CONTRACT NO: HK/2015/01

WANCHAI DEVELOPMENT PHASE II AND CENTRAL WANCHAI BYPASS
SAMPLING, FIELD MEASUREMENT AND TESTING WORK (STAGE 3)

ENVIRONMENTAL PERMIT NO. EP-376/2009, FURTHER ENVIRONMENTAL PERMITS NO. FEP-01/376/2009 AND FEP-02/376/2009

MONTHLY ENVIRONMENTAL MONITORING & AUDIT REPORT

- DECEMBER 2016 -

CLIENTS:

Civil Engineering and Development Department

PREPARED BY:

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CERTIFIED BY:

Raymond Dai

Environmental Team Leader

DATE:

13 January 2017



Ref.: AACWBIECEM00_0_8937L.17

13 January 2017

By Post and Fax (2691 2649)

AECOM Asia Company Limited 11/F Tower 2 Grand Central Plaza 138 Shatin Rural Committee Road Shatin New Territories Hong Kong

Attention: Mr. Conrad Ng

Dear Mr. Na.

Re: Contract No. HK/2015/01 Wan Chai Development Phase II - Central-Wan Chai Bypass Sampling, Field Measurement and Testing Works (Stage 3)

Monthly Environmental Monitoring and Audit Report (December 2016) for EP-376/2009, FEP-01/376/2009 and FEP-02/376/2009

Reference is made to the Environmental Team's submission of the captioned Monthly Environmental Monitoring and Audit (EM&A) Report for December 2016 received by e-mail on 13 January 2017 for our review and comment.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned submission in accordance with Condition 3.4 in the captioned Environmental Permit.

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

Yours sincerely,

David Yeung

Independent Environmental Checker

C.C.

CEDD

Attn: Mr. Stephen Lo

by fax: 2577 5040

Lam

Attn: Mr. Raymond Dai

by fax: 2882 3331

AECOM

Attn: Mr. Francis Leong/ Stephen Lai by fax: 2691 2649

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EXECUTIVE SUMMARY

- i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report December 2016 specific for Environmental Permit no. EP-376/2009 and Further Environmental Permit no. FEP-01/376/2009. The EM&A report is prepared by the Environmental Team (ET) employed under Contract No. HK/2015/01 Wan Chai Development Phase II and Central Wanchai Bypass Sampling, Field Measurement and Testing Works (Stage 3). This report presents the environmental monitoring findings and information recorded during the period of 27th November 2016 to 26th December 2016. The cut-off date of reporting is at 26th of each reporting month.
- ii. In the reporting month, the principal work activities of the contract are included as follows:
 Contract no. HK/2012/08 Wan Chai Development Phase II Central- Wan Chai Bypass at Wan Chai West
 - Drainage

Noise Monitoring

- iii. Noise monitoring was conducted at M1a Harbour Road Sports Centre.
- iv. With respect to the shift in major construction site portions at Wan Chai North, the noise monitoring station M1a – Harbour Road Sports Centre was finely adjusted from East of Harbour Road Sports Centre to West of Harbour Road Sports Centre on 21 June 2016.
- v. No action or limit level exceedance was recorded in this reporting month.

Air Quality Monitoring

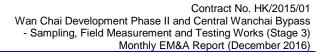
- vi. 1-hour and 24-hour Total Suspended Particulates (TSP) monitoring were conducted on every six days basis at CMA5b and CMA6a Contractor HK/2012/08 Site Office.
- vii. One action level exceedance of 24hr TSP monitoring was recorded at monitoring station CMA5b Pedestrian Plaza on 7 December 2016 in this reporting month. Investigation found that the exceedance was not related to Project works.
- viii. One action level exceedance of 1hr TSP monitoring was recorded at monitoring station CMA5b
 Pedestrian Plaza on 14 December 2016 in this reporting month. Investigation found that the exceedance was not related to Project works.

Complaints, Notifications of Summons and Successful Prosecutions

ix. No environmental complaint was received in this reporting month.

Site Inspections and Audit

x. The Environmental Team (ET) conducted weekly site inspection for Contract no. HK/2012/08 in this reporting period. The Contractors rectified major observations and recommendations made during the audit sessions. No non-conformance was identified during the site inspections.





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Future Key Issues

xi. In the coming reporting month, the principal work activities of the contract is anticipated as follows:

Contract no. HK/2012/08 – Wan Chai Development Phase II – Central- Wan Chai Bypass at Wan Chai West

Drainage

1 INTRODUCTION

1.1 Scope of the Report

- 1.1.1. Lam Geotechnics Limited (LGL) has been appointed take up the role as the Environmental Team (ET) under Environmental Permit no. EP-376/2009 and Further Environmental Permit no. FEP-01/376/2009 to implement the Environmental Monitoring and Audit (EM&A) programme as stipulated in the EM&A Manual of the approved Environmental Impact Assessment (EIA) Report for Wan Chai Development Phase II and Central-Wan Chai Bypass (Register No.: AEIAR-458/2008).
- 1.1.2. This report documents the finding of EM&A works for Environmental Permit (EP) no. EP-376/2009 and Further Environmental Permit no. FEP-01/376/2009, during the period of 27th November 2016 to 26th December 2016. The cut-off date of reporting is the 26th of each reporting month.

1.2 Structure of the Report

- **Section 1** *Introduction* details the scope and structure of the report.
- **Section 2** *Project Background* summarizes background and scope of the project, site description, project organization and contact details of key personnel during the reporting period.
- **Section 3 Status of Regulatory Compliance** summarizes the status of valid Environmental Permits / Licenses during the reporting period.
- **Section 4** *Monitoring Requirements* summarizes all monitoring parameters, monitoring methodology and equipment, monitoring locations, monitoring frequency, criteria and respective event and action plan and monitoring programmes.
- **Section 5** *Monitoring Results* summarizes the monitoring results obtained in the reporting period.
- **Section 6 Compliance Audit** summarizes the auditing of monitoring results, all exceedances environmental parameters.
- Section 7 Cumulative Construction Impact due to the Concurrent Projects summarizes the relevant cumulative construction impact due to the concurrent activities of the concurrent Projects.



Section 8	Environmental Site Audit – summarizes the findings of weekly site
	inspections undertaken within the reporting period, with a review of any
	relevant follow-up actions within the reporting period.

Section 9 Complaints, Notification of summons and Prosecution – summarizes the cumulative statistics on complaints, notification of summons and prosecution

Section 10 Conclusion

2 PROJECT BACKGROUND

2.1 Background

2.1.1 Wan Chai Development phase II and Central-Wan Chai Bypass (hereafter called "the Project") are Designated Project (DP) under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). The Environmental Impact Assessment (EIA) Report for Wan Chai Development phase II and Central-Wan Chai Bypass (Register No.: AEIAR-125/2008) has been approved on 11 December 2008.

2.2 Scope of the Project and Site Description

- 2.2.1. The design and construction of Wan Chai Development Phase II and Central Wanchai Bypass involves the construction and operation of primary and district distributor roads that is shown at *Figure 2.1*.
- 2.2.2. The key purpose of the study area encompasses the Wan Chai harbourfront area. The area starts at the boundary of Central Reclamation Phase III (CRIII) at the west and connects to the existing Hung Hing Road at the east. The scope of the project includes:
 - A dual 2-lane primary distributor road, Road P2, approximately 0.6km in length; and
 - Other new primary and district distributor roads connecting to the slip roads of the Central-Wan Chai Bypass with a total length of approximately 0.7km.
- 2.2.3. The project also contains various Schedule 2 DP that, under the EIAO, require Environmental Permits (EPs) to be granted by the DEP before they may be either constructed or operated. *Table 2.1* summarises the DP under this Project. *Figure 2.1* shows the locations of these Schedule 2 DP.

Table 2.1 Schedule 2 Designated Project under this Project

Item	Designated Project	EIAO Reference	
DP2	Road P2 and other roads which are classified as	Schedule 2, Part I, A.1	
	primary/district distributor roads		

2.2.4. The designated project work II (DP2) was awarded to China State-Leader Joint Venture HK/2012/08 (Contract Title: Wan Chai Development Phase II Central – Wan Chai Bypass at Wan Chai West) as part of the Project works by the Civil Engineering and Development Department (CEDD). The construction work under Contract no. HK/2012/08 was commenced on 13 May 2015.

2.3 Project Organization and Contact Personnel

2.3.1 Civil Engineering and Development Department and Highway Department are the overall project controllers for the Wan Chai Development Phase II and Central-Wan Chai Bypass



respectively. For the construction phase of the Project, Project Engineer, Contractor(s), Environmental Team and Independent Environmental Checker are appointed to manage and control environmental issues.

2.3.2 The proposed project organization and lines of communication with respect to environmental protection works are shown in *Figure 2.2*. Key personnel and contact particulars are summarized in *Table 2.2*:

Table 2.2 Contact Details of Key Personnel

Party	Role	Post	Name	Contact No.	Contact Fax
AECOM	Engineer's Representative for WDII	Principal Resident Engineer	Mr. Frankie Fan	2587 1778	2587 1877
	Engineer's Representative for CWB	Principal Resident Engineer	Mr. Peter Poon	3922 3388	3912 3010
China State- Leader JV	Contractor under Contract	Project Director	C. N. LAI	9106 5806	2877 1522
	no. HK/2012/08	Project Manager	Mr. Eddie Chung	9189 8118	
		Site Agent	Mr. Keith Tse	9037 1839	
		Environmental Officer	Mr. James Ma	9130 9549	
		Environmental Supervisor	Mr. Y. L. HO	9856 5669	
Ramboll Environ Hong Kong Limited	Independent Environmental Checker (IEC)	Independent Environmental Checker (IEC)	Mr. David Yeung	3465 2888	3465 2899
Lam Geotechnics Limited	Environmental Team (ET)	Environmental Team Leader (ETL)	Mr. Raymond Dai	2882 3939	2882 3331

- 2.3.3 In this reporting month, the principal work activities of the contract is included as follows:
 Contract no. HK/2012/08 Wan Chai Development Phase II Central- Wan Chai Bypass at Wan Chai West
 - Drainage
- 2.3.4 In coming reporting month, the principal work activities of the contract is anticipated as follows:



Contract no. HK/2012/08 – Wan Chai Development Phase II – Central- Wan Chai Bypass at Wan Chai West

Drainage

3 STATUS OF REGULATORY COMPLIANCE

3.1 Status of Environmental Licensing and Permitting under the Project

3.1.1. A summary of the current status on licences and/or permits on environmental protection pertinent to the Project is shown in *Table 3.1*.

Table 3.1 Summary of the current status on licences and/or permits on environmental protection pertinent to the Project

Permits and/or Licences	Reference No.	Issued Date	Status
Environmental Permit	EP-376/2009	13 Nov 2009	Valid
Further Environmental Permit	FEP-01/376/2009	31 Mar 2015	Valid
Further Environmental Permit	FEP-02/376/2009	1 Aug 2016	Valid

3.1.2. The current status on licences and/or permits on environmental protection pertinent for contract no. HK/2012/08 under FEP-01/376/2009 showed in *Table 3.2*. and *Table 3.3*

Table 3.2 Cumulative Summary of Valid Licences and Permits under Contract no. HK/2012/08

Permits and/or Licences	Reference No.	Issued Date	Valid Period/ Expiry Date	Status
Further Environmental Permit	FEP-01/376/2009	31 Mar 2015	N/A	Valid
	FEP-02/376/2009	1 Aug 2016	N/A	Valid
Notification of Works Under APCO	355439	4 Feb 2013	N/A	Valid
Registration as a Chemical Waste Producer	5213-134-C3790-01	30 Jun 2016	N/A	Valid
Billing Account under Waste Disposal Ordinance	7016883	18 Feb 2013	18 Jul 2017	Valid
Water Discharge Licence	WT00018470-2014	6 Mar 2014	31 Mar 2019	Valid



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Permits and/or Licences	Reference No.	Issued Date	Valid Period/ Expiry Date	Status
Construction Noise Permit	GW-RS0746-16	12 Jul 2016	14 Jul 2016 to 12 Jan 2017	Valid
	GW-RS0736-16	12 Jul 2016	14 Jul 2016 to 12 Jan 2017	Valid

Table 3.3 Summary of submission status under FEP-01/376/2009 Condition

EP Condition	Submission	Date of Submission
Condition 2.9 Noise Management Plan (Rev. 2)		Generally in order as commented by EPD on 27 Oct 2015
Condition 2.10	Landscape Plan (Rev. 0)	Generally in order as commented by EPD on 5 Aug 2015

3.1.3. Implementation status of the recommended mitigation measures during this reporting month is presented in *Appendix 3.1*.



4 MONITORING REQUIREMENTS

4.1 Noise Monitoring

NOISE MONITORING STATION

4.1.1. The noise monitoring station for the Project is listed and shown in *Table 4.1* and *Figure 4.1*.

Appendix 4.1 shows the established Action/Limit Levels for the monitoring works.

Table 4.1 Noise Monitoring Station

District	Station	Description
Wan Chai	M1a	Harbour Road Sports Centre

NOISE MONITORING PARAMETERS, FREQUENCY AND DURATION

- 4.1.2. The construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (Leq). Leq (30 minutes) shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, Leq (5 minutes) shall be employed for comparison with the Noise Control Ordinance (NCO) criteria. Supplementary information for data auditing, statistical results such as L10 and L90 shall also be obtained for reference.
- 4.1.3. Noise monitoring shall be carried out at all the designated monitoring stations. The monitoring frequency shall depend on the scale of the construction activities. The following is an initial guide on the regular monitoring frequency for each station on a weekly basis when noise generating activities are underway:
 - One set of measurements between 0700 and 1900 hours on normal weekdays.

MONITORING EQUIPMENT

- 4.1.4. As referred to in the Technical Memorandum ™ issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agrees to within 1.0 dB.
- 4.1.5. Noise measurements shall not be made in fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.



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4.2 Air Quality Monitoring

AIR QUALITY MONITORING STATIONS

4.2.1. The air quality monitoring stations for the Project are listed and shown in *Table 4.2* and *Figure*4.1. Appendix 4.1 shows the established Action/Limit Levels for the monitoring works.

Table 4.2 Air Quality Monitoring Stations

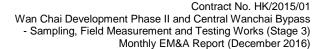
Station ID	Description
CMA5b	Pedestrian Plaza
CMA6a	WDII PRE Site Office

AIR QUALITY MONITORING PARAMETERS, FREQUENCY AND DURATION

- 4.2.2. One-hour and 24-hour TSP levels should be measured to indicate the impacts of construction dust on air quality. The 24-hour TSP levels shall be measured by following the standard high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B.
- 4.2.3. All relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any other local atmospheric factors affecting or affected by site conditions, etc., shall be recorded down in detail.
- 4.2.4. For regular impact monitoring, the sampling frequency of at least once in every six-days, shall be strictly observed at all the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six-days should be undertaken when the highest dust impact occurs.

SAMPLING PROCEDURE AND MONITORING EQUIPMENT

- 4.2.5. High volume samplers (HVSs) in compliance with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:
 - 0.6 1.7 m³ per minute adjustable flow range;
 - Equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
 - Installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
 - Capable of providing a minimum exposed area of 406 cm2;
 - Flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
 - Equipped with a shelter to protect the filter and sampler;
 - Incorporated with an electronic mass flow rate controller or other equivalent devices;
 - Equipped with a flow recorder for continuous monitoring;





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- Provided with a peaked roof inlet;
- Incorporated with a manometer;
- Able to hold and seal the filter paper to the sampler housing at horizontal position;
- · Easily changeable filter; and
- Capable of operating continuously for a 24-hour period.
- 4.2.6. Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at bi-monthly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The concern parties such as IEC shall properly document the calibration data for future reference. All the data should be converted into standard temperature and pressure condition.

LABORATORY MEASUREMENT / ANALYSIS

- 4.2.7. A clean laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments to handle the dust samples collected, shall be available for sample analysis, and equipment calibration and maintenance. The laboratory should be HOKLAS accredited.
- 4.2.8. Filter paper of size 8" x 10" shall be labelled before sampling. It shall be a clean filter paper with no pinholes, and shall be conditioned in a humidity-controlled chamber for over 24-hours and be pre-weighed before use for the sampling.
- 4.2.9. After sampling, the filter paper loaded with dust shall be kept in a clean and tightly sealed plastic bag. The filter paper shall then be returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with readout down to 0.1 mg. The balance shall be regularly calibrated against a traceable standard.
- 4.2.10. All the collected samples shall be kept in a good condition for 6 months before disposal.
- 4.2.11. Current calibration certificates of equipment are presented in *Appendix 4.2*.

5 MONITORING RESULTS

- 5.0.1. The environmental monitoring will be implemented based on the division of works areas of the designated project managed under the contract with FEP applied by individual contractors. Overall layout showing work areas of various contracts, latest status of work commencement and monitoring stations is shown in <u>Figure 2.1</u> and <u>Figure 4.1</u>. The monitoring results are presented in according to the Individual Contract(s).
- 5.0.2. In the reporting month, the concurrent contract is:
 - Contract no. HK/2012/08 Wan Chai Development Phase II Central Wan Chai Bypass at Wan Chai West.
- 5.0.3. The environment monitoring schedules for reporting month and coming month are presented in *Appendix 5.1*.

5.1 Noise Monitoring Results

5.1.1 The proposed division of noise monitoring station is summarized in *Table 5.1* below.

Table 5.1 Noise Monitoring Station for Contract no. HK/2012/08

Location ID	District	Description
M1a	Wan Chai	Harbour Road Sports Centre

- 5.1.2 No action or limit level exceedance was recorded in this reporting month.
- 5.1.3 The noise monitoring results measured in this reporting period are reviewed and summarized.

 Details of the noise monitoring results and graphical presentation can be referred to <u>Appendix</u>

 5.2.

5.2 Air Quality Monitoring Results

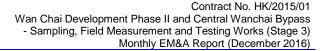
5.2.1 The proposed division of air quality monitoring stations are summarized in *Table 5.2* below.

Table 5.2 Air Quality Monitoring Station for Contract no. HK/2012/08

Station	Description
CMA5b	Pedestrian Plaza
CMA6a	WDII PRE Site Office

5.2.2 One action level exceedance of 24hr TSP monitoring was recorded at monitoring station CMA5b – Pedestrian Plaza on 7 December 2016 in this reporting month.

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- 5.2.3 After checking with the contractor, no construction activity under EP-376/2009 was undertaken on 7 December 2016 at around Pedestrian Plaza and no particular observation regarding air quality impact was observed during sampling. In view of the above, the action level exceedance was considered to be non-project related and potentially contributed by local ambient condition and other potential sources such as traffic road exhaust next to the monitoring station.
- 5.2.4 One action level exceedance of 1hr TSP monitoring was recorded at monitoring station CMA5b
 Pedestrian Plaza on 14 December 2016 in this reporting month.
- 5.2.5 After checking with the contractor, no construction activity under EP-376/2009 was undertaken on 14 December 2016 at around Pedestrian Plaza and no particular observation regarding air quality impact was observed during sampling. In view of the above, the action level exceedance was considered to be non-project related and potentially contributed by local ambient condition and other potential sources such as traffic road exhaust next to the monitoring station.
- 5.2.6 The air quality monitoring results measured in this reporting period are reviewed and summarized. Details of air quality monitoring results and graphical presentation can be referred in *Appendix 5.3*.

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5.3 WASTE MONITORING RESULTS

5.3.1 No Inert and non-inert C&D wastes disposed in this reporting month. Details of the waste flow table are summarized in *Table 5.3*.

Table 5.3 Details of Waste Disposal for Contract no. HK/2012/08

Waste Type	Quantity this month	Cumulative Quantity- to-Date	Disposal / Dumping Grounds
Inert C&D materials disposed, m3	NIL	NIL	NIL
Inert C&D materials recycled, m3	NIL	NIL	NIL
Non-inert C&D materials disposed, m3	NIL	NIL	NIL
Non-inert C&D materials recycled, m3	NIL	NIL	NIL
Chemical waste disposed, kg	NIL	NIL	NIL



6 COMPLIANCE AUDIT

6.0.1. The Event Action Plan for construction noise and air quality are presented in Appendix 6.1.

6.1 Noise Monitoring

6.1.1 No action or limit level exceedance was recorded in this reporting month.

6.2 Air Quality Monitoring

- 6.1.1. One action level exceedance of 24hr TSP monitoring was recorded at monitoring station CMA5b Pedestrian Plaza on 7 December 2016 in this reporting month.
- 6.1.2. After checking with the contractor, no construction activity under EP-376/2009 was undertaken on 7 December 2016 at around Pedestrian Plaza and no particular observation regarding air quality impact was observed during sampling. In view of the above, the action level exceedance was considered to be non-project related and potentially contributed by local ambient condition and other potential sources such as traffic road exhaust next to the monitoring station.
- 6.1.3. One action level exceedance of 1hr TSP monitoring was recorded at monitoring station CMA5b
 Pedestrian Plaza on 14 December 2016 in this reporting month.
- 6.1.4. After checking with the contractor, no construction activity under EP-376/2009 was undertaken on 14 December 2016 at around Pedestrian Plaza and no particular observation regarding air quality impact was observed during sampling. In view of the above, the action level exceedance was considered to be non-project related and potentially contributed by local ambient condition and other potential sources such as traffic road exhaust next to the monitoring station.

6.3 Review of the Reasons for and the Implications of Non-compliance

6.3.1 There was no non-compliance from the site audits in the reporting period. The observations and recommendations made in each individual site audit session were presented in Section 8.

6.4 Summary of action taken in the event of and follow-up on non-compliance

6.4.1 There was no particular action taken since no non-compliance was recorded from the site audits in the reporting period.



7 CUMULATIVE CONSTRUCTION IMPACT DUE TO THE CONCURRENT PROJECTS

- 7.0.1. According to the Condition 3.4 of the EP-376/2009, this section addresses the relevant cumulative construction impact due to the concurrent activities of the current projects including the Central Reclamation Phase III (CRIII), Wan Chai Development Phase II (WDII), Central-WanChai Bypass (CWB), Island Eastern Corridor Link projects (IECL) and Wan Chai Development Phase II Central Wan Chai Bypass at Wan Chai East (CWB Tunnel).
- 7.0.2. According to the Final EM&A report of Central Reclamation Phase III (CRIII) for Contract HK 12/02, the major construction activities were completed by end of January 2014 and no construction activities were undertaken thereafter and the water quality monitoring was completed in October 2011. As such, it is considered that there were no cumulative construction impact due to the concurrent activities of the current projects with the Central Reclamation Phase III (CRIII) undertaken by contractor HK12/02 in the reporting month.
- 7.0.3. According to the construction programme of Central-Wanchai Bypass at Wanchai West at the Central Reclamation Phase III area include road works and backfilling works were performed in December 2016 reporting month. As no project related exceedance were recorded during the reporting period, cumulative construction impact due to the concurrent activities of the current projects with the Central Reclamation Phase III (CRIII) was considered as insignificant.
- 7.0.4. According to the construction programme of Wan Chai Development Phase II, Central-Wan Chai Bypass and Island Eastern Corridor Link projects, the major construction activities under Wan Chai Development Phase II were, road and drains, building demolition and tunnel works at Wan Chai East, tunnel construction and backfilling works and ELS works at Wan Chai West. The major construction activities under Central-Wan Chai Bypass and Island Eastern Corridor Link Projects were road works and ventilation building construction at Central Interchange, temporary reclamation removal works at Ex-PCWAW, ELS works and retaining wall construction at Victoria Park, ELS works and tunnel works at TS3, bridge construction, piling and tunnel works at North Point area in the reporting month. In addition, other non-Wan Chai Development Phase II, Central-Wan Chai Bypass and Island Eastern Corridor Link projects was observed undertaken at Wan Chai North and North Point area.
- 7.0.5. No significant air impact from construction activities was anticipated in the reporting month. Besides, no project related exceedance was recorded during the water, air and noise environmental monitoring events in the reporting month. Thus, it is evaluated that the cumulative construction impact from the concurrent projects including Central Reclamation Phase III (CRIII), Wan Chai Development Phase II (WDII), Central-WanChai Bypass (CWB), Island Eastern Corridor Link projects (IECL) was insignificant.



8 ENVIRONMENTAL SITE AUDIT

8.0.1. Four site inspections for Contract no. HK/2012/08 were carried out on 29 November 2016, 6, 13 and 20 December 2016 in this reporting period. The results of inspection and outcome are summarized in *Table 8.1.*

Table 8.1 Summary of Environmental Inspections for Contract no. HK/2012/08

Item	Date	Observations	Action taken by	Outcome
			Contractor	
161129_01	29 Nov 2016	Drip tray shall be provided for	Drip tray is provided	Completion as
		oil container near Gate Exit at	for oil container at	observed on 6
		Zone D.	Zone D.	December
				2016
161213_01	13 Dec 2016	Discharge was observed at	There are	Completion as
		Zone D. Contractor is needed	wastewater	observed on
		to ensure the wastewater	discharge licences	20 December
		discharge licence has	under the project	2016
		covered the conditions of the	contract for water	
		concerned discharge.	discharge.	
161220_01	20 Dec 2016	Contractor shall ensure the	Pending for follow	Pending for
		discharge at Slip Road 1 is	up action by the	follow up
		following the terms and	Contractor	action by the
		condition of the wastewater		Contractor
		discharge licence.		

COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION 9

- 9.0.1. No environmental complaint was received in the reporting period.
- 9.0.2. The details of cumulative complaint log and updated summary of complaints are presented in Appendix 9.1
- 9.0.3. Cumulative statistic on complaints and successful prosecutions are summarized in Table 9.1 and Table 9.2 respectively.

Table 9.1 Cumulative Statistics on Complaints

Reporting Period	No. of Complaints
Commencement works (May 2015) to last reporting month	0
December 2016	0
Total	0

Table 9.2 Cumulative Statistics on Successful Prosecutions

Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative No. Project-to-Date
Air	0	0	0
Noise	0	0	0
Water	0	0	0
Waste	0	0	0
Total	0	0	0

10 CONCLUSION

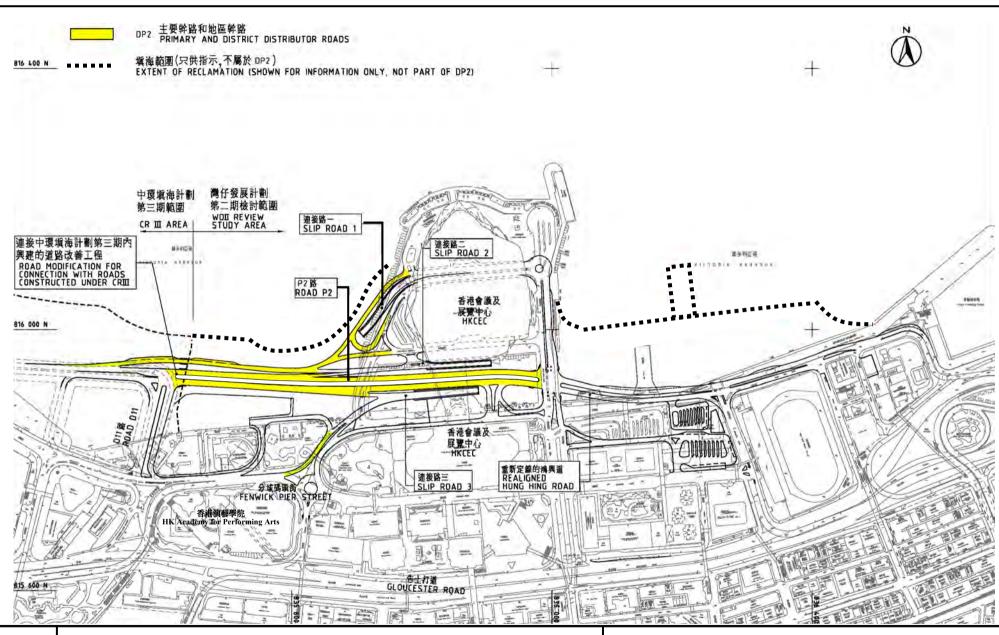
- 10.0.1. The EM&A programme was carried out in accordance with the EM&A Manual requirements, minor alterations to the programme proposed were made in response to changing circumstances.
- 10.0.2. The scheduled construction activities and the recommended mitigation measures for the coming month are listed in *Table 10.1*. The construction programmes of individual contracts are provided in *Appendix 10.1*.

Table 10.1 Summary of Key Construction Activities of Individual Contract(s) to be commenced in Coming Reporting Month

Contract No.	Key Construction Works	Recommended Mitigation Measures
HK/2012/08	Drainage	 Dust control during dust generating works; Implementation of proper noise pollution control; and Provision of protection to ensure no runoff out of site area or direct discharge into public drainage system.

Figure 2.1

Project Layout





Project Title : Road P2 and other roads which are classified as primary/district distributor roads (referred to as "DP2" in the WDII&CWB EIA Report)

工程項目名稱: P2 路及其他分類爲主要幹路或地區幹路的道路(WDII&CWB 環評報告內稱 "DP2")

Environmental Permit No.: EP-376/2009 環境許可證編號 : EP-376/2009 Figure 1: Location of the Project

圖 1: 工程項目位置圖

(This figure was prepared based on Figure 1.2b of the WDII&CWB EIA report (Register No.: AEIAR-125/2008)) (本圖是根據 WDII&CWB 環評報告(登記冊編號 AEIAR-125/2008)圖 1.2b 編制)

Figure 2.2

Project Organization Chart

Project Organization Chart

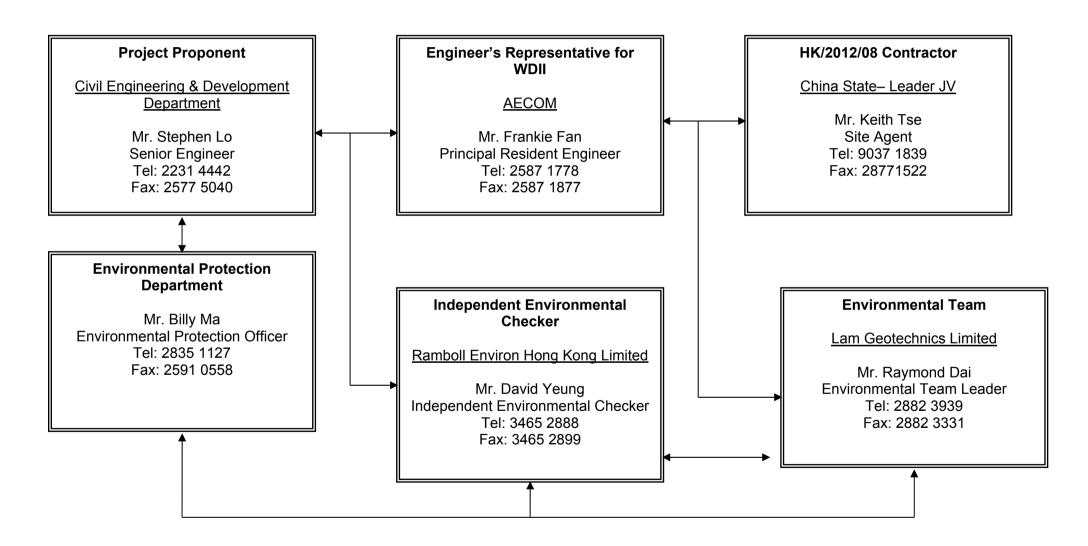
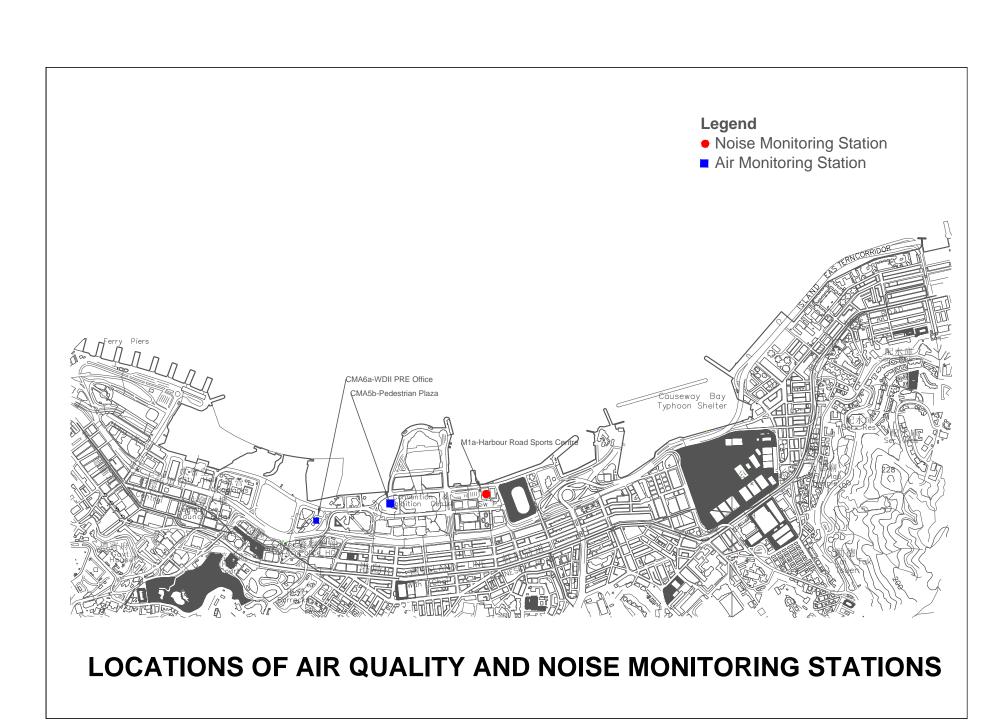


Figure 4.1

Locations of Monitoring Stations



Appendix A

Table A13.1 Implementation Schedule for Air Quality Control

Table A13.2 Implementation Schedule for Noise Control

Table A13.3 Implementation Schedule for Water Quality Control

Table A13.4 Implementation Schedule for Waste Management

Table A13.7 Implementation Schedule for Landscape and Visual

Appendix 3.1

Environmental Mitigation Implementation Schedule

IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

Table A13.1 Implementation Schedule for Air Quality Control

EIA Ref	Environmental Protection Measures /	Location / Timing	Implementation Agent	Impl	ement	ation	stage	Relevant Legislation and Guidelines
	Mitigation Measures			Des	C	О	Dec	
Constructio	n Phase							
For the Who	ole Project							
S3.6.5	Four times a day watering of the work site with active operations.	Work site / during construction	Contractor		1			EIAO-TM
S3.8.1	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimise cumulative dust impacts. Strictly limit the truck speed on site to below 10 km per hour and water spraying to keep the haul roads in wet condition; Watering during excavation and material handling; Provision of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads where necessary; and Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.	Work site / during construction	Contractor		V			

Des - Design, C - Construction, O - Operation, and Dec - Decommissioning

Table A13.2 Implementation Schedule for Noise Control

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	Impl	lemen	tation :	stage	Relevant Legislation and Guidelines
			Agent	Des	C	О	Dec	
Constructio	n Phase		L			<u> </u>		
For the Who	ole Project							
S4.9.4	Good Site Practice: Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program. Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program. Mobile plant, if any, shall be sited as far away from NSRs as possible. Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum. Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from onsite construction activities.	Work site / during construction	Contractor		V			EIAO-TM, NCO
S4.8.3 – S4.8.4	Use of quiet powered mechanical equipment, movable noise barrier and temporary noise barrier for the	Work site / during construction	Contractor		V			EIAO-TM, NCO
	following tasks: Temporary road diversion Resurfacing At-grade roadwork							

[•] Des - Design, C - Construction, O – Operation, and Dec – Decommissioning

Table A13.3 Implementation Schedule for Water Quality Control

EIA Ref	Environmental Protection Measures /	Location / Timing	Implementation	Implementation stage				Relevant Legislation
	Mitigation Measures		Agent	Des	C	0	Dec	and Guidelines
Construction	n Phase		1			I		
For the Who	le Project							
For the Who S5.8	Construction Runoff and Drainage use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow; Permanent drainage channels shall incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94; a sediment tank constructed from preformed individual cells of approximately 6 - 8 m3 capacity can be used for settling ground water prior to disposal; Oil interceptors shall be provided in the drainage system for the tunnels and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor shall have a bypass to prevent flushing during periods of heavy rain; precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention shall be paid to the control of any silty surface runoff during storm events; On-site drainage system shall be installed prior to the commencement of other	Work site / during construction	Contractor					ProPECC PN 1/94; WPCO (TM-DSS)

	installed in order to minimise the sediment loading of the effluent prior to discharge; All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge shall be adequately designed for the controlled release of storm flows. All sediment control measures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage shall be reinstated to its original condition when the construction work is finished or the temporary diversion is no longer required. All fuel tanks and store areas shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity. Minimum distances of 100 m shall be maintained between the storm water discharges				
S5.8	and the existing or planned WSD flushing water intakes during construction phase. Sewage from Construction Work Force Construction work force sewage discharges on site shall be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage shall be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Work site / during construction	Contractor	N	ProPECC PN 1/94; WPCO (TM-DSS)

<u>EP-376/2009</u> EM&A Manual

S5.8	Floating Debris and Refuse	Work site and	Contractor			WPCO
	Collection and removal of floating refuse shall	adjacent water /				
	be performed at regular intervals on a daily	During the				
	basis. The contractor shall be responsible for	construction period.				
	keeping the water within the site boundary and					
	the neighbouring water free from rubbish.					
S5.8	Storm Water Discharges	Work site and	Contractor	 		WPCO
	Minimum distances of 100 m shall be	adjacent water				
	maintained between the existing or planned	/ During the design				
	stormwater discharges and the existing or	and construction				
	planned WSD flushing water intakes.	period.				

• Des - Design, C - Construction, O – Operation, and Dec – Decommissioning

Table A13.4 Implementation Schedule for Waste Management

EIA Ref	Environmental Protection Measures /	Location / Timing	Implementation	Imp	lemen	tation	stage	Relevant Legislation
	Mitigation Measures		Agent	Des	C	О	Dec	and Guidelines
Construction	on Phase		<u>l</u>	1				<u> </u>
For the Who	ole Project							
S6.7.7	Good Site Practices Recommendations for good site practices during the construction activities include: nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; training of site personnel in proper waste management and chemical waste handling procedures; provision of sufficient waste disposal points and regular collection for disposal; appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and a recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).	Work site / During planning and design stage, and construction stage	Contractor					
S.6.7.8	Waste Reduction Measures Recommendations to achieve waste reduction include: • Sort C&D waste from demolition of the existing waterfront structures to recover	Work site / During planning and design stage, and construction stage	Contractor	V	V			

	 recyclable portions such as metals. Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal. Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force. Any unused chemicals or those with remaining functional capacity shall be recycled. Use of reusable non-timber formwork, such as in casting the tunnel box sections, to reduce the amount of C&D material. Proper storage and site practices to minimise the potential for damage or contamination of construction materials. Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. 					
S6.7.10	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material. A collection area shall be provided where wastes can be stored and loaded prior to removal from site. An enclosed and covered area is recommended to reduce the occurrence of 'wind	Work site / During the construction period	Contractor	V	Public Health and Municipal Services Ordinance (Cap. 13	

S6.7.11	Chemical Wastes After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) shall be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals shall be collected by a licensed collector for disposal at the CWTF or other licensed facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Work site / During the construction period	Contractor	V	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
S6.7.12 – S6.7.13	Construction and Demolition Material C&D material shall be sorted on-site into inert C&D material (that is, public fill) and C&D waste. All the suitable inert C&D material shall be broken down to 250 mm in size for reuse as public fill in the WDII reclamation. C&D waste, such as wood, glass, plastic, steel and other metals shall be reused or recycled and, as a last resort, disposed of to landfill. A suitable area shall be designated to facilitate the sorting process and a temporary stockpiling area will be required for the separated materials.	Work site / During the construction period	Contractor and Independent Environmental Checker	V	DEVB TCW No.6/2010; ETWB TCW No. 33/2002; ETWB TCW No. 19/2005
	In order to monitor the disposal of public fill and C&D waste at public fill reception facilities and landfills, respectively, and to control fly tipping, a trip-ticket system shall be included as one of the contractual requirements and implemented by the Environmental Team undertaking the environmental monitoring and audit work. An Independent Environment Checker shall be responsible for auditing the results of the system.				
S6.7.14	Bentonite Slurry The disposal of residual used bentonite slurry shall follow the good practice guidelines stated	Work site / During the construction period	Contractor	V	ProPECC PN 1/94

EP-376/2009 EM&A Manual in ProPECC PN 1/94 "Construction Site Drainage" and listed as follows: If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis. If the used bentonite slurry is intended to be disposed of through the public drainage system, it shall be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the Technical Memorandum of Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters. If the used bentonite slurry is intended to be disposed to public fill reception facilities, it will be mixed with dry soil on site before disposal.

• Des - Design, C - Construction, O – Operation, and Dec – Decommissioning

Table A13.7 Implementation Schedule for Landscape and Visual

EIA Ref	Environmental Protection Measures /	Location / Timing	Implementation	Imp	lemen	tation	stage	Relevant Legislation
	Mitigation Measures		Agent	Des	C	0	Dec	and Guidelines
Construction	n Phase		1		1			
For the Who	le Project							
Table 10.5	CM1 Topsoil, where identified, shall be stripped and stored for re-use in the construction of the soft landscape works, where practical.	Work site / During Construction Phase	Contractor	V	1			EIAO TM
Table 10.5	CM2 Existing trees to be retained on site shall be carefully protected during construction.	Work site / During Construction Phase	Contractor	V	V			EIAO TM
Table 10.5	CM3 Trees unavoidably affected by the works shall be transplanted where practical.	Work site / During Construction Phase	Contractor	1	1			EIAO TM
Table 10.5	CM4 Compensatory tree planting shall be provided to compensate for felled trees.	Work site / During Construction Phase	Contractor	1	1			EIAO TM
Table 10.5	CM5 Control of night-time lighting.	Work site / During Construction Phase	Contractor		1			EIAO TM
Table 10.5	CM6 Erection of decorative screen hoarding compatible with the surrounding setting.	Work site / During Construction Phase	Contractor		1			EIAO TM
For DP2 - V	VDII Major Roads (Road P2)							
Table 10.5	CM1 Topsoil, where identified, shall be stripped and stored for re-use in the construction of the soft landscape works, where practical.	Work site / During Construction Phase	Contractor	√	1			EIAO TM
Table 10.5	CM2 Existing trees to be retained on site shall be carefully protected during construction.	Work site / During Construction Phase	Contractor	V	V			EIAO TM
Table 10.5	CM3 Trees unavoidably affected by the works shall be transplanted where practical.	Work site / During Construction Phase	Contractor	1	√			EIAO TM
Table 10.5	CM4 Compensatory tree planting shall be provided to compensate for felled trees.	Work site / During Construction Phase	Contractor	1	√			EIAO TM
Table 10.5	CM5 Control of night-time lighting.	Work site / During Construction Phase	Contractor		√			EIAO TM
Table 10.5	CM6 Erection of decorative screen hoarding compatible with the surrounding setting.	Work site / During Construction Phase	Contractor		1			EIAO TM

Operation Pl	nase					
•	DII Major Roads (Road P2)					
Table 10.6, Figure	OM1 Aesthetic design of buildings and road- related structures,	Work site / During Design Stage and	CEDD/HyD	V	1	ETWB TCW 2/2004
10.5.1-	including viaducts, vent buildings, subways,	Operation Phases				
10.5.5	footbridges					
Table 10.6,	and noise barriers and enclosure. OM3 Buffer Tree and Shrub Planting to screen	Work site / During	CEDD/HyD	V	1	ETWB TCW 2/2004
Figure	proposed roads	Design Stage and		'	'	
10.5.1-	and associated structures.	Operation Phases				
10.5.5 Table 10.6.	OM5 Aesthetic streetscape design.	Work site / During	CEDD/HyD	V	1	ETWB TCW 2/2004
Figure		Design Stage and			'	
10.5.1- 10.5.5		Operation Phases				
Table 10.6,	OM6 Aesthetic design of roadside amenity areas	Work site / During	CEDD/HyD	V	1	ETWB TCW 2/2004
Figure	22.20 22.20.000	Design Stage and			1	
10.5.1-		Operation Phases				
10.5.5						

[•] Des - Design, C - Construction, O – Operation, and Dec – Decommissioning

Appendix 4.1

Action and Limit Level

Action and Limit Level

Action and Limit Level for Noise Monitoring

Time Period	Action Level	Limit Level
07:00 - 19:00 hours on normal weekdays	When one documented complaint is received.	75 dB(A)

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed. *The Limit level shall be 70 dB(A) and 65 dB(A) for educational institute during normal teaching periods and school examination periods, respectively.

Action and Limit Level for Air Monitoring

Monitoring Locations	1-hour TSP Le	vel inµg/m3	24-hour TSP L	evel inµg/m3
	Action Level	Limit Level	Action Level	Limit Level
CMA5b Pedestrian Plaza	339.7	500	209.9	260
CMA6a WDII PRE Site Office	333.0	500	207.1	260

Appendix 4.2

Copies of Calibration Certificates



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CERTIFICATE OF CALIBRATION

Certificate No.:

16CA0413 02

Page

Tel: (852) 2873 6860

Fax: (852) 2555 7533

Item tested

Description: Manufacturer: Sound Level Meter (Type 1)

Microphone B&K 4950

Preamp B&K ZC0032

Type/Model No.: Serial/Equipment No.: Adaptors used:

2250-L 2722310

2698702

13318

Item submitted by

Customer Name:

Lam Geotechnics Limited

Address of Customer:

Request No.

Date of receipt:

13-Apr-2016

Date of test:

09-May-2016

Reference equipment used in the calibration

Model: B&K 4226 Serial No. 2288444

Expiry Date: 19-Jun-2016

Traceable to: CIGISMEC

Multi function sound calibrator Signal generator Signal generator

DS 360 DS 360

33873 61227

18-Apr-2017 18-Apr-2017 CEPREL CEPREI

Ambient conditions

Temperature:

21 ± 1 °C

Relative humidity: Air pressure:

60 ± 10 %

1005 ± 5 hPa

Test specifications

The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

The electrical tests were performed using an electrical signal substituted for the microphone which was removed and 2. replaced by an equivalent capacitance within a tolerance of +20%

The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference 3. between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

in/Fena Jun Qi

Actual Measurement data are documented on worksheets.

Huand

Approved Signatory:

Date:

10-May-2016

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

Soils & Materials Engineering Co. Ltd.

Form No CARP152-1/Issue 1/Rev C/01/02/2007



G/F, 9/F, 12/F, 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. 香港 黄竹坑 道 3 7 號 利 達 中 心 地 下,9 樓,1 2 樓,1 3 樓 及 2 0 樓 E-mail: smec@cigismec.com Website: www.cigismec.com Tel : (852) 2873 6860 Fax : (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0413 02 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertanity (dB)	Coverage Factor
1000.	Oublest.	otatus.	oncortainty (ab)	1 40101
Self-generated noise	Α	Pass	0.3	
	C	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	Α	Pass	0.3	
	С	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/103 at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Date:

na

Fung Chi Yip 09-May-2016 End

Checked by:

Date:

J.Q. Feng 10-May-2016

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No CARP152-2/Issue 1/Rev C/01/02/2007



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CERTIFICATE OF CALIBRATION

Certificate No.:

16CA0127 02

Page

Item tested

Description:

Sound Level Meter (Type 1)

Microphone

Manufacturer:

B&K

B&K

Preamp B&K

Type/Model No.: Serial/Equipment No .: 2250-L 3002695

4950 2940839 ZC0032 18582

Adaptors used:

Item submitted by

Customer Name:

Lam Geoechnics Ltd

Address of Customer:

Request No.

Date of receipt:

27-Jan-2016

Date of test:

28-Jan-2016

Reference equipment used in the calibration

Description:

Multi function sound calibrator

Model:

Serial No.

Expiry Date:

Traceable to:

Signal generator

B&K 4226

2288444

19-Jun-2016 16-Apr-2016 CIGISMEC

Signal generator

DS 360 DS 360 33873 61227

16-Apr-2016

CEPREI CEPREI

Ambient conditions

Temperature: Air pressure:

21 ± 1 °C

Relative humidity:

60 ± 10 % 1010 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580; Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2. The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of +20%

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Huang-Jian Nin/Feng Jun Qi

Actual Measurement data are documented on worksheets.

Approved Signatory:

Date:

29-Jan-2016

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

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Form No CARP152-1/Issue 1/Rev C/01/02/2007



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Tel: (852) 2873 6860 Fax: (852) 2555 7533

2



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

16CA0127 02

Page

of

2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertanity (dB)	Coverage Factor
Self-generated noise	Α	Pass	0.3	
	С	Pass	0.8	
	Lin	Pass	1.6	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	Α	Pass	0.3	
	С	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/103 at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/104 at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertanity (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz Weighting A at 8000 Hz	Pass Pass	0.3 0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Checked by:

Fung Chi Yip
28-Jan-2016

Date: 29-Jan-2016

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No CARP152-2/Issue 1/Rev C/01/02/2007



香港黄竹坑道37號利達中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

Certificate No.:

16CA0513 01-02

Page:

Item tested

Description:

Acoustical Calibrator (Class 1)

Manufacturer: Type/Model No.: Rion Co., Ltd.

Serial/Equipment No.:

NC-73 10465798

Adaptors used:

Item submitted by

Curstomer:

Lam Geotechnics Ltd.

Address of Customer:

Request No.

Date of receipt:

13-May-2016

Date of test:

17-May-2016

Reference equipment used in the calibration

Description: Lab standard microphone Preamplifier Measuring amplifier Signal generator Digital multi-meter Audio analyzer	Model: B&K 4180 B&K 2673 B&K 2610 DS 360 34401A 8903B	Serial No. 2412857 2239857 2346941 61227 US36087050 GB41300350	Expiry Date: 14-Apr-2017 28-Apr-2017 26-Apr-2017 18-Apr-2017 19-Apr-2017	Traceable to: SCL CEPREI CEPREI CEPREI CEPREI
Universal counter	53132A	MY40003662	19-Apr-2017 19-Apr-2017	CEPREI CEPREI

Ambient conditions

Temperature:

22 ± 1 °C

Relative humidity:

55 ± 10 %

Air pressure:

1010 ± 5 hPa

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156. 2.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

Date:

18-May-2016

Company Chop:

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument

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Form No CARP156-1/Issue 1 Rev D/01/03/2007



香港黄竹坑道37號利達中心12樓 12/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong. E-mail: smec@cigismec.com Website: www.cigismec.com

Tel: (852) 2873 6860 Fax: (852) 2555 7533



CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.:

16CA0513 01-02

2

of

Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

			(Output level in dB re 20 µPa)
Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	93.96	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz

STF = 0.001 dB

Estimated expanded uncertainty

0.005 dB

3, **Actual Output Frequency**

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz

Actual Frequency = 967.3 Hz

Estimated expanded uncertainty

0.1 Hz

Coverage factor k = 2.2

4. **Total Noise and Distortion**

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz

TND = 0.8 %

Estimated expanded uncertainty

07%

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

Calibrated by:

Fnd

Date:

Fung Chi Yip 17-May-2016 Checked by:

Date:

Lam Tze Wa 18-May-2016

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No CARP156-2/Issue 1/Rev C/01/05/2005



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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mo Operator		Rootsmeter Orifice I.I		438320 3166	Ta (K) - Pa (mm) -	293 - 748.03
PLATE OR Run # 1 2 3 4 5	VOLUME START (m3) NA NA NA NA NA	VOLUME STOP (m3) NA NA NA NA NA	DIFF VOLUME (m3) 1.00 1.00 1.00 1.00	DIFF TIME (min) 1.4270 1.0220 0.9100 0.8730 0.7180	METER DIFF Hg (mm) 3.2 6.4 7.9 8.8 12.7	ORFICE DIFF H2O (in.) 2.00 4.00 5.00 5.50 8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9967 0.9925 0.9904 0.9892 0.9840	0.6985 0.9711 1.0883 1.1332 1.3705	1.4150 2.0010 2.2372 2.3464 2.8299		0.9957 0.9915 0.9893 0.9882 0.9830	0.6977 0.9701 1.0872 1.1320 1.3691	0.8851 1.2517 1.3995 1.4678 1.7702
Qstd slop intercept coefficie y axis =	(b) = ent (r) =	2.10714 -0.05158 0.99978 	 [a)]	Qa slope intercept coefficie y axis =	(b) =	1.31946 -0.03226 0.99978

CALCULATIONS

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

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

For subsequent flow rate calculations:

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



Calibration Data for High Volume Sampler (TSP Sampler)

Location		CMA5b	Calibration Date	1	11-Nov-16
Equipment no.	1	HVS010	Calibration Due Date	:	11-Jan-17

CALIBRATION OF CONTINUOUS FLOW RECORDER

		Ambient Con	dition		
Temperature, T _a	293	Kelvin Pr	essure, P _a	1019	mmHg
	Or	ifice Transfer Standa	ard Information		
Equipment No.	Ori002	Slope, m _c	2.10714	Intercept, bc	-0.05158
Last Calibration Date	20-May-16		(HxPa)	/1013.3 x 298 / T _a)	1/2
Next Calibration Date	20-May-17		= n	$n_c \times Q_{std} + b_c$	

Calibration Point		(inches of the (down)		Q _{std} (m³ / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P _a /1013.3x298/T _a) ^{1/2} /35.31 Y-axis
1	1.4	1.4	2.8	0.8276	32	32.3625
2	2.3	2.3	4.6	1.0539	38	38,4305
3	3.5	3.5	7.0	1.2943	48	48.5438
4	4.6	4.6	9.2	1.4802	52	52.5891
5	5.8	5.8	11.6	1.6591	60	60.6797

Slope, m	=	33.8651	Intercept, b =	3.7484	
Correlation Coefficient*	=	0.9956	T		
Calibration Accepted		Yes/Ne**			

**	De	lete	as	appropriate	٠.
----	----	------	----	-------------	----

Remarks: As per client's provided information, the equipment reference no. of the calibrated High Volume Sampler has been

re-assigned from EL222 to HVS010 with respect to the update in quality management system.

 Calibrated by
 :
 Jackey MA
 Checked by
 :
 Pauline Wong

 Date
 :
 11-Nov-16
 Date
 :
 11-Nov-16

 $[\]mbox{^{\star}}$ if Correlation Coefficient < 0.990, check and recalibration again.



Calibration Data for High Volume Sampler (TSP Sampler)

Location	1	CMA6a	Calibration Date		11-Nov-16
Equipment no.	1 1	HVS013	Calibration Due Date	*	11-Jan-17

CALIBRATION OF CONTINUOUS FLOW RECORDER

Ambient Condition							
Temperature, T _a	293	Kelvin Pressure, Pa	1019	mmHg			

Orifice Transfer Standard Information								
Equipment No.	Ori002	Slope, m _c	2.10714	Intercept, bc	-0.05158			
Last Calibration Date	20-May-16		(HxP	a / 1013.3 x 298 / Ta)	1/2			
Next Calibration Date	20-May-17		=	$m_c \times Q_{std} + b_c$				

			C	alibration of TSF		
Calibration Point		Manometer Reading H (inches of water) (up) (down) (difference)			Continuous Flo Recorder, W (CFM)	
1	1.5	1.5	3.0	0.8558	33	33.3739
2	2.2	2.2	4.4	1.0312	42	42.4758
3	3.5	3.5	7.0	1.2943	48	48.5438
4	4.6	4.6	9.2	1.4802	53	53.6004
5	5.9	5.9	11.8	1.6732	59	59.6684
	Slope, m Coefficient* on Accepted		30.4334 0.9909 Yes/Ne*		Intercept, b =	8.9749

^{*} if Correlation Coefficient < 0.990, check and recalibration again.

Remarks: As per client's provided information, the equipment reference no. of the calibrated High Volume Sampler has been

re-assigned from EL551 to HVS013 with respect to the update in quality management system.

Calibrated by		Jackey MA	Checked by	:	Pauline Wong
Date	:	11-Nov-16	Date	100	11-Nov-16

^{**} Delete as appropriate.

Appendix 5.1

Monitoring Schedules for Reporting Month and Coming Reporting Month

Contract No. HK/2015/01 W an Chai Development Phase II and Central-W an Chai Bypass Sampling, Field Measurement and Testing W orks (Stage 3)

Environmental Monitoring Schedule December 2016

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	28-Nov	29-Nov			2-Dec	3-Dec
				24hr TSP	1hr TSP	
		Noise (daytime)				
4-Dec	5-Dec	6-Dec	7-Dec	8-Dec	9-Dec	10-Dec
			24hr TSP	1hr TSP		
	Noise (daytime)			6.		
11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec
		24hr TSP				
		Noise (daytime)	1hr TSP			
18-Dec	19-Dec	20-Dec	21-Dec	22-Dec	23-Dec	24-Dec
	24hr TSP	1hr TSP			24hr TSP	1hr TSP
		Noise (daytime)				
.25-Dep	26-Dec					

Contract No. HK/2015/01 W an Chai Development Phase II and Central-W an Chai Bypass Sampling, Field Measurement and Testing W orks (Stage 3)

Tentative Environmental Monitoring Schedule January 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		27-Dec	28-Dec	29-Dec	30-Dec	31-Dec
			041 TOD			
			24hr TSP	1hr TSP		
			Noise (daytime)	Noise (daytime)		
			riores (aayame)	(dayamo)		
1-Jan	2-Jan	3-Jan	4-Jan	5-Jan	6-Jan	7-Jan
		24hr TSP	41. TOD			
			1hr TSP Noise (daytime)			
		Noise (daylille)	Noise (daytille)			
8-Jan	9-Jan	10-Jan	11-Jan	12-Jan	13-Jan	14-Jan
	24hr TSP	45 - TOD				24hr TSP
	Noise (daytime)	1hr TSP Noise (daytime)				
	rtolog (dayamo)	rtoloo (dayamo)				
:::::::::15-Jan	16-Jan	17-Jan	18-Jan	19-Jan	20-Jan	21-Jan
	41 700				24hr TSP	41. TOD
	1hr TSP Noise (daytime)	Noise (daytime)				1hr TSP
	Noise (dayline)	Noise (daylille)				
22-Jan	23-Jan	24-Jan	25-Jan	26-Jan	27-Jan	
				24hr TSP	41 TOD	
	Noise (daytime)	Noise (daytime)			1hr TSP	
	Noise (dayanne)	Noise (daylime)				

Appendix 5.2

Noise Monitoring Results and Graphical Presentations



Noise Monitoring Result for EP-376/2009

Day Time (0700 - 1900hrs on normal weekdays)

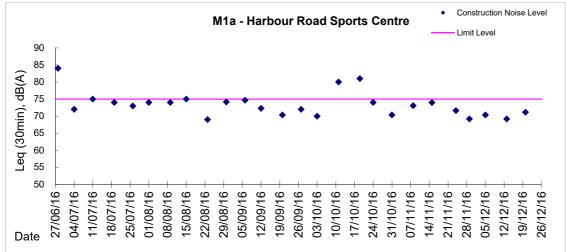
Location: M1a - Harbour Road Sports Centre

			Measur	ement Noi	se Level	Baseline Level	Construction Noise Level	Limit Level
Date	Date Time Weather		Leq	L10	L90	Leq	Leq	Leq
				Unit: dB(A), (30-min)			B(A), (30-min)	
29/11/2016	10:12	Cloudy	74.3	75.5	72.0	73	69	75
5/12/2016	11:20	Fine	74.7	78.0	68.5	73	70	75
13/12/2016	13:00	Fine	74.3	76.0	71.5	73	69	75
20/12/2016	13:25	Fine	75.0	76.5	73.0	73	71	75



Graphic Presentation of Noise Monitoring Result

Day Time (0700 - 1900hrs on normal weekdays)



Appendix 5.3

Air Quality Monitoring Results and Graphical Presentations



Location: CMA5b - Pedestrian Plaza

Report on 24-hour TSP monitoring for EP-376/2009 Action Level - 209.9 μ g/m³ Limit Level - 260 μ g/m³

Date	Sampling	Weather	Filter paper	Filter Weigh	Filter Weight, g		Elapse Time, hr		Flo	w Rate, m³/ı	min	Total	TSP Level,
	Time	Condition	no.	Initial	Final	Initial	Final	Time, hr	Initial, Q _{si}	Final, Q _{sf}	Average	Volume, m ³	μg/m³
1-Dec-16	8:00	Fine	18162	2.6537	2.8860	7619.77	7643.77	24.00	1.10	1.09	1.09	1576	147.4
7-Dec-16	8:00	Cloudy	18258	2.6901	3.0562	7646.77	7670.77	24.00	1.09	1.09	1.09	1575	232.5
13-Dec-16	8:00	Cloudy	18146	2.6730	2.9060	7673.77	7697.77	24.00	1.09	1.09	1.09	1567	148.7
19-Dec-16	8:00	Fine	18171	2.7519	2.9946	7700.77	7724.77	24.00	1.09	1.09	1.09	1572	154.4
23-Dec-16	8:00	Cloudy	16342	2.8157	3.0871	7727.77	7751.77	24.00	1.09	1.10	1.10	1577	172.1

Report on 1-hour TSP monitoring for EP-376/2009 Action Level - $$339.7~\mu g/m3$$ Limit Level - $500~\mu g/m3$

Date	Sampling	Weather	Filter paper	Filter Weigh	nt, g	Elapse Time	e, hr	Sampling	Flo	w Rate, m³/ı	min	Total	TSP Level,
	Time	Condition	no.	Initial	Final	Initial	Final	Time, hr	Initial, Q _{si}	Final, Q_{sf}	Average	Volume, m ³	μg/m³
2-Dec-16	8:15	Fine	18341	2.6746	2.6959	7643.77	7644.77	1.00	1.09	1.09	1.09	66	324.6
2-Dec-16	9:40	Fine	18338	2.6766	2.6934	7644.77	7645.77	1.00	1.09	1.09	1.09	66	256.0
2-Dec-16	11:00	Fine	18337	2.6653	2.6820	7645.77	7646.77	1.00	1.09	1.09	1.09	66	254.5
8-Dec-16	8:05	Fine	18392	2.6702	2.6898	7670.77	7671.77	1.00	1.09	1.09	1.09	66	298.6
8-Dec-16	9:30	Fine	18150	2.7063	2.7243	7671.77	7672.77	1.00	1.09	1.09	1.09	66	274.2
8-Dec-16	10:45	Fine	18147	2.6750	2.6946	7672.77	7673.77	1.00	1.09	1.09	1.09	66	298.6
14-Dec-16	8:05	Cloudy	18546	2.7978	2.8106	7697.77	7698.77	1.00	1.09	1.09	1.09	65	195.6
14-Dec-16	9:30	Cloudy	16513	2.9005	2.9183	7698.77	7699.77	1.00	1.09	1.09	1.09	65	272.0
14-Dec-16	10:50	Cloudy	18540	2.7877	2.8189	7699.77	7700.77	1.00	1.09	1.09	1.09	65	476.7
20-Dec-16	8:05	Fine	18383	2.6714	2.6844	7724.77	7725.77	1.00	1.09	1.09	1.09	65	198.7
20-Dec-16	10:40	Fine	17785	2.7464	2.7628	7725.77	7726.77	1.00	1.03	1.03	1.03	62	264.6
20-Dec-16	13:00	Fine	18439	2.8640	2.8760	7726.77	7727.77	1.00	1.09	1.09	1.09	65	183.5
24-Dec-16	8:05	Cloudy	18109	2.7157	2.7235	7751.77	7752.77	1.00	1.10	1.10	1.10	66	118.5
24-Dec-16	9:10	Cloudy	16579	2.8410	2.8488	7752.77	7753.77	1.00	1.10	1.10	1.10	66	118.5
24-Dec-16	10:16	Cloudy	16573	2.8609	2.8690	7753.77	7754.77	1.00	1.10	1.10	1.10	66	123.1



Location: CMA6a - WDII PRE Office

Report on 24-hour TSP monitoring for EP-376/2009

Action Level -207.1 μg/m3 Limit Level -260 μg/m3

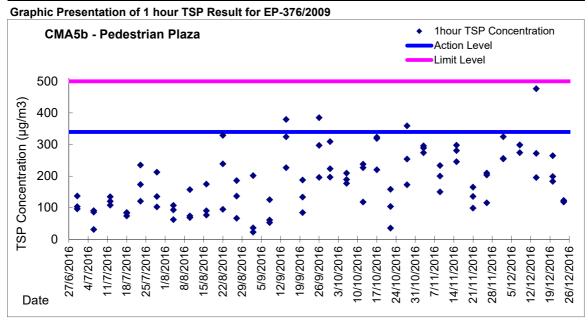
Date	Sampling	Weather	Filter	Filter Weigh	Filter Weight, g		Elapse Time, hr		Flo	w Rate, m³/ı	min	Total	TSP Level,
	Time	Condition	paper no.	Initial	Final	Initial	Final	Time, hr	Initial, Q _{si}	Final, Q _{sf}	Average	Volume, m ³	μg/m³
1-Dec-16	8:00	Fine	18160	2.6632	2.8207	1305.57	1329.57	24.00	0.98	0.98	0.98	1414	111.4
7-Dec-16	8:00	Cloudy	15980	2.9109	3.1284	1332.57	1356.57	24.00	0.98	0.98	0.98	1413	153.9
13-Dec-16	8:00	Cloudy	18144	2.7041	2.8857	1359.57	1383.57	24.00	1.04	1.04	1.04	1496	121.4
19-Dec-16	8:00	Fine	18172	2.6868	2.8230	1386.58	1410.58	24.00	1.04	1.04	1.04	1502	90.7
23-Dec-16	8:00	Cloudy	18444	2.8436	2.9352	1413.58	1437.58	24.00	0.92	0.92	0.92	1324	69.2

Report on 1-hour TSP monitoring for EP-376/2009 Action Level - $$333\ \mu g/m3$$ Limit Level -500 μg/m3

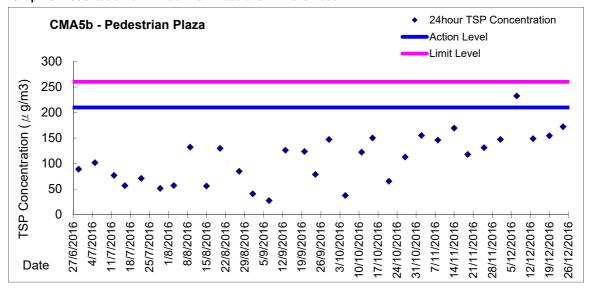
Date	Sampling	Weather	Filter	Filter Weigl	nt, g	Elapse Tim	e, hr	Sampling	Flo	w Rate, m³/ı	min	Total	TSP Level,
	Time	Condition	paper no.	Initial	Final	Initial	Final	Time, hr	Initial, Q _{si}	Final, Q _{sf}	Average	Volume, m ³	μg/m³
2-Dec-16	9:00	Fine	18342	2.6786	2.6837	1329.57	1330.57	1.00	1.05	1.05	1.05	63	81.3
2-Dec-16	10:05	Fine	18339	2.6677	2.6743	1330.57	1331.57	1.00	1.05	1.05	1.05	63	105.2
2-Dec-16	13:00	Fine	18335	2.6679	2.6756	1331.57	1332.57	1.00	1.05	1.05	1.05	63	122.8
8-Dec-16	8:05	Fine	18394	2.6923	2.7047	1356.57	1357.57	1.00	1.05	1.05	1.05	63	197.7
8-Dec-16	9:20	Fine	18152	2.6996	2.7099	1357.57	1358.57	1.00	1.05	1.05	1.05	63	164.2
8-Dec-16	10:45	Fine	18149	2.6795	2.6872	1358.57	1359.57	1.00	1.05	1.05	1.05	63	122.7
14-Dec-16	8:15	Cloudy	18543	2.8172	2.8250	1383.58	1384.58	1.00	1.04	1.04	1.04	63	124.8
14-Dec-16	9:20	Cloudy	18544	2.8188	2.8267	1384.58	1385.58	1.00	1.04	1.04	1.04	63	126.4
14-Dec-16	10:40	Cloudy	18542	2.8014	2.8151	1385.58	1386.58	1.00	1.04	1.04	1.04	63	219.1
20-Dec-16	8:04	Fine	18267	2.6940	2.7005	1410.58	1411.58	1.00	1.04	1.04	1.04	62	104.0
20-Dec-16	10:30	Fine	17783	2.7428	2.7515	1411.58	1412.58	1.00	0.98	0.98	0.98	59	148.3
20-Dec-16	13:00	Fine	18437	2.8566	2.8663	1412.58	1413.58	1.00	0.98	0.98	0.98	59	165.3
24-Dec-16	8:03	Cloudy	16583	2.8653	2.8723	1437.58	1438.58	1.00	1.05	1.05	1.05	63	111.2
24-Dec-16	9:20	Cloudy	16576	2.8489	2.8548	1438.58	1439.58	1.00	1.05	1.05	1.05	63	93.7
24-Dec-16	10:35	Cloudy	18631	2.6434	2.6501	1439.58	1440.58	1.00	1.05	1.05	1.05	63	106.4



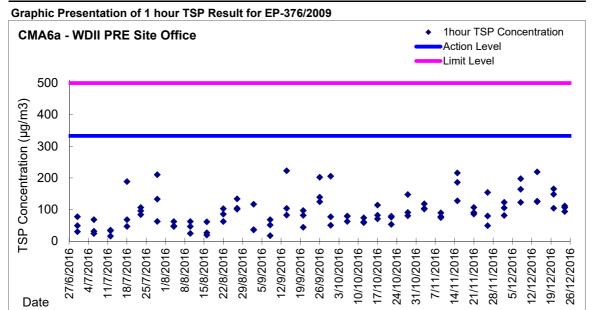
Wanchai Development Phase II and Central Wanchai Bypass Sampling, Field Measurement and Testing Work (Stage 3)

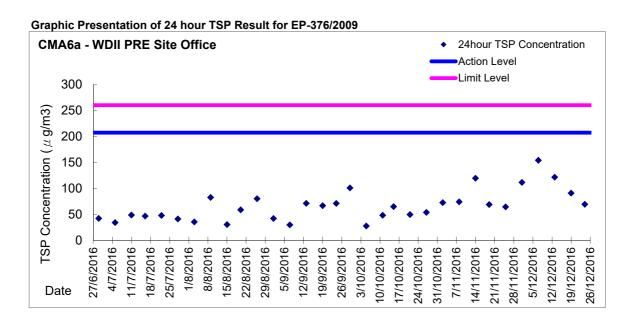


Graphic Presentation of 24 hour TSP Result for EP-376/2009









Appendix 6.1

Event Action Plans

Event/Action Plan for Construction Noise

EVENT		AC	CTION	
	ET	IEC	ER	CONTRACTOR
Action Level being exceeded	 Notify ER, IEC and Contractor; Carry out investigation; Report the results of investigation to the IEC, ER and Contractor; Discuss with the IEC and Contractor on remedial measures required; Increase monitoring frequency to check mitigation effectiveness. (The above actions should be taken within 2 working days after the exceedance is identified) 	1. Review the investigation results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Advise the ER on the effectiveness of the proposed remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified)	 Confirm receipt of notification of failure in writing; Notify Contractor; In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures. (The above actions should be taken within 2 working days after the exceedance is identified) 	Submit noise mitigation proposals to IEC and ER; Implement noise mitigation proposals. (The above actions should be taken within 2 working days after the exceedance is identified)



EVENT		AC	CTION	
	ET	IEC	ER	CONTRACTOR
Limit Level being exceeded	 Inform IEC, ER, Contractor and EPD; Repeat measurements to confirm findings; Increase monitoring frequency; 4. Identify source and investigate the cause of exceedance; 5. Carry out analysis of Contractor's working procedures; 6. Discuss with the IEC, Contractor and ER on remedial measures required; Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; If exceedance stops, cease additional monitoring. (The above actions should be taken within 2 working days after the exceedance is identified) 	Discuss amongst ER, ET, and Contractor on the potential remedial actions; Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. (The above actions should be taken within 2 working days after the exceedance is identified)	 Confirm receipt of notification of failure in writing; Notify Contractor; In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented; Supervise the implementation of remedial measures; If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated. The above actions should be taken within 2 working days after the exceedance is identified) 	 Take immediate action to avoid further exceedance; Submit proposals for remedial actions to IEC and ER within 3 working days of notification; Implement the agreed proposals; Submit further proposal if problem still not under control; Stop the relevant portion of works as instructed by the ER until the exceedance is abated. (The above actions should be taken within 2 working days after the exceedance is identified)

Event / Action Dian for Construction Air Quality

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



Event and Action Plan for Marine Water Quality

EVENT		ACTION		
	ET	IEC	ER	CONTRACTOR
Action level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; (The above actions should be taken within 1 working day after the exceedance is identified) Repeat measurement on next day of exceedance.	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented. (The above actions should be taken within 1 working day after the exceedance is identified)	Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and ER; Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)
Action level being exceeded by more than one consecutive sampling days	Identify source(s) of impact; Inform IEC and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC and Contractor; Ensure mitigation measures are implemented; Prepare to increase the monitoring frequency to daily; (The above actions should be taken within 1 working day after the exceedance is identified) Repeat measurement on next working day of exceedance.	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with IEC on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)

am	Lam Geotechnics Limited

EVENT		ACTION										
	ET	IEC	ER	CONTRACTOR								
Limit level being exceeded by one sampling day	Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3 working days Implement the agreed mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)								
Limit level being exceeded by more than one consecutive sampling days	Identify source(s) of impact; Inform IEC, contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented; Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with ET and Contractor on the mitigation measures; Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; Assess the effectiveness of the implemented mitigation measures. (The above actions should be taken within 1 working day after the exceedance is identified)	Discuss with IEC, ET and Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures; Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit level. (The above actions should be taken within 1 working day after the exceedance is identified)	Inform the ER and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3working days; Implement the agreed mitigation measures; As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities. (The above actions should be taken within 1 working day after the exceedance is identified)								

Event and Action Plan for Odour Patrol

Event		ACTION
	Person-in-charge of Odour Monitoring	Implementation Agent Identified by CEDD
Action Level		
Exceedance of Action Level	Identify source/reason of exceedance; Repeat odour patrol to confirm finding.	 Carry out investigation to identify the source/reason of exceedance; Rectify any unacceptable practice Implement more mitigation measures if necessary; Inform EPD or MD if exceedance is considered to be caused by expedient connections or floating debris.
Limit Level		
Exceedance of Limit Level	I. Identify source / reason of exceedance; Repeat odour patrol to confirm findings; Increase odour patrol frequency; If exceedance stops, cease additional odour patrol.	 Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 2 weeks; Rectify any unacceptable practice; Formulate remedial actions; Ensure remedial actions properly implemented; If exceedance continues, consider what more/enhanced mitigation measures shall be implemented; Inform EPD or MD if exceedance is considered to be caused by expedient connections or floating debris.

Appendix 6.2

Summary for Notification of Exceedance



Ref. No.	Date	Time	Location	Measured TSP Level	Unit	Action Level	Limit Level	Follow-up action	
X_16A0015	7-Dec-16	8:00	CMA5b- Pedestrian Plaza	232.5	24 hr TSP (ug/m³)	209.9	260	Possible reason:	Elevated TSP level potentially in relate to local ambient condition and other poential sources such as road traffic next to the monitoring station.
					, ,			Action taken / to be taken:	Reviewed the trend of air quality measurement across monitoring stations. Reviewed Contractor's working procedures. Mitigation measures including maintaining haul road in dampened condition was implemented by Contractor.
								Remarks / Other Obs:	No construction activity under EP-376/2009 was undertaken on the monitoring date at around Pedestrian Plaza under Contractor of HK/2012/08 and no particular observation regarding air quality impact from cosntruction site was observed during sampling. In addition, the Air Quality Health Index (AQHI) recorded by EPD at Causeway Bay road-side station during the monitoring period was ranged from 4 to 8 during the monitoring period indicating moderate to very high concentration of air pollutants. In view of the above, the action level exceedance was considered to be non-project related and potentially contributed by local ambient condition and other potential sources such as traffic road exhaust next to the monitoring station. In addition, non WDII-CWB Project construction activities opposite to the monitoring station was observed on the monitoring date. Nevertheless, the Contractor of HK/2012/08 was reminded to maintain regular dust suppression measures for any potential dusty surface and dust generating operation around the concerned location to avoid any potential cumulative air quality impact.
X_16A0018	14-Dec-16	10:15	CMA5b- Pedestrian Plaza	476.7	1hr TSP (ug/m³)	332.0	500	Possible reason:	Elevated TSP level potentially in relate to other sources affecting local ambient condition such as road traffic next to the monitoring station
					(3,)			Action taken / to be taken:	Reviewed the trend of air quality measurement across monitoring stations. Reviewed Contractor's working procedures.
								Remarks / Other Obs:	No construction activity under EP-376/2009 was undertaken on the monitoring date at around Pedestrian Plaza under Contractor of HK/2012/08 and no particular observation regarding air quality impact was observed during sampling. In view of the above, the action level exceedance was considered to be non-project related and potentially contributed by other sources affecting local ambient condition such as road traffic next to the monitoring station. In addition, non WDII-CWB Project construction activities opposite to the monitoring station was observed on the monitoring date. Nevertheless, the Contractor of HK/2012/08 was reminded to maintain regular dust suppression measures for any potential dusty surface and dust generating operation around the concerned location to avoid any potential cumulative air quality impact.

Appendix 9.1

Complaint Log

Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					ł	

Appendix 10.1

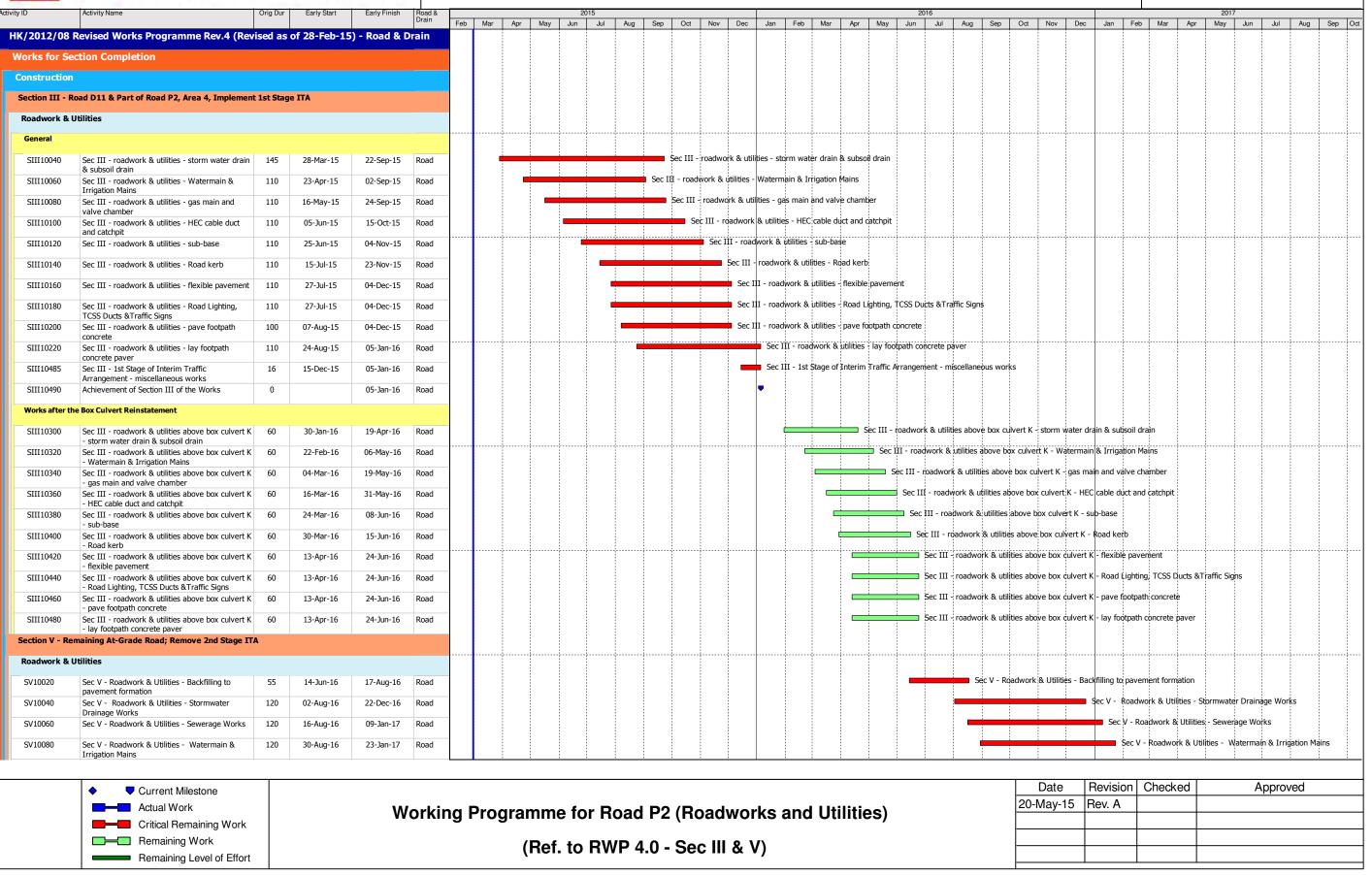
Construction Programme of Individual Contracts



中國建築-利達聯營 CHINA STATE - LEADER JOINT VENTURE

CEDD Contract No. HK/2012/08 Wan Chai Development Phase II Central - Wan Chai Bypass at Wan Chai West

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中國建築-利達聯營 CHINA STATE - LEADER JOINT VENTURE

CEDD Contract No. HK/2012/08 Wan Chai Development Phase II Central - Wan Chai Bypass at Wan Chai West

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SV10120	Activity Name	Orig Dur	Early Start	Early Finish	Road &		2015								2016 2017																				
					Drain	Feb	Ma	r Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb I	Mar	Apr May	Jun	Jul	Aug Se
SV10100	Sec V - Roadwork & Utilities - Gas Main	90	13-Sep-16	31-Dec-16	Road																				_				Sec \	- Roadwor	rk & Utili	ties - Gas I	lain		
SV10120	Sec V - Roadwork & Utilities - HEC cable duct and drawpit	90	28-Sep-16	16-Jan-17	Road																								 	ec V - Road	lwork &	Utilities - H	EC cable d	uct and dra	awpit
SV10140	Sec V - Roadwork & Utilities - Telecom cable duct and drawpit	90	14-Oct-16	04-Feb-17	Road																					_				Sec V -	Roadwo	rk & Utilitie	s - Teleco	m cable du	uct and drav
SV10160	Sec V - Roadwork & Utilities - lay & compact sub-base	110	28-Oct-16	14-Mar-17	Road																					1								'	compact sub
SV10180	Sec V - Roadwork & Utilities - construct road kerb	110	05-Nov-16	22-Mar-17	Road																						_								truct road k
SV10200	Sec V - Roadwork & Utilities - flexible pavement	110	14-Nov-16	30-Mar-17	Road																						_				S	ec V - Road	work & U	ilities - flex	xible paven
SV10220	Sec V - Roadwork & Utilities - footpath paving block	110	24-Nov-16	11-Apr-17	Road																						•					Sec V - R	oadwork 8	Utilities -	footpath p
SV10240	Sec V - Roadwork & Utilities - concrete footpath	72	02-Dec-16	04-Mar-17	Road																										Sec V - I	Roadwork 8	Utilities -	concrete f	ootpath
SV10260	Sec V - Roadwork & Utilities - construct surface channel	72	02-Dec-16	04-Mar-17	Road																										Sec V - I	Roadwork 8	Utilities -	construct	surface cha
SV10280	Sec V - Roadwork & Utilities - Road Lighting, TCSS Ducts & Traffic Signs	72	11-Feb-17	12-May-17	Road																											9	ec V - Ro	adwork & I	Utilities - R
SV10300	Achievement of Section V of the Works	0		12-May-17	Road	1	1																	[7	1]	Ţ.,	1			■ ■			