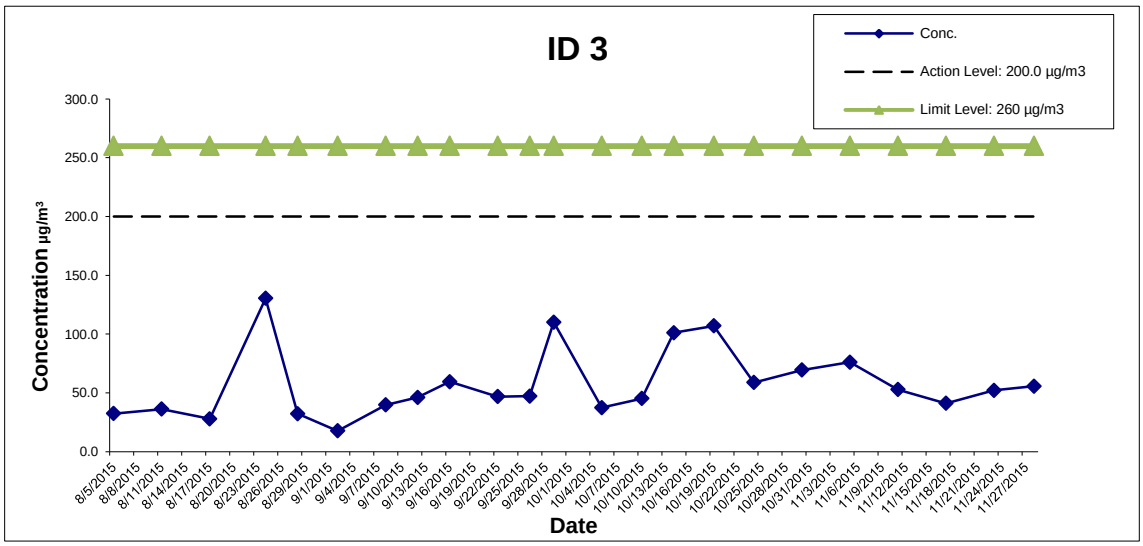
		JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -





Remark: The result of concentration sampled at ID2 on 23 November 2015 was exceptionally low compared with other monitoring stations, and thus counted as invalid.



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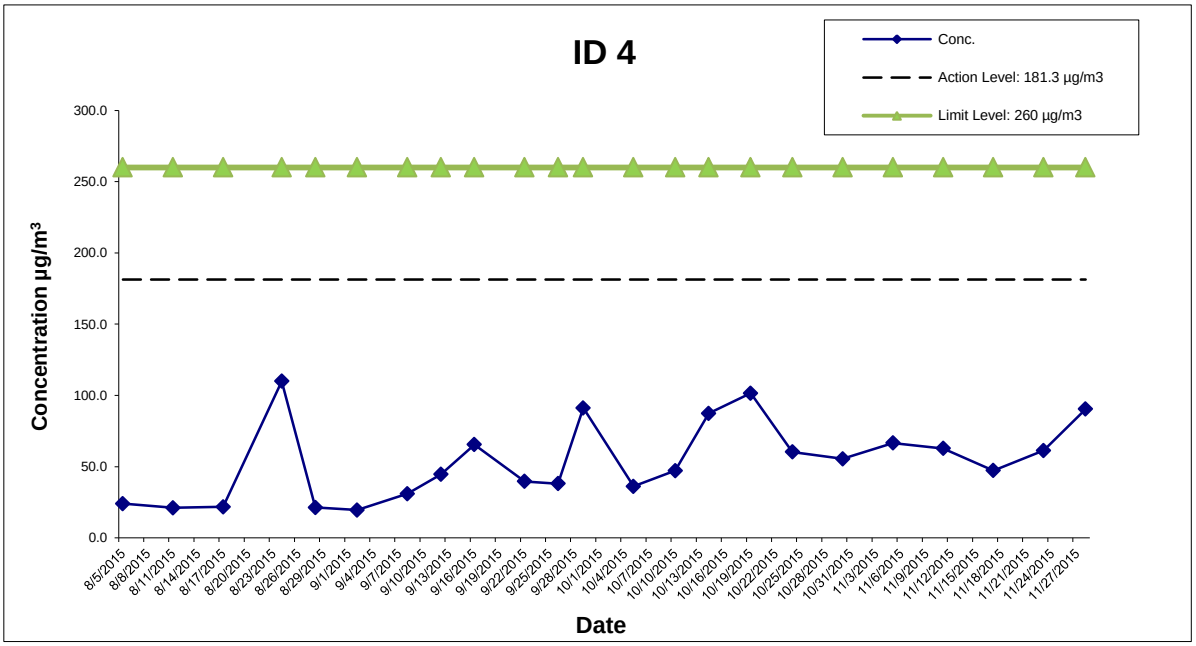
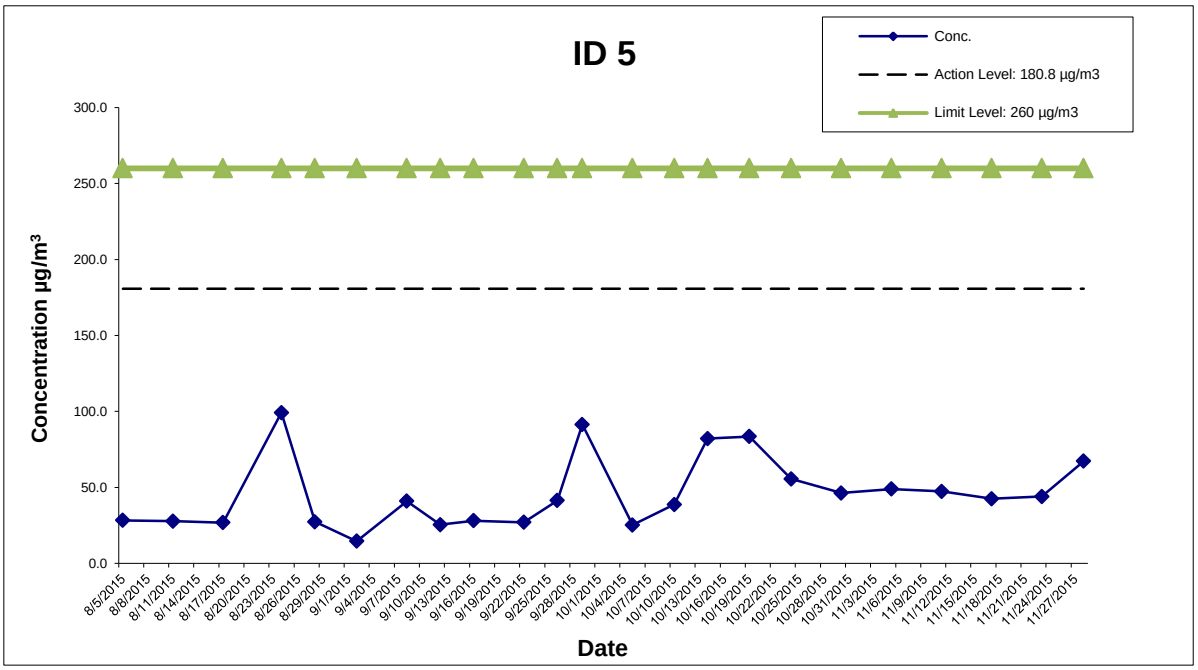
	Graphical Presentations of Impact 24-hour TSP Monitoring Results	JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -





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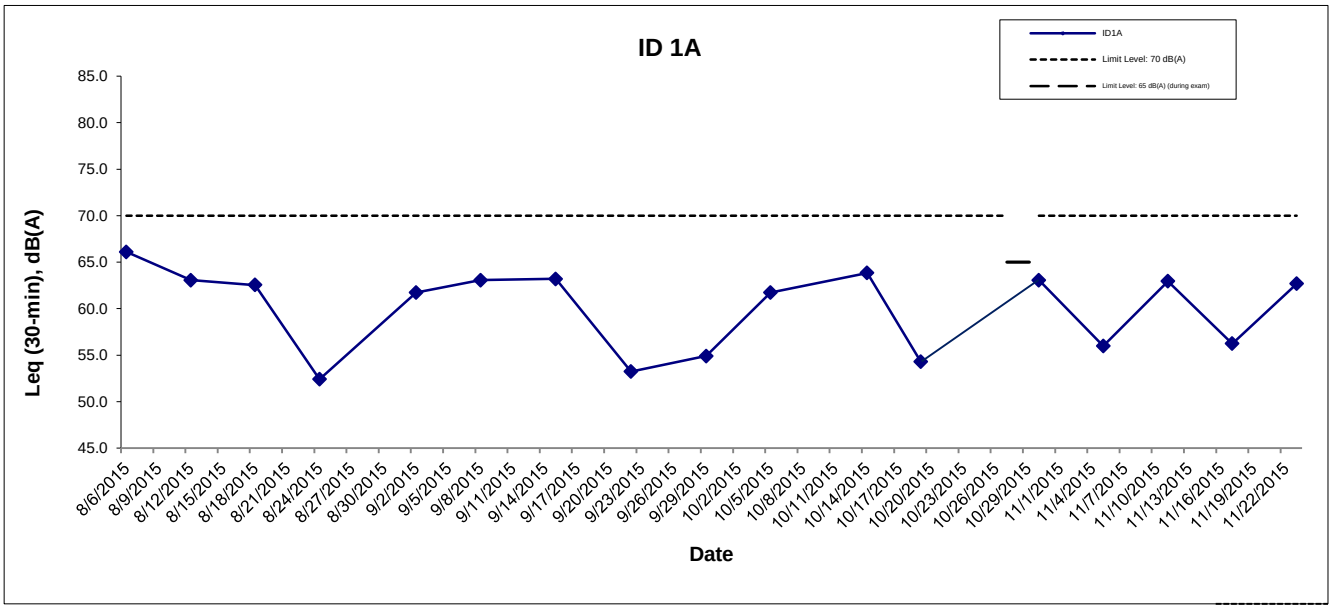
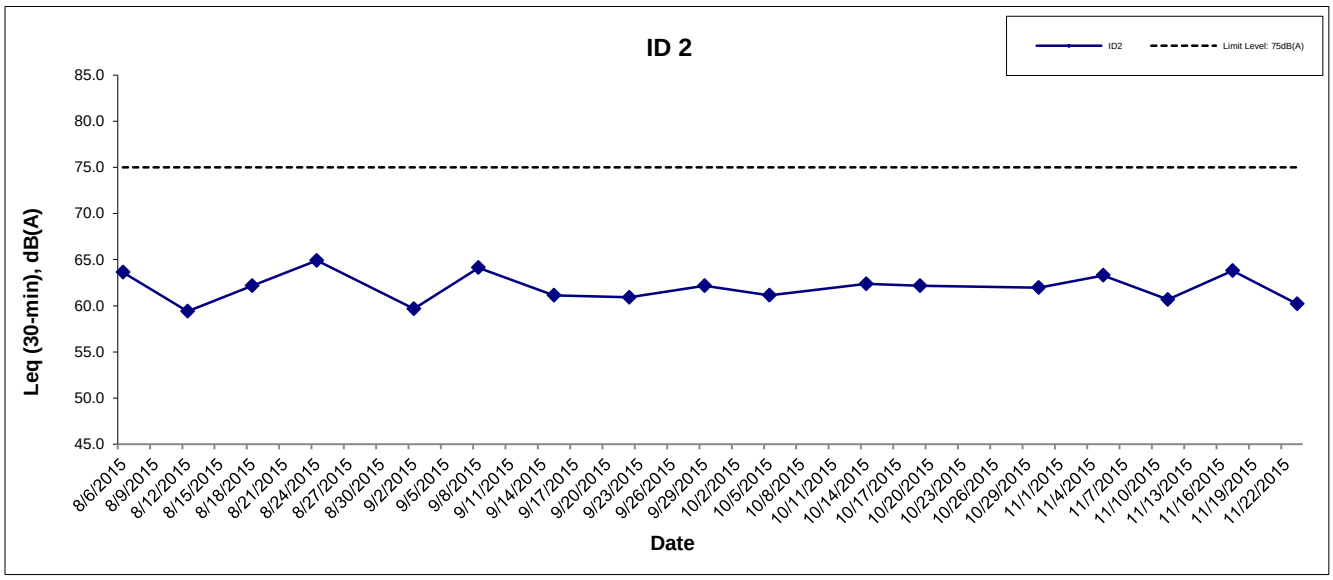
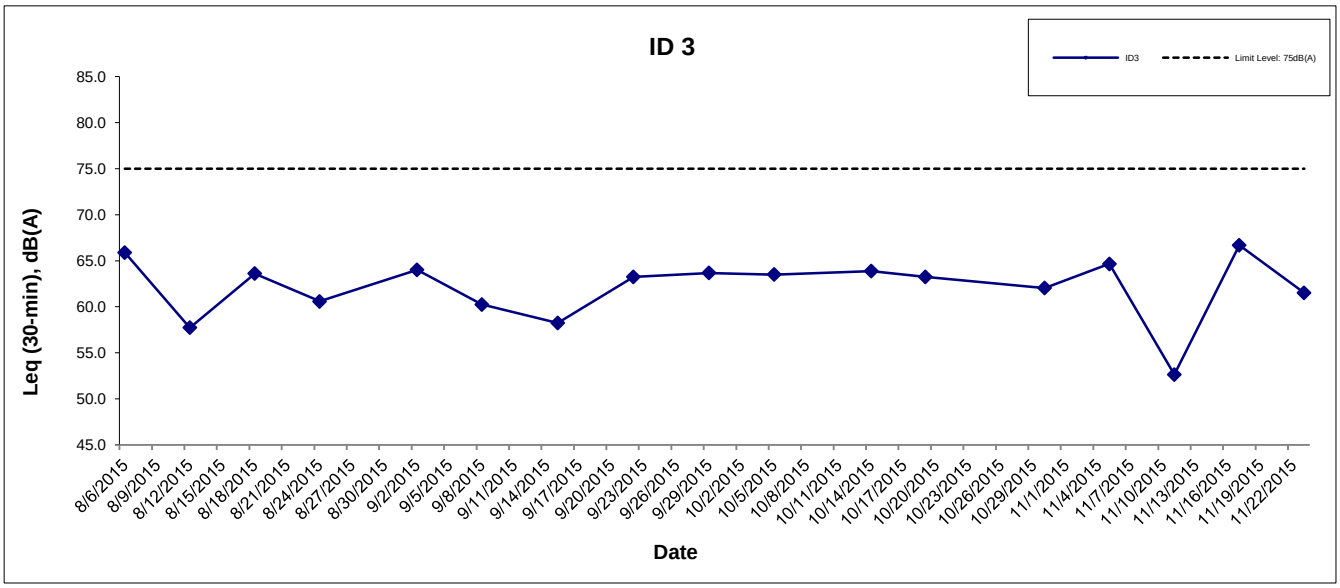
		CHECK	FYW	DRAWN	DTTW
		JOB NO.	60043155	**APPENDIX No.** F	**Rev.** -

APPENDIX E

Graphical Presentation of Noise Monitoring Results over the Past Four Months







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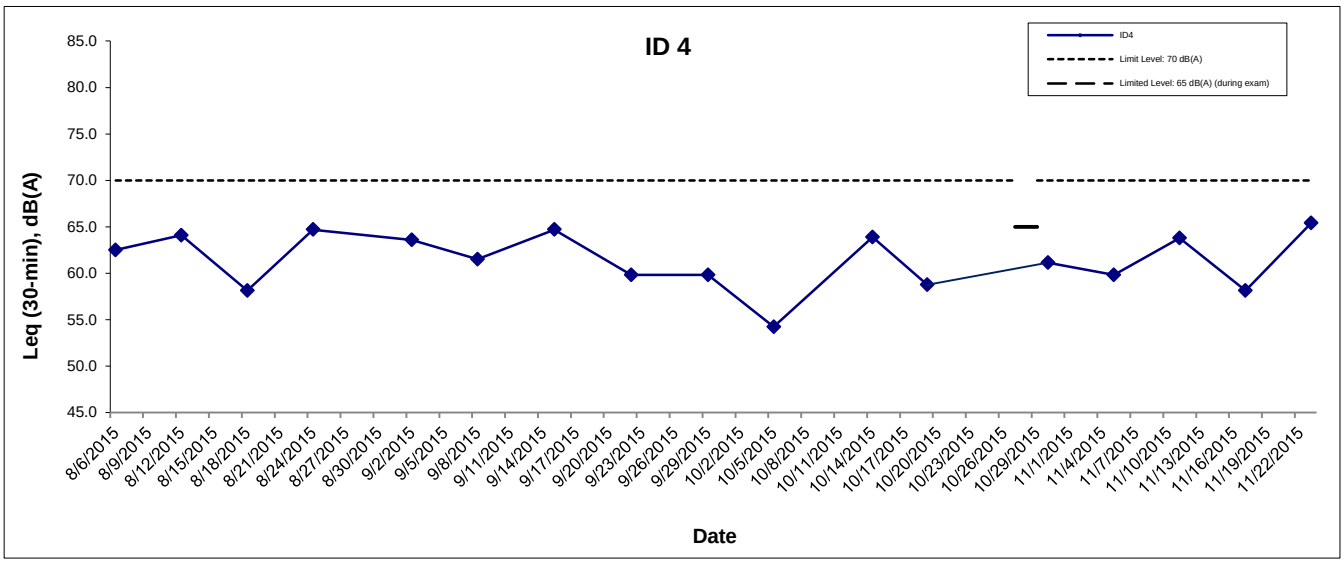
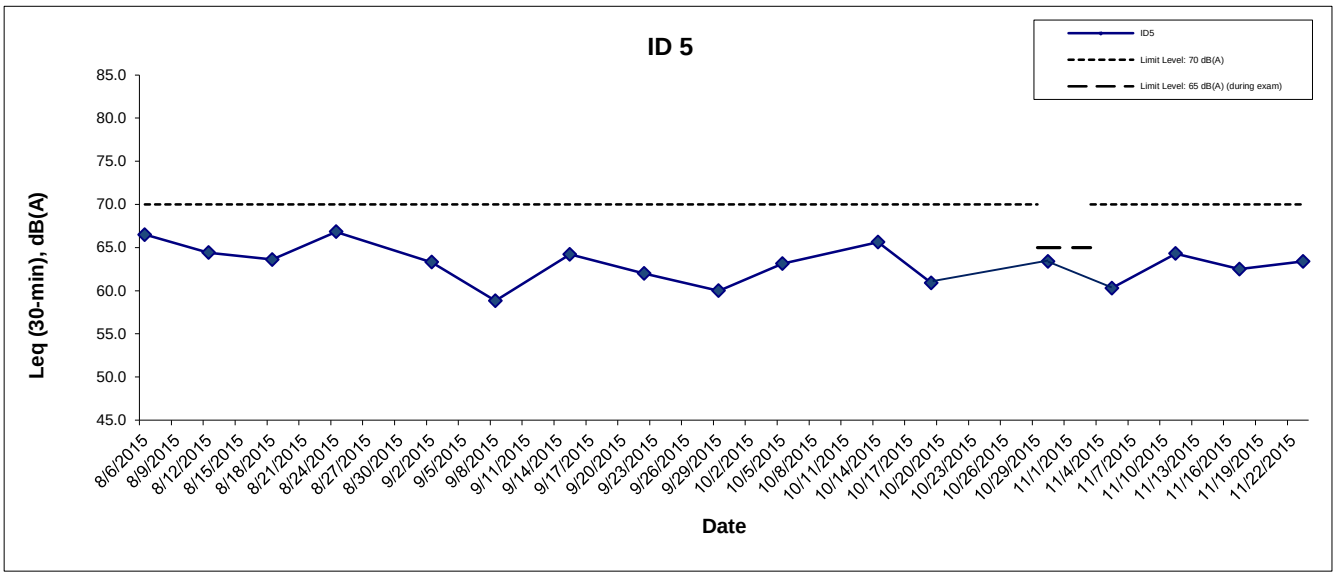
		CHECK	FYW	DRAWN	DTTW
	Graphical Presentations of Noise Monitoring Results	JOB NO.	60043155	**APPENDIX** G	**Rev** -





AECOM	**Development at Anderson Road - Site Formation and Associated Infrastructure Works**	SCALE	N.T.S.	DATE	Dec-15
		CHECK	FYW	DRAWN	DTTW
	Graphical Presentations of Noise Monitoring Results	JOB NO.	60043155	**APPENDIX** G	**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