**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

**- APRIL 2017 -**

**CLIENTS:**

**Civil Engineering and Development Department**

**PREPARED BY:**

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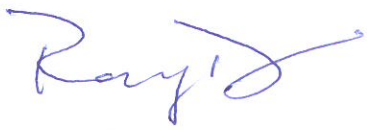

Raymond Dai
Environmental Team Leader

**DATE:**

12 May 2017

RAMBOLL ENVIRON

Ref.: AACWBIECEM00_0_9338L.17

12 May 2017

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

By Post and Fax (2691 2649)

Attention: Mr. Conrad Ng

Dear Mr. Ng,

**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 (April 2017)**
**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 April 2017 received by e-mail on 12 May 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. L K Tsang | 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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i. This is the Environmental Monitoring and Audit (EM&A) Monthly Report – April 2017 specific for Environmental Permit no. EP-376/2009 and Further Environmental Permits no. FEP-01/376/2009 and FEP-02/376/2009. 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 March 2017 to 26th April 2017. 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. Due to electricity supply interruption, the TSP monitoring in the reporting month were rescheduled as follow:

viii. 24 TSP monitoring at CMA6a was rescheduled from 12 and 18 April 2017 to 13 and 19 April 2017 respectively

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

Complaints, Notifications of Summons and Successful Prosecutions

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

Site Inspections and Audit

xi. 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.

Future Key Issues

xii. 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 Permits no. FEP-01/376/2009 and FEP-02/376/2009 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).

This report documents the finding of EM&A works for Environmental Permit (EP) no. EP-376/2009 and Further Environmental Permits no. FEP-01/376/2009 and FEP-02/376/2009, during the period of 27th March 2017 to 26th April 2017. 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 primary/district distributor roads | Schedule 2, Part I, A.1 |

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-Build King Joint Venture | Contractor under Contract no. HK/2012/08 | Project Director | C. N. LAI | 9106 5806 | 2877 1522 |
| | | Project Manager | Mr. Eddie Chung | 9189 8118 | |
| | | Site Agent | Mr. Keith Tse | 9037 1839 | |
| | | Environmental Officer | Mr. James Ma | 9130 9549 | |
| 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-02/376/2009 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 |

| Permits and/or Licences | Reference No. | Issued Date | Valid Period/ Expiry Date | Status |
|---|---|---|---|---|
| Construction Noise Permit | GW-RS1332-16 | 29 Dec 2016 | 13 Jan 2017 to 12 Jul 2017 | Valid |
| | GW-RS1340-16 | 23 Dec 2016 | 13 Jan 2017 to 12 Jul 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 ($L_{eq}$). $L_{eq\ (30\ minutes)}$ shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays. For all other time periods, $L_{eq\ (5\ minutes)}$ 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.

## 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 $m^3$ 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;

- 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 ***Figure 2.1*** and ***Figure 4.1***. 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 ***Appendix 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 No action or limit level exceedance was recorded in this reporting month.

5.2.3 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***.

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

## 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, backfilling works and reinstatement of Culvert and Cooling mains were performed in April 2017 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 construction, backfilling works, and tunnel works at Wan Chai West, tunnel construction, backfilling works, road and drains works at Wan Chai West and Wan Chai East. The major construction activities under Central-Wan Chai Bypass and Island Eastern Corridor Link Projects were drainage works and ventilation building construction at Central; backfilling and temporary reclamation removal works at Causeway Bay road works and side wall construction at Victoria Park; reinstatement of Eastern Breakwater and bridge demolition, noise enclosure installation, piling works 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.** Five site inspections for Contract no. HK/2012/08 were carried out on 29 March 2017, 5, 11, 19 and 25 April 2017 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 Contractor | Outcome |
|---|---|---|---|---|
| 170405_01 | 5-Apr-17 | Contractor is required to critically review the capacity and operation of the water treatment unit at Slip Road 1 to ensure the construction effluent is properly treated prior discharge and safeguard nearby waterbody. | The concerned water treatment unit at Slip Road 1 was observed disconnected and no discharge was observed. | Completion as observed on 11 April 2017 |
| 170405_02 | 5-Apr-17 | Drip tray shall be provided for chemical containers at Zone CE. | Chemical containers was removed at Zone CE. | Completion as observed on 11 April 2017 |
| 170411_01 | 11-Apr-17 | Drip tray shall be provided for oil containers on-site. | Drip tray was provided for oil containers on-site | Completion as observed on 19 April 2017 |
| 170425_01 | 25-Apr-17 | Drip tray shall be provided for the chemical container at dry dock area. | Chemical container at dry dock area was removed. | Completion as observed on 2 May 2017 |
| 170425_02 | 25-Apr-17 | The hole of drip tray for the generator at dry dock area shall be covered. | The hole of drip tray was covered. | Completion as observed on 2 May 2017 |

# 9 COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTION

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 |
| April 2017 | 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.

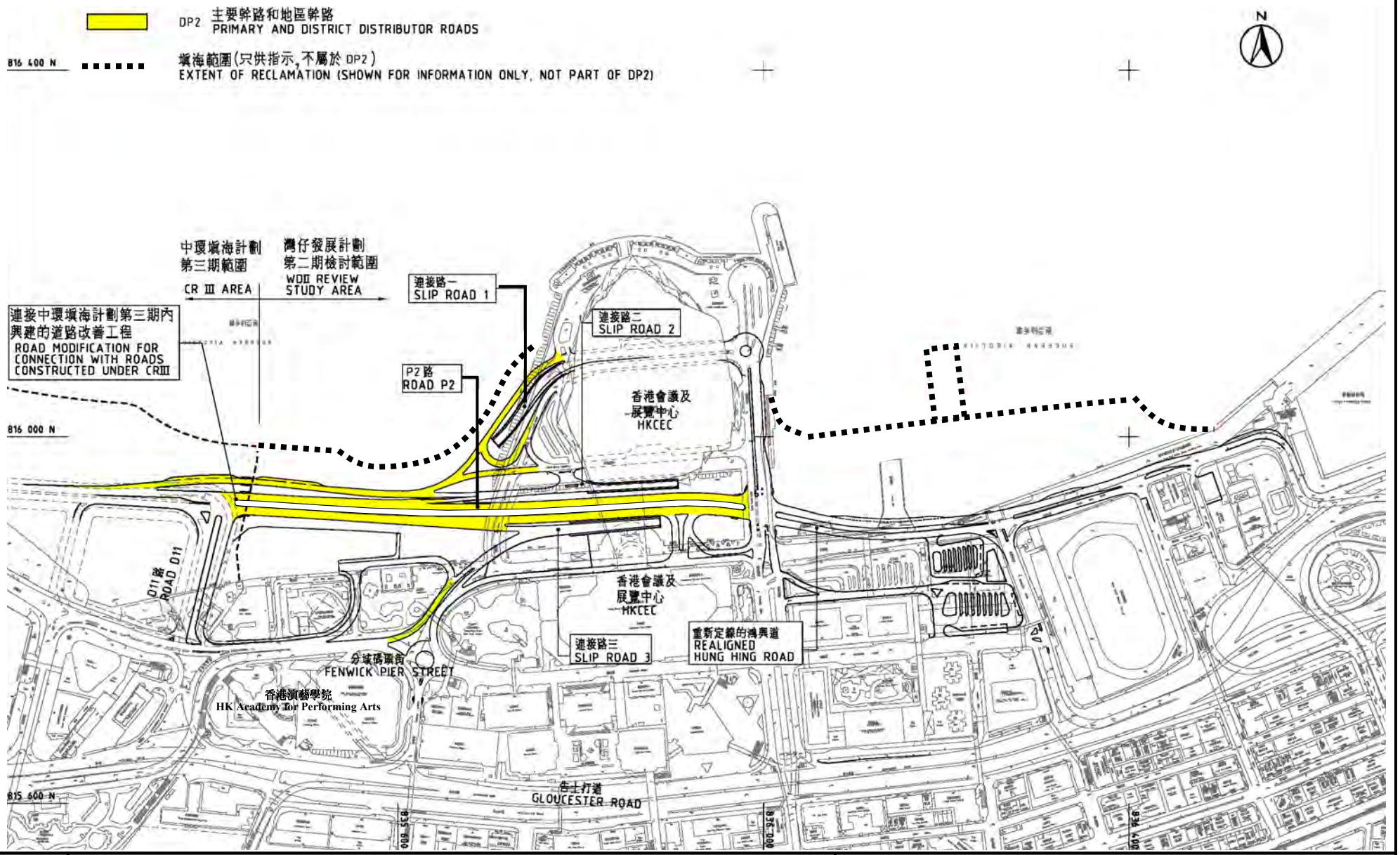
10.0.2. The scheduled construction activities and the recommended mitigation measures for the coming month are listed in ***Table 10.1***. The construction programmes of individual contracts are provided in ***Appendix 10.1***.

***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;<br>• Implementation of proper noise pollution control; and<br>• 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

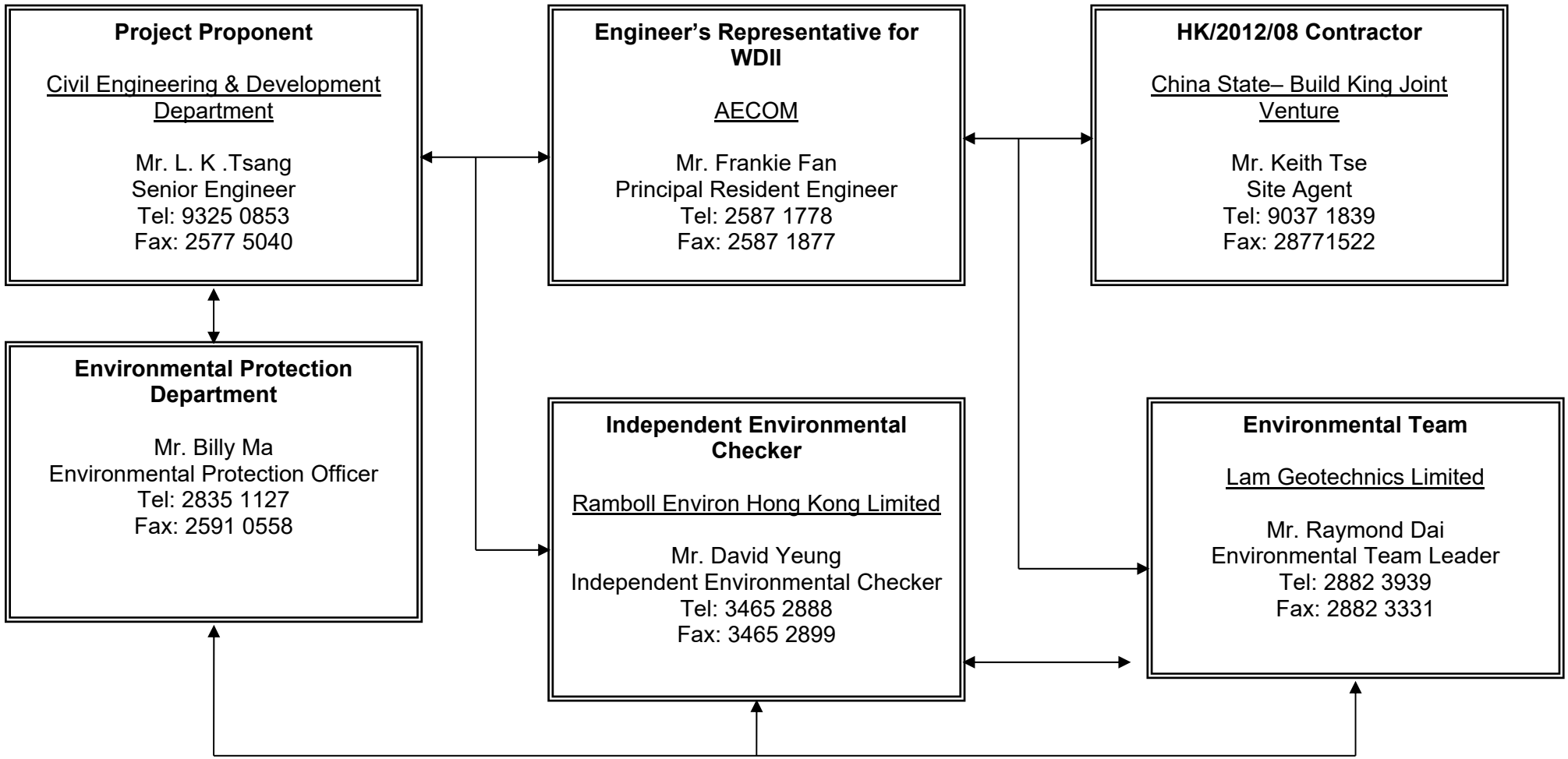
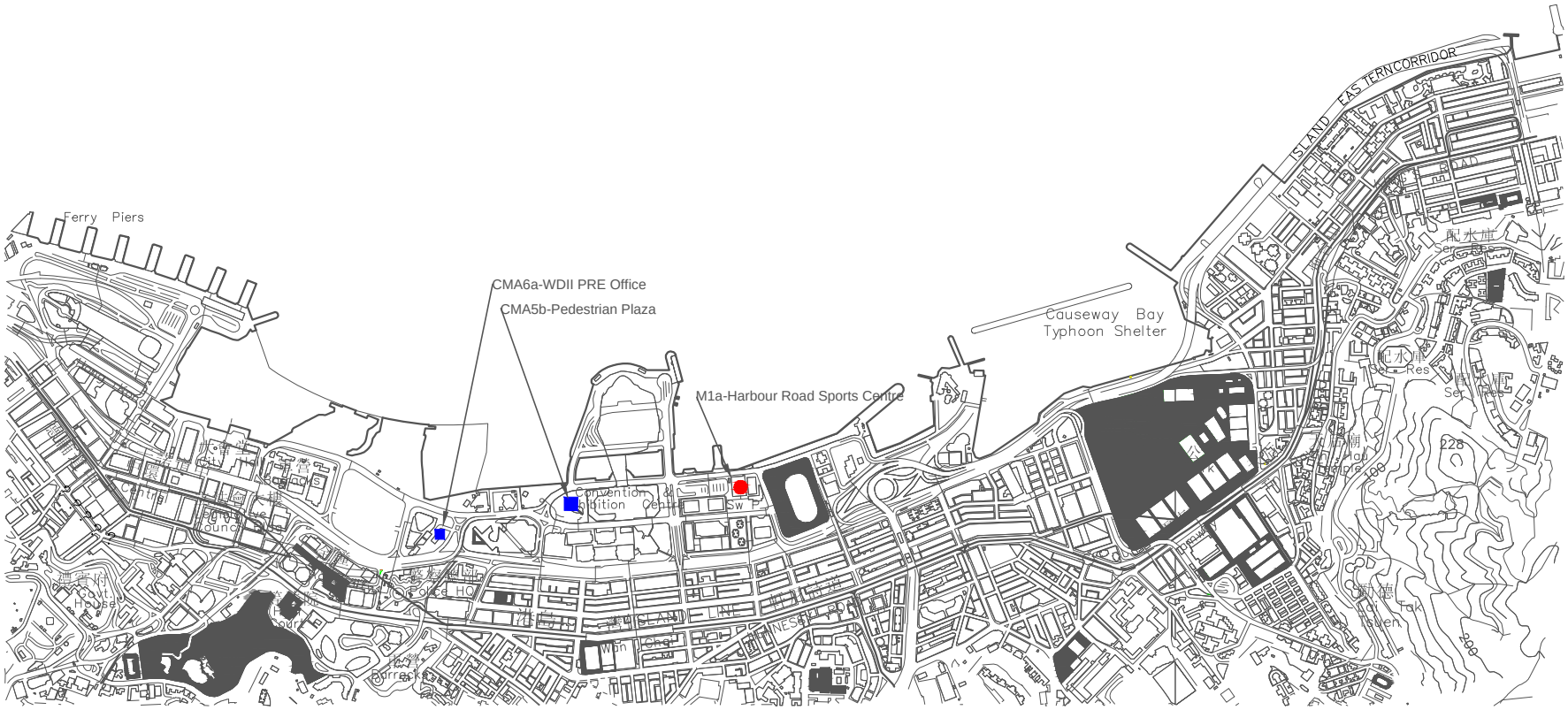


***Figure 4.1***

***Locations of Monitoring Stations***




# LOCATIONS OF AIR QUALITY AND NOISE MONITORING STATIONS

***Appendix 3.1***

***Environmental Mitigation Implementation Schedule***

# 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**

## IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

### Table A13.1 Implementation Schedule for Air Quality Control

| EIA Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation stage | | | | Relevant Legislation and Guidelines |
|---|---|---|---|---|---|---|---|---|
| | | | | Des | C | O | Dec | |
| **Construction Phase** | | | | | | | | |
| ***For the Whole Project*** | | | | | | | | |
| S3.6.5 | Four times a day watering of the work site with active operations. | Work site / during construction | Contractor | | √ | | | 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.<br><br>▪ Strictly limit the truck speed on site to below 10 km per hour and water spraying to keep the haul roads in wet condition;<br><br>▪ Watering during excavation and material handling;<br><br>▪ Provision of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads where necessary; and<br><br>▪ Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. | Work site / during construction | Contractor | | √ | | | |

▪ 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 Agent | Implementation stage | | | | Relevant Legislation and Guidelines |
|---|---|---|---|---|---|---|---|---|
| | | | | Des | C | O | Dec | |
| **Construction Phase** | | | | | | | | |
| ***For the Whole Project*** | | | | | | | | |
| S4.9.4 | Good Site Practice:<br>▪ Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.<br>▪ Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.<br>▪ Mobile plant, if any, shall be sited as far away from NSRs as possible.<br>▪ 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.<br>▪ 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.<br>▪ Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from onsite construction activities. | Work site / during construction | Contractor | | √ | | | EIAO-TM, NCO |
| ***For DP2 – WDII Major Roads (Road P2)*** | | | | | | | | |
| S4.8.3 – S4.8.4 | Use of quiet powered mechanical equipment, movable noise<br>barrier and temporary noise barrier for the following tasks:<br>▪ Temporary road diversion<br>▪ Resurfacing<br>▪ At-grade roadwork | Work site / during construction | Contractor | | √ | | | EIAO-TM, NCO |

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

**Table A13.3 Implementation Schedule for Water Quality Control**

| EIA Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation stage | | | | Relevant Legislation and Guidelines |
|---|---|---|---|---|---|---|---|---|
| | | | | Des | C | O | Dec | |
| **Construction Phase** | | | | | | | | |
| ***For the Whole Project*** | | | | | | | | |
| S5.8 | *Construction Runoff and Drainage*<br>▪ use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow;<br>▪ 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;<br>▪ a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m3 capacity can be used for settling ground water prior to disposal;<br>▪ 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;<br>▪ On-site drainage system shall be installed prior to the commencement of other construction activities. Sediment traps shall be | 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;<br>▪ 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.<br>▪ 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.<br>▪ 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.<br>▪ Minimum distances of 100 m shall be maintained between the storm water discharges and the existing or planned WSD flushing water intakes during construction phase. | | | | | | | |
| S5.8 | *Sewage from Construction Work Force*<br>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 | | √ | | | ProPECC PN 1/94; WPCO (TM-DSS) |

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

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

**Table A13.4 Implementation Schedule for Waste Management**

| EIA Ref | Environmental Protection Measures / Mitigation Measures | Location / Timing | Implementation Agent | Implementation stage | | | | Relevant Legislation and Guidelines |
|---|---|---|---|---|---|---|---|---|
| | | | | Des | C | O | Dec | |
| **Construction Phase** | | | | | | | | |
| ***For the Whole Project*** | | | | | | | | |
| S6.7.7 | *Good Site Practices*<br>Recommendations for good site practices during the construction activities include:<br>▪ 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;<br>▪ training of site personnel in proper waste management and chemical waste handling procedures;<br>▪ provision of sufficient waste disposal points and regular collection for disposal;<br>▪ appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;<br>▪ regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and<br>▪ 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*<br>Recommendations to achieve waste reduction include:<br>• Sort C&D waste from demolition of the existing waterfront structures to recover | Work site / During planning and design stage, and construction stage | Contractor | √ | √ | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | recyclable portions such as metals.<br>• 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.<br>• 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.<br>• Any unused chemicals or those with remaining functional capacity shall be recycled.<br>• Use of reusable non-timber formwork, such as in casting the tunnel box sections, to reduce the amount of C&D material.<br>• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.<br>• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. | | | | | | | |
| S6.7.10 | *General Refuse*<br>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.<br><br>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 blow' light material. | Work site / During the construction period | Contractor | | √ | | | Public Health and Municipal Services Ordinance (Cap. 132) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| S6.7.11 | *Chemical Wastes*<br>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 | | √ | | | Waste Disposal (Chemical Waste) (General) Regulation<br>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes |
| S6.7.12 – S6.7.13 | *Construction and Demolition Material*<br>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.<br><br>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.<br>An Independent Environment Checker shall be responsible for auditing the results of the system. | Work site / During the construction period | Contractor and Independent Environmental Checker | | √ | | | DEVB TCW No.6/2010;<br>ETWB TCW No. 33/2002;<br>ETWB TCW No. 19/2005 |
| S6.7.14 | *Bentonite Slurry*<br>The disposal of residual used bentonite slurry shall follow the good practice guidelines stated | Work site / During the construction period | Contractor | | √ | | | ProPECC PN 1/94 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | in ProPECC PN 1/94 "Construction Site Drainage" and listed as follows:<br><br>▪ 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.<br><br>▪ 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.<br><br>▪ 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 / Mitigation Measures | Location / Timing | Implementation Agent | Implementation stage | | | | Relevant Legislation and Guidelines |
|---|---|---|---|---|---|---|---|---|
| | | | | Des | C | O | Dec | |
| **Construction Phase** | | | | | | | | |
| ***For the Whole 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 | √ | √ | | | 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 | √ | √ | | | EIAO TM |
| Table 10.5 | CM3 Trees unavoidably affected by the works shall be transplanted where practical. | Work site / During Construction Phase | Contractor | √ | √ | | | EIAO TM |
| Table 10.5 | CM4 Compensatory tree planting shall be provided to compensate for felled trees. | Work site / During Construction Phase | Contractor | √ | √ | | | 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 | | √ | | | EIAO TM |
| ***For DP2 – WDII 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 | √ | √ | | | 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 | √ | √ | | | EIAO TM |
| Table 10.5 | CM3 Trees unavoidably affected by the works shall be transplanted where practical. | Work site / During Construction Phase | Contractor | √ | √ | | | EIAO TM |
| Table 10.5 | CM4 Compensatory tree planting shall be provided to compensate for felled trees. | Work site / During Construction Phase | Contractor | √ | √ | | | 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 | | √ | | | EIAO TM |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Operation Phase** | | | | | | | | |
| ***For DP2 – WDII Major Roads (Road P2)*** | | | | | | | | |
| Table 10.6, Figure 10.5.1-10.5.5 | OM1 Aesthetic design of buildings and road-related structures, including viaducts, vent buildings, subways, footbridges and noise barriers and enclosure. | Work site / During Design Stage and Operation Phases | CEDD/HyD | | √ | √ | | ETWB TCW 2/2004 |
| Table 10.6, Figure 10.5.1-10.5.5 | OM3 Buffer Tree and Shrub Planting to screen proposed roads and associated structures. | Work site / During Design Stage and Operation Phases | CEDD/HyD | | √ | √ | | ETWB TCW 2/2004 |
| Table 10.6, Figure 10.5.1-10.5.5 | OM5 Aesthetic streetscape design. | Work site / During Design Stage and Operation Phases | CEDD/HyD | | √ | √ | | ETWB TCW 2/2004 |
| Table 10.6, Figure 10.5.1-10.5.5 | OM6 Aesthetic design of roadside amenity areas | Work site / During Design Stage and Operation Phases | CEDD/HyD | | √ | √ | | ETWB TCW 2/2004 |

- 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 Level inμg/m3 | | 24-hour TSP Level 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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Tel: (852) 2873 6860
Fax: (852) 2555 7533

HOKLAS 028 CAL

# CERTIFICATE OF CALIBRATION

**Certificate No.:** 16CA1117 01-01 

## Item tested

| | | | |
|---|---|---|---|
| Description: | Sound Level Meter (Type 1) | , | Microphone |
| Manufacturer: | B & K | , | B & K |
| Type/Model No.: | 2236 | , | 4188 |
| Serial/Equipment No.: | 2100736 | , | 2288941 |
| Adaptors used: | - | , | - |

## Item submitted by

| | |
|---|---|
| Customer Name: | Lam Geotechnics Limited |
| Address of Customer: | - |
| Request No.: | - |
| Date of receipt: | 17-Nov-2016 |

**Date of test:** 18-Nov-2016

## Reference equipment used in the calibration

| Description: | Model: | Serial No. | Expiry Date: | Traceable to: |
|---|---|---|---|---|
| Multi function sound calibrator | B&K 4226 | 2288444 | 18-Jun-2017 | CIGISMEC |
| Signal generator | DS 360 | 33873 | 18-Apr-2017 | CEPREI |
| Signal generator | DS 360 | 61227 | 18-Apr-2017 | CEPREI |

## Ambient conditions

| | |
|---|---|
| Temperature: | 23 ± 1 °C |
| Relative humidity: | 50 ± 10 % |
| Air pressure: | 1005 ± 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.

Actual Measurement data are documented on worksheets.

**Approved Signatory:** Huang Jian Min/Feng Jun Qi **Date:** 21-Nov-2016 **Company Chop:** SOILS & MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

**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.

綜合試驗有限公司
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HOKLAS 028 CAL

# CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA1117 01-01 Page 2 of 2

## 1, Electrical Tests

The electrical tests were perfomed 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 Uncertainty (dB) | Coverage Factor |
|---|---|---|---|---|
| Self-generated noise | A | Pass | 0.3 | |
| | C | Pass | 1.0 | 2.1 |
| | Lin | Pass | 2.0 | 2.2 |
| 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 | A | Pass | 0.3 | |
| | C | 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 $1/10^3$ at 4kHz | Pass | 0.3 | |
| | 1 ms burst duty factor $1/10^4$ 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 Uncertainty (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.

- End -

Calibrated by: Fung Chi Yip Date: 18-Nov-2016

Checked by: Lam Tze Wai Date: 21-Nov-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.

綜合試驗有限公司
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Tel: (852) 2873 6860
Fax: (852) 2555 7533

# CERTIFICATE OF CALIBRATION

**Certificate No.:** 16CA0513 01-02 **Page:** 1 **of** 2

## Item tested

| | |
|---|---|
| Description: | Acoustical Calibrator (Class 1) |
| Manufacturer: | Rion Co., Ltd. |
| Type/Model No.: | NC-73 |
| Serial/Equipment No.: | 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: | Model: | Serial No. | Expiry Date: | Traceable to: |
|---|---|---|---|---|
| Lab standard microphone | B&K 4180 | 2412857 | 14-Apr-2017 | SCL |
| Preamplifier | B&K 2673 | 2239857 | 28-Apr-2017 | CEPREI |
| Measuring amplifier | B&K 2610 | 2346941 | 26-Apr-2017 | CEPREI |
| Signal generator | DS 360 | 61227 | 18-Apr-2017 | CEPREI |
| Digital multi-meter | 34401A | US36087050 | 18-Apr-2017 | CEPREI |
| Audio analyzer | 8903B | GB41300350 | 19-Apr-2017 | CEPREI |
| Universal counter | 53132A | MY40003662 | 19-Apr-2017 | CEPREI |

## Ambient conditions

| | |
|---|---|
| Temperature: | 22 ± 1 °C |
| Relative humidity: | 55 ± 10 % |
| Air pressure: | 1010 ± 5 hPa |

## Test specifications

1. 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.
3. 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:** Huang Jian Min/Feng Jun Qi **Date:** 18-May-2016 **Company Chop:**

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

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# CERTIFICATE OF CALIBRATION

(Continuation Page)

**Certificate No.:** 16CA0513 01-02 **Page:** 2 **of** 2

## 1, 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 0.7 %

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.

- End -

**Calibrated by:** Fung Chi Yip **Date:** 17-May-2016

**Checked by:** Lam Tze Wai **Date:** 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.

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
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# ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 20, 2016 Rootsmeter S/N 0438320 Ta (K) - 293
Operator Tisch Orifice I.D. - 3166 Pa (mm) - 748.03

| PLATE OR Run # | VOLUME START (m3) | VOLUME STOP (m3) | DIFF VOLUME (m3) | DIFF TIME (min) | METER DIFF Hg (mm) | ORFICE DIFF H2O (in.) |
|---|---|---|---|---|---|---|
| 1 | NA | NA | 1.00 | 1.4270 | 3.2 | 2.00 |
| 2 | NA | NA | 1.00 | 1.0220 | 6.4 | 4.00 |
| 3 | NA | NA | 1.00 | 0.9100 | 7.9 | 5.00 |
| 4 | NA | NA | 1.00 | 0.8730 | 8.8 | 5.50 |
| 5 | NA | NA | 1.00 | 0.7180 | 12.7 | 8.00 |

## DATA TABULATION

| Vstd | (x axis) Qstd | (y axis) |
|---|---|---|
| 0.9967 | 0.6985 | 1.4150 |
| 0.9925 | 0.9711 | 2.0010 |
| 0.9904 | 1.0883 | 2.2372 |
| 0.9892 | 1.1332 | 2.3464 |
| 0.9840 | 1.3705 | 2.8299 |

Qstd slope (m) = 2.10714
intercept (b) = -0.05158
coefficient (r) = 0.99978

y axis = SQRT[H2O(Pa/760)(298/Ta)]

| Va | (x axis) Qa | (y axis) |
|---|---|---|
| 0.9957 | 0.6977 | 0.8851 |
| 0.9915 | 0.9701 | 1.2517 |
| 0.9893 | 1.0872 | 1.3995 |
| 0.9882 | 1.1320 | 1.4678 |
| 0.9830 | 1.3691 | 1.7702 |

Qa slope (m) = 1.31946
intercept (b) = -0.03226
coefficient (r) = 0.99978

y axis = SQRT[H2O(Ta/Pa)]

## CALCULATIONS

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

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

For subsequent flow rate calculations:

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

# Calibration Data for High Volume Sampler (TSP Sampler)

| | | | |
|---|---|---|---|
| **Location** | : CMA5b | **Calibration Date** | : 23-Feb-17 |
| **Equipment no.** | : HVS010 | **Calibration Due Date** | : 23-Apr-17 |

## CALIBRATION OF CONTINUOUS FLOW RECORDER

| Ambient Condition | | | | | |
|---|---|---|---|---|---|
| **Temperature, $T_a$** | 291 | Kelvin | **Pressure, $P_a$** | 1017 | mmHg |

| Orifice Transfer Standard Information | | | | | |
|---|---|---|---|---|---|
| **Equipment No.** | **Ori002** | **Slope, $m_c$** | 2.10714 | **Intercept, bc** | -0.05158 |
| **Last Calibration Date** | 20-May-16 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ | | | |
| **Next Calibration Date** | 20-May-17 | $= m_c \times Q_{std} + b_c$ | | | |

**Calibration of TSP**

| Calibration Point | Manometer Reading H (inches of water) (up) | (down) | (difference) | $Q_{std}$ ($m^3$ / min.) X-axis | Continuous Flow Recorder, W (CFM) | IC $(W(P_a/1013.3\times298/T_a)^{1/2}/35.31)$ Y-axis |
|---|---|---|---|---|---|---|
| 1 | 1.4 | 1.4 | 2.8 | 0.8296 | 36 | 36.4969 |
| 2 | 2.2 | 2.2 | 4.4 | 1.0337 | 42 | 42.5797 |
| 3 | 3.6 | 3.6 | 7.2 | 1.3155 | 52 | 52.7177 |
| 4 | 4.6 | 4.6 | 9.2 | 1.4838 | 57 | 57.7867 |
| 5 | 5.8 | 5.8 | 11.6 | 1.6631 | 63 | 63.8695 |

By Linear Regression of Y on X

Slope, m = 33.0908 Intercept, b = 8.8257

Correlation Coefficient* = 0.9996

Calibration Accepted = Yes/~~No~~**

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

** Delete as appropriate.

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** | : 23-Feb-17 | **Date** | : 23-Feb-17 |

# Calibration Data for High Volume Sampler (TSP Sampler)

| | | | | | |
|---|---|---|---|---|---|
| **Location** | : | CMA5b | **Calibration Date** | : | 21-Apr-17 |
| **Equipment no.** | : | HVS010 | **Calibration Due Date** | : | 21-Jun-17 |

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

| **Ambient Condition** | | | | | |
|---|---|---|---|---|---|
| **Temperature, $T_a$** | 299 | Kelvin | **Pressure, $P_a$** | 1008 | mmHg |

| **Orifice Transfer Standard Information** | | | | | |
|---|---|---|---|---|---|
| **Equipment No.** | **Ori002** | **Slope, $m_c$** | 2.10714 | **Intercept, bc** | -0.05158 |
| **Last Calibration Date** | 20-May-16 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ | | | |
| **Next Calibration Date** | 20-May-17 | $= m_c \times Q_{std} + b_c$ | | | |

| **Calibration of TSP** | | | | | | |
|---|---|---|---|---|---|---|
| **Calibration Point** | **Manometer Reading H (inches of water)** (up) | (down) | (difference) | **$Q_{std}$** ($m^3$ / min.) **X-axis** | **Continuous Flow Recorder, W** (CFM) | **IC** ($W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31$) **Y-axis** |
| **1** | 1.4 | 1.4 | 2.8 | 0.8152 | 38 | 37.8371 |
| **2** | 2.1 | 2.1 | 4.2 | 0.9929 | 44 | 43.8113 |
| **3** | 3.3 | 3.3 | 6.6 | 1.2385 | 52 | 51.7770 |
| **4** | 4.3 | 4.3 | 8.6 | 1.4102 | 57 | 56.7556 |
| **5** | 5.5 | 5.5 | 11.0 | 1.5917 | 62 | 61.7341 |

By Linear Regression of Y on X

| | | | | | |
|---|---|---|---|---|---|
| Slope, m | = | 30.8725 | Intercept, b | = | 13.0364 |
| Correlation Coefficient* | = | 0.9991 | | | |
| Calibration Accepted | = | Yes/~~No~~** | | | |

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

** Delete as appropriate.

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** | : | 21-Apr-17 | **Date** | : | 21-Apr-17 |

# Calibration Data for High Volume Sampler (TSP Sampler)

| | | | | | |
|---|---|---|---|---|---|
| **Location** | : | CMA6a | **Calibration Date** | : | 23-Feb-17 |
| **Equipment no.** | : | HVS013 | **Calibration Due Date** | : | 23-Apr-17 |

## CALIBRATION OF CONTINUOUS FLOW RECORDER

| Ambient Condition | | | | | |
|---|---|---|---|---|---|
| **Temperature, $T_a$** | 291 | Kelvin | **Pressure, $P_a$** | 1017 | mmHg |

| Orifice Transfer Standard Information | | | | | |
|---|---|---|---|---|---|
| **Equipment No.** | **Ori002** | **Slope, $m_c$** | 2.10714 | **Intercept, bc** | -0.05158 |
| **Last Calibration Date** | 20-May-16 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ | | | |
| **Next Calibration Date** | 20-May-17 | $= m_c \times Q_{std} + b_c$ | | | |

**Calibration of TSP**

| Calibration Point | Manometer Reading H (inches of water) (up) | (down) | (difference) | $Q_{std}$ ($m^3$ / min.) X-axis | Continuous Flow Recorder, W (CFM) | IC $(W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31)$ Y-axis |
|---|---|---|---|---|---|---|
| 1 | 1.5 | 1.5 | 3.0 | 0.8578 | 34 | 34.4693 |
| 2 | 2.4 | 2.4 | 4.8 | 1.0786 | 42 | 42.5797 |
| 3 | 3.7 | 3.7 | 7.4 | 1.3333 | 51 | 51.7039 |
| 4 | 4.9 | 4.9 | 9.8 | 1.5306 | 57 | 57.7867 |
| 5 | 6.2 | 6.2 | 12.4 | 1.7187 | 64 | 64.8833 |

By Linear Regression of Y on X

Slope, m = 34.9914 Intercept, b = 4.6626

Correlation Coefficient* = 0.9996

Calibration Accepted = Yes/~~No~~**

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

** Delete as appropriate.

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** | : | 23-Feb-17 | **Date** | : | 23-Feb-17 |

# Calibration Data for High Volume Sampler (TSP Sampler)

| | | | | | |
|---|---|---|---|---|---|
| **Location** | : | CMA6a | **Calibration Date** | : | 21-Apr-17 |
| **Equipment no.** | : | HVS013 | **Calibration Due Date** | : | 21-Jun-17 |

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

| Ambient Condition | | | | | |
|---|---|---|---|---|---|
| **Temperature, $T_a$** | 299 | Kelvin | **Pressure, $P_a$** | 1008 | mmHg |

| Orifice Transfer Standard Information | | | | | |
|---|---|---|---|---|---|
| **Equipment No.** | **Ori002** | **Slope, $m_c$** | 2.10714 | **Intercept, bc** | -0.05158 |
| **Last Calibration Date** | 20-May-16 | $(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ | | | |
| **Next Calibration Date** | 20-May-17 | $= m_c \times Q_{std} + b_c$ | | | |

**Calibration of TSP**

| Calibration Point | Manometer Reading H (inches of water) (up) | (down) | (difference) | $Q_{std}$ ($m^3$ / min.) X-axis | Continuous Flow Recorder, W (CFM) | IC $(W(P_a/1013.3 \times 298/T_a)^{1/2}/35.31)$ Y-axis |
|---|---|---|---|---|---|---|
| **1** | 1.4 | 1.4 | 2.8 | 0.8152 | 38 | 37.8371 |
| **2** | 2.3 | 2.3 | 4.6 | 1.0380 | 44 | 43.8113 |
| **3** | 3.6 | 3.6 | 7.2 | 1.2924 | 52 | 51.7770 |
| **4** | 4.8 | 4.8 | 9.6 | 1.4886 | 56 | 55.7599 |
| **5** | 6.1 | 6.1 | 12.2 | 1.6750 | 64 | 63.7256 |

By Linear Regression of Y on X

Slope, m = 29.3004 Intercept, b = 13.6098

Correlation Coefficient* = 0.9957

Calibration Accepted = Yes/~~No~~**

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

** Delete as appropriate.

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** | : | 21-Apr-17 | **Date** | : | 21-Apr-17 |

***Appendix 5.1***

***Monitoring Schedules for Reporting Month and Coming Reporting Month***

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

**Environmental Monitoring Schedule**
**April 2017**

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | 28-Mar<br>Noise (daytime) | 29-Mar | 30-Mar | 31-Mar<br>24hr TSP | 1-Apr<br>1hr TSP |
| 2-Apr | 3-Apr<br>Noise (daytime) | 4-Apr | 5-Apr | 6-Apr<br>24hr TSP | 7-Apr<br>1hr TSP | 8-Apr |
| 9-Apr | 10-Apr | 11-Apr<br>Noise (daytime) | 12-Apr<br>24hr TSP | 13-Apr<br>24hr TSP<br>(CMA6a)<br>1hr TSP | 14-Apr | 15-Apr |
| 16-Apr | 17-Apr | 18-Apr<br>24hr TSP<br>Noise (daytime) | 19-Apr<br>24hr TSP<br>(CMA6a)<br>1hr TSP | 20-Apr | 21-Apr | 22-Apr |
| 23-Apr | 24-Apr<br>24hr TSP<br>Noise (daytime) | 25-Apr<br>1hr TSP | 26-Apr | | | |

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

**Tentative Environmental Monitoring Schedule**
**May 2017**

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | 27-Apr | 28-Apr<br>24hr TSP | 29-Apr<br>1hr TSP |
| 30-Apr | 1-May | 2-May<br>Noise (daytime) | 3-May | 4-May<br>24hr TSP<br>Noise (daytime) | 5-May<br>1hr TSP | 6-May |
| 7-May | 8-May<br>Noise (daytime) | 9-May<br>Noise (daytime) | 10-May<br>24hr TSP | 11-May<br>1hr TSP | 12-May | 13-May |
| 14-May | 15-May<br>Noise (daytime) | 16-May<br>24hr TSP<br>Noise (daytime) | 17-May<br>1hr TSP | 18-May | 19-May | 20-May |
| 21-May | 22-May<br>24hr TSP<br>Noise (daytime) | 23-May<br>1hr TSP<br>Noise (daytime) | 24-May | 25-May | 26-May | |

***Appendix 5.2***

***Noise Monitoring Results and Graphical Presentations***

**Noise Monitoring Result for EP-376/2009**

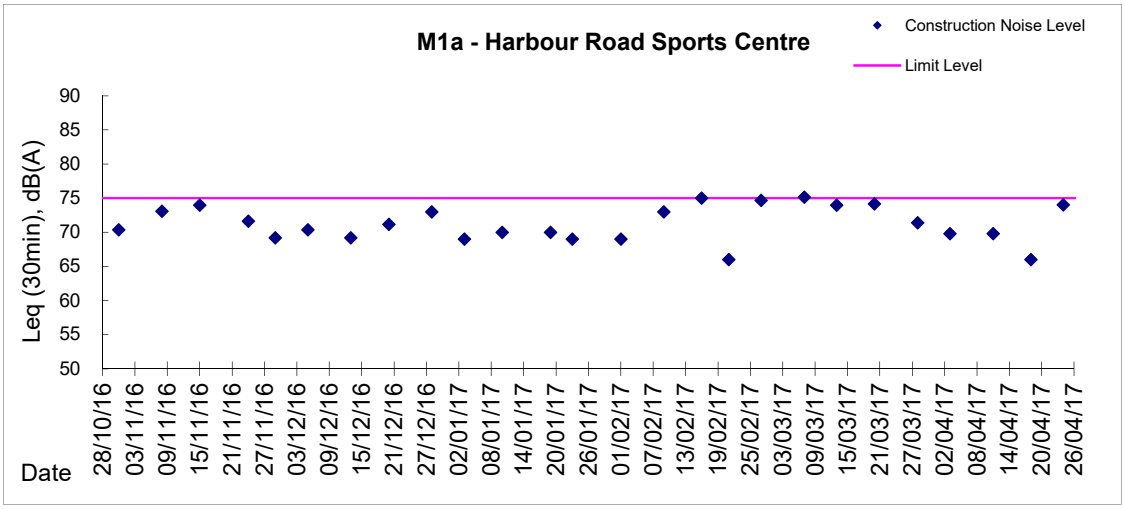
**Day Time (0700 - 1900hrs on normal weekdays)**

Location: M1a - Harbour Road Sports Centre

| Date | Time | Weather | Measurement Noise Level | | | Baseline Level | Construction Noise Level | Limit Level |
|---|---|---|---|---|---|---|---|---|
| | | | Leq | L10 | L90 | Leq | Leq | Leq |
| | | | Unit: dB(A), (30-min) | | | | | |
| 28/3/2017 | 09:50 | Fine | 75.1 | 76.5 | 71.0 | 73 | 71 | 75 |
| 3/4/2017 | 14:42 | Fine | 74.5 | 75.5 | 70.9 | 73 | 70 | 75 |
| 11/4/2017 | 13:40 | Cloudy | 74.5 | 76.0 | 71.0 | 73 | 70 | 75 |
| 18/4/2017 | 10:00 | Fine | 73.6 | 75.5 | 70.0 | 73 | 66 | 75 |
| 24/4/2017 | 13:46 | Cloudy | 76.4 | 78.0 | 74.0 | 73 | 74 | 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 µg/m3
Limit Level - 260 µg/m3

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, $m^3$/min | | | Total Volume, $m^3$ | TSP Level, $\mu g/m^3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Initial | Final | Initial | Final | | Initial, $Q_{si}$ | Final, $Q_{sf}$ | Average | | |
| 31-Mar-17 | 8:00 | Rainy | 19823 | 2.6104 | 2.6631 | 8187.71 | 8211.71 | 24.00 | 0.85 | 0.85 | 0.85 | 1221 | 43.2 |
| 6-Apr-17 | 8:00 | Fine | 19779 | 2.8292 | 2.9819 | 8214.71 | 8238.71 | 24.00 | 0.84 | 0.84 | 0.84 | 1205 | 126.7 |
| 12-Apr-17 | 8:00 | Rainy | 19877 | 2.6223 | 2.7310 | 8241.71 | 8265.71 | 24.00 | 0.90 | 0.91 | 0.90 | 1301 | 83.5 |
| 18-Apr-17 | 8:00 | Fine | 19972 | 2.9208 | 3.0670 | 8268.71 | 8292.71 | 24.00 | 0.83 | 0.83 | 0.83 | 1196 | 122.2 |
| 24-Apr-17 | 8:00 | Cloudy | 20077 | 2.4703 | 2.6024 | 8295.71 | 8319.71 | 24.00 | 0.89 | 0.89 | 0.89 | 1282 | 103.0 |

Report on 1-hour TSP monitoring for EP-376/2009
Action Level - 339.7 µg/m3
Limit Level - 500 µg/m3

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, $m^3$/min | | | Total Volume, $m^3$ | TSP Level, $\mu g/m^3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Initial | Final | Initial | Final | | Initial, $Q_{si}$ | Final, $Q_{sf}$ | Average | | |
| 1-Apr-17 | 8:03 | Cloudy | 19821 | 2.6456 | 2.6568 | 8211.71 | 8212.71 | 1.00 | 0.91 | 0.91 | 0.91 | 55 | 205.3 |
| 1-Apr-17 | 9:35 | Cloudy | 19799 | 2.8229 | 2.8336 | 8212.71 | 8213.71 | 1.00 | 0.91 | 0.91 | 0.91 | 55 | 196.2 |
| 1-Apr-17 | 10:45 | Cloudy | 19804 | 2.7975 | 2.8064 | 8213.71 | 8214.71 | 1.00 | 0.91 | 0.91 | 0.91 | 55 | 163.2 |
| 7-Apr-17 | 8:15 | Fine | 19996 | 2.8489 | 2.8581 | 8238.71 | 8239.71 | 1.00 | 0.84 | 0.86 | 0.85 | 51 | 180.4 |
| 7-Apr-17 | 9:35 | Fine | 19893 | 2.6444 | 2.6496 | 8239.71 | 8240.71 | 1.00 | 0.84 | 0.84 | 0.84 | 50 | 103.7 |
| 7-Apr-17 | 11:00 | Fine | 19885 | 2.6526 | 2.6649 | 8240.71 | 8241.71 | 1.00 | 0.89 | 0.89 | 0.89 | 54 | 229.4 |
| 13-Apr-17 | 8:10 | Cloudy | 19848 | 2.6621 | 2.6671 | 8265.71 | 8266.71 | 1.00 | 0.96 | 0.96 | 0.96 | 58 | 86.4 |
| 13-Apr-17 | 9:40 | Cloudy | 19852 | 2.6378 | 2.6448 | 8266.71 | 8267.71 | 1.00 | 0.96 | 0.96 | 0.96 | 58 | 121.0 |
| 13-Apr-17 | 11:00 | Cloudy | 19595 | 2.8511 | 2.8625 | 8267.71 | 8268.71 | 1.00 | 0.96 | 0.96 | 0.96 | 58 | 197.1 |
| 19-Apr-17 | 8:05 | Fine | 20167 | 2.5751 | 2.5824 | 8292.71 | 8293.71 | 1.00 | 0.89 | 0.89 | 0.89 | 53 | 137.0 |
| 19-Apr-17 | 9:50 | Fine | 20044 | 2.5039 | 2.5057 | 8293.71 | 8294.71 | 1.00 | 0.83 | 0.83 | 0.83 | 50 | 36.1 |
| 19-Apr-17 | 13:00 | Fine | 20072 | 2.4903 | 2.4936 | 8294.71 | 8295.71 | 1.00 | 0.89 | 0.89 | 0.89 | 53 | 61.9 |
| 25-Apr-17 | 8:25 | Cloudy | 20137 | 2.5387 | 2.5453 | 8319.75 | 8320.75 | 1.00 | 0.76 | 0.76 | 0.76 | 46 | 143.8 |
| 25-Apr-17 | 9:55 | Cloudy | 20143 | 2.5594 | 2.5712 | 8320.75 | 8321.75 | 1.00 | 0.76 | 0.76 | 0.76 | 46 | 257.2 |
| 25-Apr-17 | 11:00 | Cloudy | 20152 | 2.5829 | 2.5960 | 8321.75 | 8322.75 | 1.00 | 0.76 | 0.76 | 0.76 | 46 | 285.5 |

*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

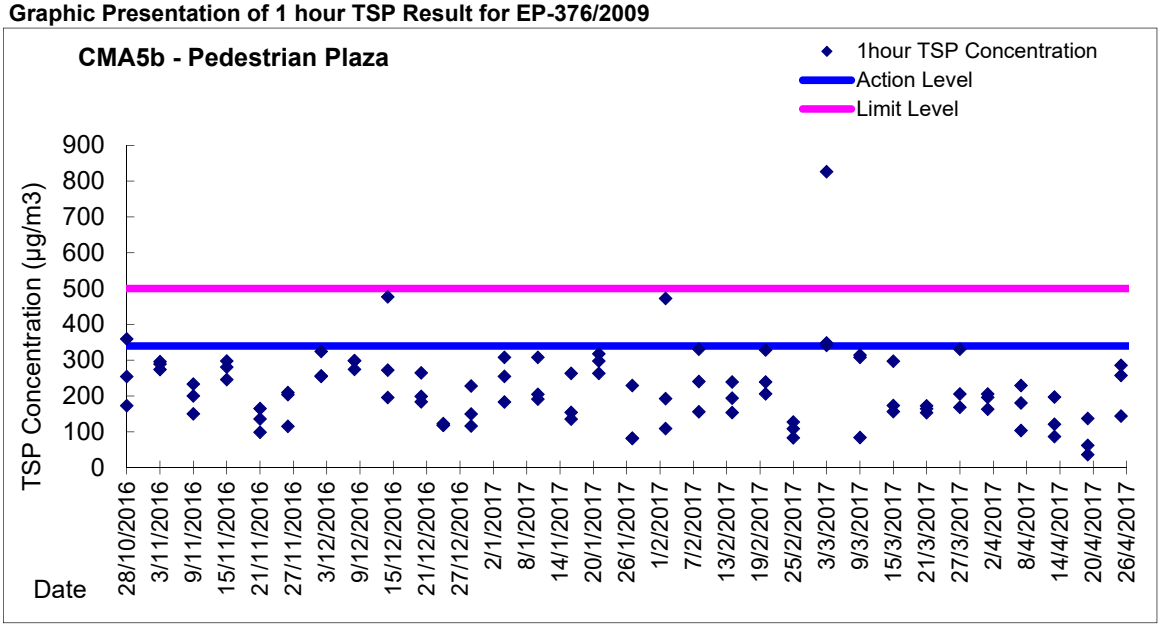
| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, $m^3$/min | | | Total Volume, $m^3$ | TSP Level, $\mu g/m^3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Initial | Final | Initial | Final | | Initial, $Q_{si}$ | Final, $Q_{sf}$ | Average | | |
| 31-Mar-17 | 8:00 | Rainy | 18493 | 2.8432 | 2.8784 | 1875.26 | 1899.26 | 24.00 | 0.97 | 0.98 | 0.98 | 1406 | 25.0 |
| 6-Apr-17 | 8:00 | Fine | 19777 | 2.8280 | 2.9494 | 1902.26 | 1926.26 | 24.00 | 1.02 | 1.02 | 1.02 | 1469 | 82.6 |
| 13-Apr-17 | 14:03 | Cloudy | 19971 | 2.9067 | 2.9442 | 1932.26 | 1956.26 | 24.00 | 0.92 | 0.92 | 0.92 | 1322 | 28.4 |
| 19-Apr-17 | 12:02 | Fine | 20084 | 2.4684 | 2.5116 | 1959.27 | 1983.27 | 24.00 | 0.90 | 0.91 | 0.91 | 1304 | 33.1 |
| 24-Apr-17 | 8:00 | Cloudy | 20161 | 2.5798 | 2.7072 | 1983.31 | 2007.31 | 24.00 | 0.79 | 0.79 | 0.79 | 1133 | 112.4 |

Remarks: Due to interruption of electricity, the 24hr TSP was rescheduled from 12 and 18 April 2017 to 13 and 19 April 2017 respectively.

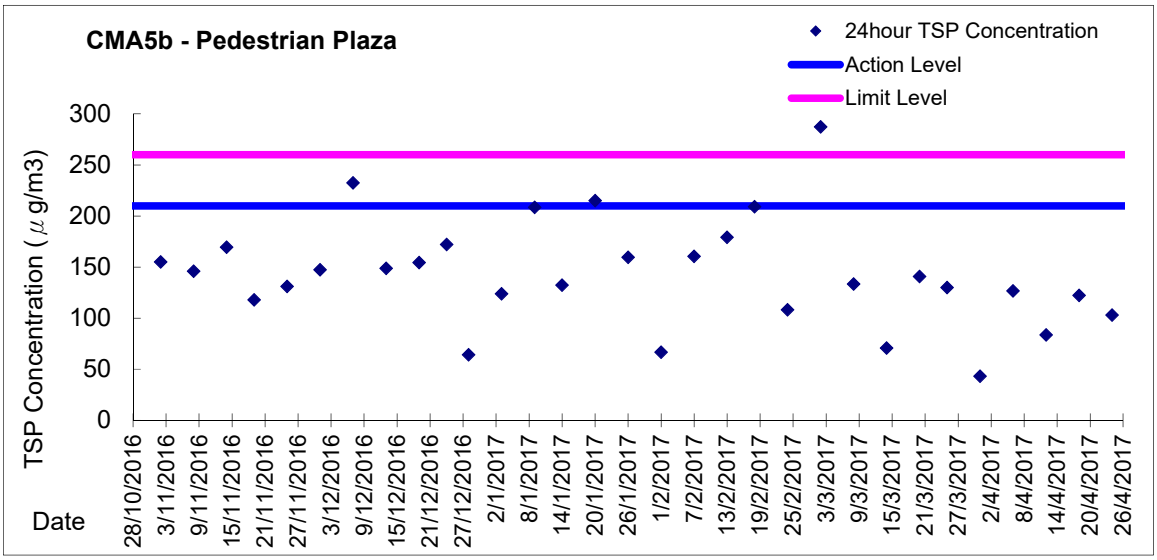
Report on 1-hour TSP monitoring for EP-376/2009
Action Level - 333 μg/m3
Limit Level - 500 μg/m3

| Date | Sampling Time | Weather Condition | Filter paper no. | Filter Weight, g | | Elapse Time, hr | | Sampling Time, hr | Flow Rate, $m^3$/min | | | Total Volume, $m^3$ | TSP Level, $\mu g/m^3$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Initial | Final | Initial | Final | | Initial, $Q_{si}$ | Final, $Q_{sf}$ | Average | | |
| 1-Apr-17 | 8:15 | Cloudy | 19814 | 2.8203 | 2.8221 | 1899.26 | 1900.26 | 1.00 | 1.03 | 1.03 | 1.03 | 62 | 29.0 |
| 1-Apr-17 | 9:35 | Cloudy | 19810 | 2.8290 | 2.8301 | 1900.26 | 1901.26 | 1.00 | 1.03 | 1.03 | 1.03 | 62 | 17.7 |
| 1-Apr-17 | 10:40 | Cloudy | 19800 | 2.8248 | 2.8272 | 1901.26 | 1902.26 | 1.00 | 1.03 | 1.03 | 1.03 | 62 | 38.7 |
| 7-Apr-17 | 8:05 | Fine | 19998 | 2.8249 | 2.8292 | 1926.26 | 1927.26 | 1.00 | 0.91 | 0.91 | 0.91 | 55 | 78.8 |
| 7-Apr-17 | 9:35 | Fine | 19892 | 2.6352 | 2.6412 | 1927.26 | 1928.26 | 1.00 | 0.91 | 0.91 | 0.91 | 55 | 110.0 |
| 7-Apr-17 | 11:00 | Fine | 19883 | 2.6627 | 2.6672 | 1928.26 | 1929.26 | 1.00 | 0.91 | 0.91 | 0.91 | 55 | 82.5 |
| 13-Apr-17 | 8:00 | Cloudy | 19873 | 2.6331 | 2.6460 | 1929.26 | 1930.26 | 1.00 | 1.03 | 1.03 | 1.03 | 62 | 208.6 |
| 13-Apr-17 | 9:45 | Cloudy | 19859 | 2.6774 | 2.6797 | 1930.26 | 1931.26 | 1.00 | 1.03 | 1.03 | 1.03 | 62 | 37.2 |
| 13-Apr-17 | 13:00 | Cloudy | 19958 | 2.8401 | 2.8435 | 1931.26 | 1932.26 | 1.00 | 1.03 | 1.03 | 1.03 | 62 | 55.0 |
| 19-Apr-17 | 8:00 | Fine | 19970 | 2.8378 | 2.8392 | 1956.26 | 1957.26 | 1.00 | 0.90 | 0.90 | 0.90 | 54 | 25.8 |
| 19-Apr-17 | 9:30 | Fine | 20049 | 2.5050 | 2.5106 | 1957.26 | 1958.26 | 1.00 | 0.90 | 0.90 | 0.90 | 54 | 103.2 |
| 19-Apr-17 | 11:00 | Fine | 20086 | 2.4677 | 2.4703 | 1958.26 | 1959.26 | 1.00 | 0.90 | 0.90 | 0.90 | 54 | 47.9 |
| 25-Apr-17 | 8:10 | Cloudy | 20160 | 2.5458 | 2.5502 | 2007.31 | 2008.31 | 1.00 | 0.79 | 0.79 | 0.79 | 47 | 93.3 |
| 25-Apr-17 | 9:57 | Cloudy | 20158 | 2.5441 | 2.5478 | 2008.31 | 2009.31 | 1.00 | 0.79 | 0.79 | 0.79 | 47 | 78.4 |
| 25-Apr-17 | 11:00 | Cloudy | 20149 | 2.5554 | 2.5643 | 2009.31 | 2010.31 | 1.00 | 0.79 | 0.79 | 0.79 | 47 | 188.7 |

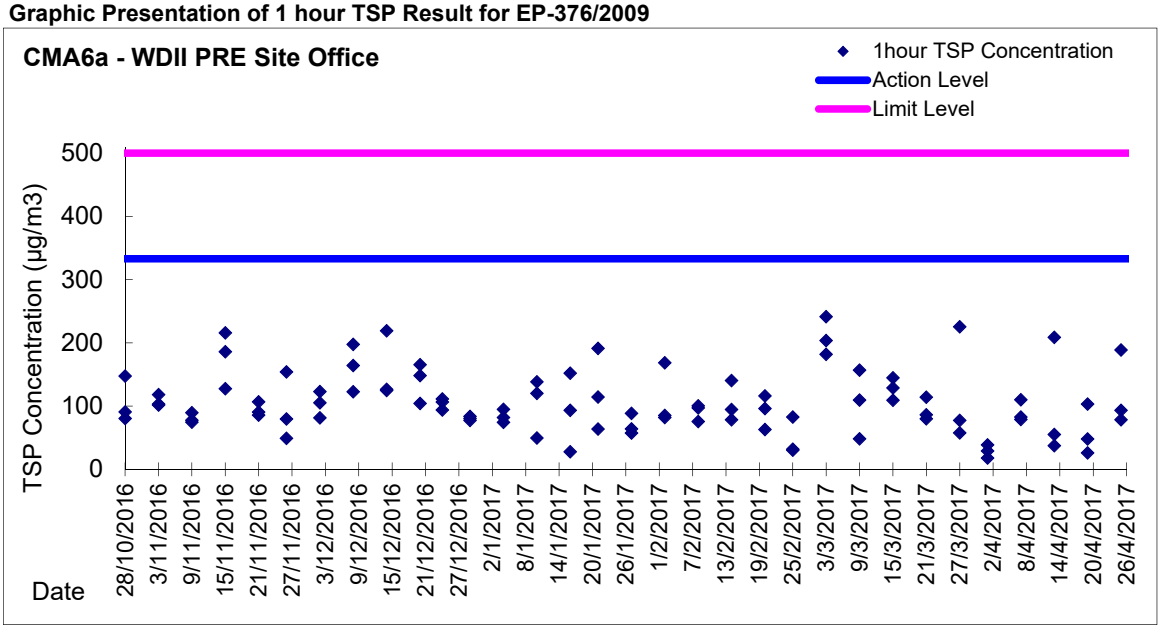
**Graphic Presentation of 1 hour TSP Result for EP-376/2009**



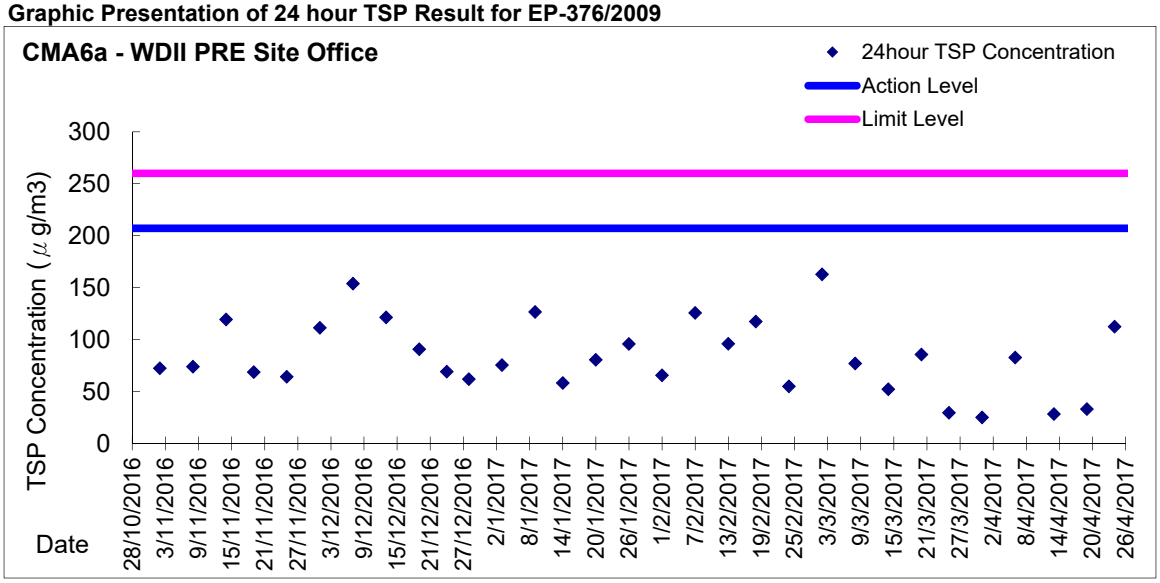

**Graphic Presentation of 24 hour TSP Result for EP-376/2009**



**Graphic Presentation of 1 hour TSP Result for EP-376/2009**




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



***Appendix 6.1***

***Event Action Plans***

**Event/Action Plan for Construction Noise**

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **ER** | **CONTRACTOR** |
| Action Level being exceeded | 1. Notify ER, IEC and Contractor;<br>2. Carry out investigation;<br>3. Report the results of investigation to the IEC, ER and Contractor;<br>4. Discuss with the IEC and Contractor on remedial measures required;<br>5. Increase monitoring frequency to check mitigation effectiveness.<br>(The above actions should be taken within 2 working days after the exceedance is identified) | 1. Review the investigation results submitted by the ET;<br>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;<br>3. Advise the ER on the effectiveness of the proposed remedial measures.<br>(The above actions should be taken within 2 working days after the exceedance is identified) | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;<br>4. Supervise the implementation of remedial measures.<br>(The above actions should be taken within 2 working days after the exceedance is identified) | 1. Submit noise mitigation proposals to IEC and ER;<br>2. Implement noise mitigation proposals.<br>(The above actions should be taken within 2 working days after the exceedance is identified) |

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **ER** | **CONTRACTOR** |
| Limit Level being exceeded | 1. Inform IEC, ER, Contractor and EPD;<br>2. Repeat measurements to confirm findings;<br>3. Increase monitoring frequency;<br>4. 4. Identify source and investigate the cause of exceedance;<br>5. 5. Carry out analysis of Contractor's working procedures;<br>6. 6. Discuss with the IEC, Contractor and ER on remedial measures required;<br>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;<br>8. If exceedance stops, cease additional monitoring.<br>(The above actions should be taken within 2 working days after the exceedance is identified) | 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;<br>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.<br>(The above actions should be taken within 2 working days after the exceedance is identified) | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;<br>4. Supervise the implementation of remedial measures;<br>5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.<br>(The above actions should be taken within 2 working days after the exceedance is identified) | 1. Take immediate action to avoid further exceedance;<br>2. Submit proposals for remedial actions to IEC and ER within 3 working days of notification;<br>3. Implement the agreed proposals;<br>4. Submit further proposal if problem still not under control;<br>5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.<br>(The above actions should be taken within 2 working days after the exceedance is identified) |

## Event / Action Plan for Construction Air Quality

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

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | **ET** | **IEC** | **ER** | **CONTRACTOR** |
| Limit level being exceeded by one sampling day | Repeat in-situ measurement to confirm findings;<br>Identify source(s) of impact; Inform IEC, contractor and EPD;<br>Check monitoring data, all plant, equipment and Contractor's working methods;<br>Discuss mitigation measures with IEC, ER and Contractor; Ensure mitigation measures are implemented;<br>Increase the monitoring frequency to daily until no exceedance of Limit level.<br>(The above actions should be taken within 1 working day after the exceedance is identified) | Discuss with ET and Contractor on the mitigation measures;<br>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;<br>Assess the effectiveness of the implemented mitigation measures.<br>(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;<br>Request Contractor to critically review the working methods;<br>Make agreement on the mitigation measures to be implemented;<br>Assess the effectiveness of the implemented mitigation measures.<br>(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;<br>Rectify unacceptable practice;<br>Check all plant and equipment;<br>Consider changes of working methods;<br>Discuss with ET , IEC and ER and propose mitigation measures to IEC and ER within 3 working days;<br>Implement the agreed mitigation measures.<br>(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;<br>Check monitoring data, all plant, equipment and Contractor's working methods;<br>Discuss mitigation measures with IEC, ER and Contractor;<br>Ensure mitigation measures are implemented;<br>Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.<br>(The above actions should be taken within 1 working day after the exceedance is identified) | Discuss with ET and Contractor on the mitigation measures;<br>Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly;<br>Assess the effectiveness of the implemented mitigation measures.<br>(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;<br>Request Contractor to critically review the working methods;<br>Make agreement on the mitigation measures to be implemented;<br>Assess the effectiveness of the implemented mitigation measures;<br>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.<br>(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;<br>Rectify unacceptable practice;<br>Check all plant and equipment;<br>Consider changes of working methods;<br>Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 3working days;<br>Implement the agreed mitigation measures;<br>As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.<br>(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 | 1. Identify source/reason of exceedance;<br>2. Repeat odour patrol to confirm finding. | 1. Carry out investigation to identify the source/reason of exceedance;<br>2. Rectify any unacceptable practice<br>3. Implement more mitigation measures if necessary;<br>4. Inform EPD or MD if exceedance is considered to be caused by expedient connections or floating debris. |
| **Limit Level** | | |
| Exceedance of Limit Level | 1. Identify source / reason of exceedance;<br>2. Repeat odour patrol to confirm findings;<br>3. Increase odour patrol frequency;<br>4. If exceedance stops, cease additional odour patrol. | 1. Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 2 weeks;<br>2. Rectify any unacceptable practice;<br>3. Formulate remedial actions;<br>4. Ensure remedial actions properly implemented;<br>5. If exceedance continues, consider what more/enhanced mitigation measures shall be implemented;<br>6. 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***

**Lam Geotechnics Limited**

Summary for Notification of Exceedance

| Ref no. | Date | Location | Parameters (Unit) | Measured | Action Level | Limit Level | Follow-up action | |
|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - | - |

***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 |
|---|---|---|---|---|---|---|
| -- | -- | -- | -- | -- | -- | -- |

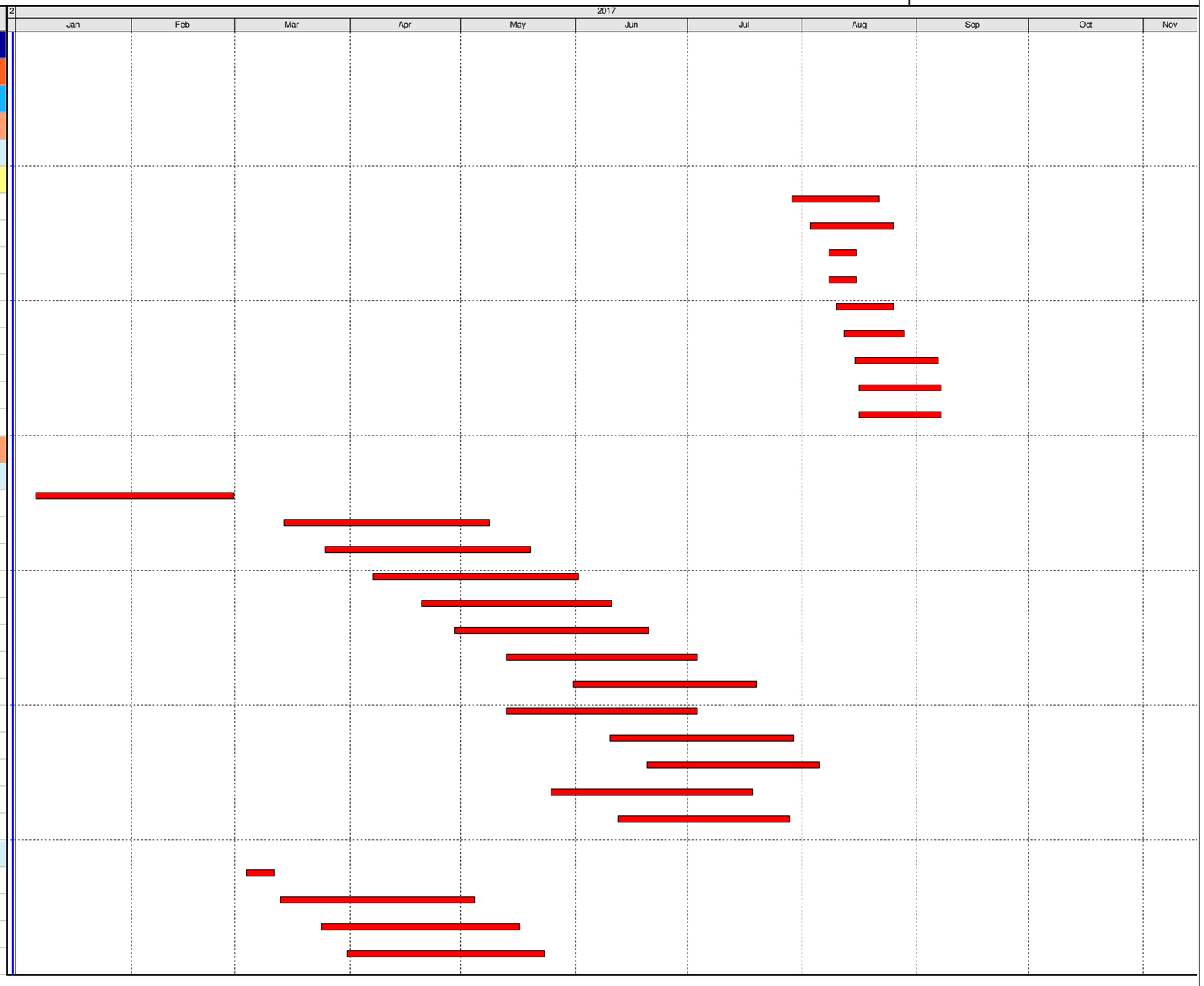
***Appendix 10.1***

***Construction Programme of Individual Contracts***

中國建築-利基聯營
CHINA STATE - BUILD KING JOINT VENTURE

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

| Activity ID | Activity Name | Remaining Dur | Early Start | Early Finish |
|---|---|---|---|---|
| **HK/2012/08 Revised Works Programme Rev.9(DD 31 December 2016)** | | | | |
| **Works for Section Completion** | | | | |
| **Construction** | | | | |
| **Section III - Road D11 & Part of Road P2, Area 4, Implement 1st Stage ITA** | | | | |
| **Roadwork & Utilities** | | | | |
| **Works after the Box Culvert Reinstatement** | | | | |
| SIII10300 | Sec III - roadwork & utilities above box culvert K - storm water drain & subsoil drain | 20 | 29-Jul-17 | 21-Aug-17 |
| SIII10320 | Sec III - roadwork & utilities above box culvert K - Watermain & Irrigation Mains | 20 | 03-Aug-17 | 25-Aug-17 |
| SIII10340 | Sec III - roadwork & utilities above box culvert K - gas main and valve chamber | 7 | 08-Aug-17 | 15-Aug-17 |
| SIII10360 | Sec III - roadwork & utilities above box culvert K - HEC cable duct and catchpit | 7 | 08-Aug-17 | 15-Aug-17 |
| SIII10380 | Sec III - roadwork & utilities above box culvert K - sub-base | 14 | 10-Aug-17 | 25-Aug-17 |
| SIII10400 | Sec III - roadwork & utilities above box culvert K - Road kerb | 14 | 12-Aug-17 | 28-Aug-17 |
| SIII10420 | Sec III - roadwork & utilities above box culvert K - flexible pavement | 20 | 15-Aug-17 | 06-Sep-17 |
| SIII10440 | Sec III - roadwork & utilities above box culvert K - Road Lighting, TCSS Ducts &Traffic Signs | 20 | 16-Aug-17 | 07-Sep-17 |
| SIII10480 | Sec III - roadwork & utilities above box culvert K - lay footpath concrete paver/ pave footpath concrete | 20 | 16-Aug-17 | 07-Sep-17 |
| **Section III A - Road A2, A4, A5, Area 11; Implement 2nd Stage ITA** | | | | |
| **Roadwork & Utilities at CRIII/A1** | | | | |
| SIIIA10260 | Sec III A - roadwork and utilities (Zone A1) - Backfill to pavement founding level | 42 | 06-Jan-17 | 28-Feb-17 |
| SIIIA10280 | Sec III A - roadwork and utlities (Zone A1) - storm water drain & sub-soil drain | 42 | 14-Mar-17 | 08-May-17 |
| SIIIA10300 | Sec III A - roadwork and utilities (Zone A1) - Fresh watermain & Irrigation Mains | 42 | 25-Mar-17 | 19-May-17 |
| SIIIA10320 | Sec III A - roadwork and utilities (Zone A1) - Gas main | 42 | 07-Apr-17 | 01-Jun-17 |
| SIIIA10340 | Sec III A - roadwork and utilities (Zone A1) - HEC | 42 | 20-Apr-17 | 10-Jun-17 |
| SIIIA10360 | Sec III A - roadwork and utilities (Zone A1) - sub-base | 42 | 29-Apr-17 | 20-Jun-17 |
| SIIIA10380 | Sec III A - roadwork and utilities (Zone A1) - road kerb | 42 | 13-May-17 | 03-Jul-17 |
| SIIIA10400 | Sec III A - roadwork and utilities (Zone A1) - flexible pavement | 42 | 31-May-17 | 19-Jul-17 |
| SIIIA10420 | Sec III A - roadwork and utilities (Zone A1) - construct u-channel | 42 | 13-May-17 | 03-Jul-17 |
| SIIIA10440 | Sec III A - roadwork and utilities (Zone A1) - pave footpath concrete | 42 | 10-Jun-17 | 29-Jul-17 |
| SIIIA10460 | Sec III A - roadwork and utilities (Zone A1) - Road Lighting, TCSS Ducts &Traffic Signs | 40 | 20-Jun-17 | 05-Aug-17 |
| SIIIA10480 | Sec III A - roadwork and utilities (Zone A1) - lay footpath paving block | 45 | 25-May-17 | 18-Jul-17 |
| SIIIA10500 | Sec III A - roadwork and utilities (Zone A1) - Road sign and road marking | 40 | 12-Jun-17 | 28-Jul-17 |
| **Roadwork & Utilities at A2** | | | | |
| SIIIA10580 | Sec III A - roadwork and utilities (Zone A2) - Backfill to pavement founding level | 7 | 04-Mar-17 | 11-Mar-17 |
| SIIIA10600 | Sec III A - roadwork and utilities (Zone A2) - storm water drain & sub-soil drain | 40 | 13-Mar-17 | 04-May-17 |
| SIIIA10620 | Sec III A - roadwork and utilities (Zone A2) - Fresh watermain & Irrigation Mains | 40 | 24-Mar-17 | 16-May-17 |
| SIIIA10640 | Sec III A - roadwork and utilities (Zone A2) - Gas main | 40 | 31-Mar-17 | 23-May-17 |




Data Date:
31-Dec-16

Current Milestone
Actual Work
Critical Remaining Work
Remaining Work
Remaining Level of Effort

## Works Programme for Utilities & Roadworks
## (Ref. to DWP Rev.9)

| Date | Revision | Checked | Approved |
|---|---|---|---|
| 31-Dec-16 | 9 | | |
| | | | |
| | | | |
| | | | |

中國建築-利基聯營
CHINA STATE - BUILD KING JOINT VENTURE

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

| Activity ID | Activity Name | Remaining Dur | Early Start | Early Finish |
|---|---|---|---|---|
| SIIIA10660 | Sec III A - roadwork and utilities (Zone A2) - HEC | 40 | 08-Apr-17 | 31-May-17 |
| SIIIA10680 | Sec III A - roadwork and utilities (Zone A2) - sub-base | 40 | 19-Apr-17 | 07-Jun-17 |
| SIIIA10700 | Sec III A - roadwork and utilities (Zone A2) - road kerb | 40 | 28-Apr-17 | 16-Jun-17 |
| SIIIA10720 | Sec III A - roadwork and utilities (Zone A2) - flexible pavement | 50 | 10-May-17 | 08-Jul-17 |
| SIIIA10740 | Sec III A - roadwork and utilities (Zone A2) - construct u-channel | 50 | 26-Apr-17 | 26-Jun-17 |
| SIIIA10760 | Sec III A - roadwork and utilities (Zone A2) - pave footpath concrete | 40 | 08-May-17 | 23-Jun-17 |
| SIIIA10780 | Sec III A - roadwork and utilities (Zone A2) - Road Lighting, TCSS Ducts &Traffic Signs | 40 | 17-May-17 | 04-Jul-17 |
| SIIIA10800 | Sec III A - roadwork and utilities (Zone A2) - lay footpath paving block | 40 | 10-May-17 | 26-Jun-17 |
| SIIIA10820 | Sec III A - roadwork and utilities (Zone A2) - Road sign and road marking | 40 | 22-May-17 | 08-Jul-17 |
| **Roadwork & Utilities at B** | | | | |
| SIIIA10840 | Sec III A - roadwork and utilities (Zone B) - Backfill to pavement founding level | 40 | 28-Feb-17 | 19-Apr-17 |
| SIIIA10860 | Sec III A - roadwork and utlities (Zone B) - storm water drain & sub-soil drain | 40 | 05-Apr-17 | 26-May-17 |
| SIIIA10880 | Sec III A - roadwork and utilities (Zone B) - Fresh watermain & Irrigation Mains | 40 | 10-Apr-17 | 01-Jun-17 |
| SIIIA10900 | Sec III A - roadwork and utilities (Zone B) - Gas main | 40 | 10-Apr-17 | 01-Jun-17 |
| SIIIA10920 | Sec III A - roadwork and utilities (Zone B) - HEC | 40 | 18-Apr-17 | 06-Jun-17 |
| SIIIA10940 | Sec III A - roadwork and utilities (Zone B) - sub-base | 40 | 22-Apr-17 | 10-Jun-17 |
| SIIIA10960 | Sec III A - roadwork and utilities (Zone B) - road kerb | 40 | 27-Apr-17 | 15-Jun-17 |
| SIIIA10980 | Sec III A - roadwork and utilities (Zone B) - flexible pavement | 45 | 06-May-17 | 28-Jun-17 |
| SIIIA11000 | Sec III A - roadwork and utilities (Zone B) - construct u-channel | 45 | 02-May-17 | 24-Jun-17 |
| SIIIA11020 | Sec III A - roadwork and utilities (Zone B) - pave footpath concrete | 45 | 06-May-17 | 28-Jun-17 |
| SIIIA11040 | Sec III A - roadwork and utilities (Zone B) - Road Lighting, TCSS Ducts &Traffic Signs | 45 | 12-May-17 | 05-Jul-17 |
| SIIIA11060 | Sec III A - roadwork and utilities (Zone B) - lay footpath paving block | 45 | 10-May-17 | 03-Jul-17 |
| SIIIA11080 | Sec III A - roadwork and utilities (Zone B) - Road sign and road marking | 45 | 17-May-17 | 10-Jul-17 |
| **Roadwork & Utilities at D** | | | | |
| SIIIA11090 | Sec III A - roadwork and utlities (Zone D) - backfill to pavement founding level | 25 | 10-Apr-17 | 13-May-17 |
| SIIIA11100 | Sec III A - roadwork and utilities (Zone D) - storm water drain & sub-soil drain | 45 | 09-May-17 | 30-Jun-17 |
| SIIIA11110 | Sec III A - roadwork and utilities (Zone D) - Fresh watermain & Irrigation Mains | 45 | 09-May-17 | 30-Jun-17 |
| SIIIA11120 | Sec III A - roadwork and utilities (Zone D) - Gas main | 45 | 09-May-17 | 30-Jun-17 |
| SIIIA11130 | Sec III A - roadwork and utilities (Zone D) - HEC | 45 | 09-May-17 | 30-Jun-17 |
| SIIIA11140 | Sec III A - roadwork and utilities (Zone D) - sub-base | 45 | 25-May-17 | 18-Jul-17 |
| SIIIA11150 | Sec III A - roadwork and utilities (Zone D) - road kerb | 45 | 05-Jun-17 | 27-Jul-17 |
| SIIIA11160 | Sec III A - roadwork and utilities (Zone D) - flexible pavement | 45 | 14-Jun-17 | 05-Aug-17 |
| SIIIA11170 | Sec III A - roadwork and utilities (Zone D) - construct u-channel | 45 | 09-Jun-17 | 01-Aug-17 |
| SIIIA11180 | Sec III A - roadwork and utilities (Zone D) - pave footpath concrete | 45 | 12-Jun-17 | 03-Aug-17 |
| SIIIA11190 | Sec III A - roadwork and utilities (Zone D) - Road Lighting, TCSS Ducts &Traffic Signs | 45 | 19-Jun-17 | 10-Aug-17 |
| SIIIA11200 | Sec III A - roadwork and utilities (Zone D) - lay footpath paving block | 45 | 19-Jun-17 | 10-Aug-17 |
| SIIIA11210 | Sec III A - roadwork and utilities (Zone D) - road sign & road marking | 45 | 26-Jun-17 | 17-Aug-17 |
| **Section V - Remaining At-Grade Road; Remove 2nd Stage ITA** | | | | |
| **Roadwork & Utilities** | | | | |
| SV10020 | Sec V - Roadwork & Utilities - Backfilling to pavement formation | 20 | 30-Mar-17 | 26-Apr-17 |

中國建築-利基聯營
CHINA STATE - BUILD KING JOINT VENTURE

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

| Activity ID | Activity Name | Remaining Dur | Early Start | Early Finish |
|---|---|---|---|---|
| SV10040 | Sec V - Roadwork & Utilities - Stormwater Drainage Works | 45 | 21-Apr-17 | 15-Jun-17 |
| SV10060 | Sec V - Roadwork & Utilities - Sewerage Works | 45 | 21-Apr-17 | 15-Jun-17 |
| SV10080 | Sec V - Roadwork & Utilities - Watermain & Irrigation Mains | 45 | 21-Apr-17 | 15-Jun-17 |
| SV10100 | Sec V - Roadwork & Utilities - Gas Main | 45 | 05-May-17 | 27-Jun-17 |
| SV10120 | Sec V - Roadwork & Utilities - HEC cable duct and drawpit | 45 | 12-May-17 | 05-Jul-17 |
| SV10140 | Sec V - Roadwork & Utilities - Telecom cable duct and drawpit | 45 | 18-May-17 | 11-Jul-17 |
| SV10160 | Sec V - Roadwork & Utilities - lay & compact sub-base | 45 | 29-May-17 | 21-Jul-17 |
| SV10180 | Sec V - Roadwork & Utilities - construct road kerb | 45 | 01-Jun-17 | 24-Jul-17 |
| SV10200 | Sec V - Roadwork & Utilities - flexible pavement | 45 | 03-Jun-17 | 26-Jul-17 |
| SV10220 | Sec V - Roadwork & Utilities - footpath paving block | 45 | 07-Jun-17 | 29-Jul-17 |
| SV10240 | Sec V - Roadwork & Utilities - concrete footpath | 45 | 13-Jun-17 | 04-Aug-17 |
| SV10260 | Sec V - Roadwork & Utilities - construct surface channel | 45 | 13-Jun-17 | 04-Aug-17 |
| SV10280 | Sec V - Roadwork & Utilities - Road Lighting, TCSS Ducts &Traffic Signs | 45 | 15-Jun-17 | 07-Aug-17 |
| **Section IV - Slip Road 3** | | | | |
| **Roadwork & Utilities (Remaining)** | | | | |
| SIV10020 | Sec IV - Roadwork & Utilities at SR3 - Backfill to road formation | 25 | 28-Mar-17 | 29-Apr-17 |
| SIV10040 | Sec IV - Roadwork & Utilities at SR3 - Sewerage Works | 50 | 19-Apr-17 | 19-Jun-17 |
| SIV10060 | Sec IV - Roadwork & Utilities at SR3 - Stormwater Drainage Works and Subsoil drain | 50 | 09-May-17 | 07-Jul-17 |
| SIV10080 | Sec IV - Roadwork & Utilities at SR3 - Fresh watermain & Irrigation Mains | 50 | 12-May-17 | 11-Jul-17 |
| SIV10100 | Sec IV - Roadwork & Utilities at SR3 - Salt water main | 50 | 18-May-17 | 17-Jul-17 |
| SIV10120 | Sec IV - Roadwork & Utilities at SR3 - Gas main | 50 | 24-May-17 | 22-Jul-17 |
| SIV10140 | Sec IV - Roadwork & Utilities at SR3 - HEC cable duct and drawpit | 50 | 24-May-17 | 22-Jul-17 |
| SIV10160 | Sec IV - Roadwork & Utilities at SR3 - Telcom cable duct and drawpit | 50 | 24-May-17 | 22-Jul-17 |
| SIV10180 | Sec IV - Roadwork & Utilities at SR3 - lay and compact sub-base | 50 | 31-May-17 | 28-Jul-17 |
| SIV10200 | Sec IV - Roadwork & Utilities SR3 - lay road kerb | 50 | 06-Jun-17 | 03-Aug-17 |
| SIV10220 | Sec IV - Roadwork & Utilities at SR3 - Pave flexible pavement | 50 | 12-Jun-17 | 09-Aug-17 |
| SIV10240 | Sec IV - Roadwork & Utilities at SR3 - Road Lighting, TCSS Ducts &Traffic Signs | 50 | 17-Jun-17 | 15-Aug-17 |