# Environmental Impact Assessment for Wan Chai Development Phase II and Central-Wan Chai Bypass

## Environmental Monitoring and Audit Manual

**For**

(i) Road P2 and other roads which are classified as primary/district distributor roads (referred to as “DP2” in the EIA report)

**under Environmental Permit No. EP-376/2009**

**(January 2014)**

# Environmental Impact Assessment for Wan Chai Development Phase II and Central-Wan Chai Bypass

## Updated Environmental Monitoring and Audit Manual

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**under Environmental Permit No. EP-376/2009**

| | | Name | Signature |
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| **Certified by:** | **Environmental Team Leader** | RAYMOND DAI | |

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Ref.: AACWBIECEM00_0_4778L.14

7 January 2014

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 Sir,

**Re: Wan Chai Development Phase II and Central-Wan Chai Bypass**
**EP-376/2009 – DP2-Road P2 and other roads which are classified as primary/district distributor roads**
**Updated Environmental Monitoring and Audit Manual for EP-376/2009**

Reference is made to the Environmental Team's submission of the captioned Updated Environmental Monitoring and Audit (EM&A) Manual for EP-376/2009 received by email on 7 January 2014 for our further review and comment.

Please be informed that we have no adverse comment on the captioned submission. We write to verify the captioned Updated EM&A Manual in accordance with Condition 2.5 of EP-376/2009.

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

Yours sincerely,

David Yeung
Independent Environmental Checker

| | | | |
|---|---|---|---|
| c.c. | HyD | Mr. Jones Lai | by fax: 2714 5289 |
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# 1 INTRODUCTION

## 1.1 Purpose of the Manual

1.1.1 The purpose of this Environmental Monitoring and Audit (EM&A) Manual is to guide the set up of an EM&A programme to ensure compliance with the Environmental Impact Assessment (EIA) study recommendations, to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action. This Manual outlines the monitoring and audit programme for the construction and operation of the proposed Wan Chai Development Phase II (WDII) and for the construction of the Central-Wan Chai Bypass (CWB). It aims to provide systematic procedures for monitoring, auditing and minimising environmental impacts associated with construction works and operational activities.

1.1.2 Hong Kong environmental regulations and the Hong Kong Planning Standards and Guidelines have served as environmental standards and guidelines in the preparation of this Manual. In addition, the EM&A Manual has been prepared in accordance with the requirements stipulated in Annex 21 of the Technical Memorandum on the EIA Process (EIAO-TM).

1.1.3 This Manual contains the following information:

- responsibilities of the Contractor, the Engineer or Engineer's Representative (ER), Environmental Team (ET), and the Independent Environmental Checker (IEC) with respect to the environmental monitoring and audit requirements during the course of the project;
- project organisation and programming of construction activities for the project;
- the basis for and description of the broad approach underlying the EM&A programme;
- requirements with respect to the construction schedule and the necessary environmental monitoring and audit programme to track the varying environmental impact;
- details of the methodologies to be adopted and details on quality assurance and quality control programme;
- the rationale on which the environmental monitoring data will be evaluated and interpreted; definitions of Action and Limit levels;
- establishment of Event and Action plans;
- requirements for reviewing pollution sources and working procedures required in the event of non-compliance with the environmental criteria and complaints;
- requirements for presentation of environmental monitoring and audit data and appropriate reporting procedures; and
- requirements for review of EIA predictions and the effectiveness of the mitigation measures / environmental management systems and the EM&A programme.

1.1.4 For the purpose of this Manual, the ET leader, who shall be responsible for and in charge of the ET, shall refer to the person delegated the role of executing the EM&A requirements.

## 1.2 Project Background

***Site Location***

1.2.1 The DP covered by the EP No. EP-376/2009 are located mainly in the WDII project starts at the boundary of CRIII at the west and connects to the existing Hung Hing Road at the east, as shown in **Figure 1.1**.

- DP2 – Road P2 and other roads which are classified as primary/ district distributor road
- The major element of the future ground level road system is Road P2, which runs east-west from Central to connections with the existing road network in Wan Chai North. Road P2 is a dual 2- lane primary distributor that serves both local east-west movements and the distribution of northsouth traffic movements.
- The Road P2 alignment has been planned to run over the top of the Trunk Road tunnel through CRIII and the HKCEC water channel, to the connection with Fleming Road, in order to minimize the overall road "footprint" and area of land sterilized by highway infrastructure. New junctions are formed along Road P2 with the north-south roads.
- Along the Wan Chai shoreline, the existing Hung Hing Road in front of the Wan Chai North PTI is realigned to connect with the new Road P2 / Fleming Road junction, but the current Hung Hing Road alignment in front of the Wan Chai Sports Ground is retained. The retention further east of existing Hung Hing Road alignment and existing Hung Hing Road Flyover means there is no intrusion by new roads into the new Wan Chai waterfront area.
- The at-grade road network also provides connections to slip roads of the Trunk Road at Wan Chai North area.
- All existing road connections from Wan Chai North to the Wan Chai area south of Gloucester Road are maintained.

1.2.2 This EM&A Manual covers the monitoring and audit programme requirements for the construction of the CWB under the Environmental Permit (EP) No. EP-376/2009, issued on 13 November 2009.

1.2.3 This EM&A Manual does not cover the tunnel structure works of the CWB within the Central Reclamation Phase III (CRIII) area in the Central waterfront area. The tunnel structure works of the CWB within the CRIII area are separately covered by the EP No. EP-122/2002 and the further environmental permit No. FEP-01/122/2003, and their subsequently amended versions.

1.2.4 This EM&A Manual does not cover the permanent and temporary reclamation and associated dredging works related to the CWB construction. These works are separately covered by the EP No. EP-356/2009.

1.2.5 This EM&A Manual does not cover the Central – Wan Chai Bypass (CWB) including its Road Tunnel and Slip Roads. These works are separately covered by the EP No. EP-364/2009/B.

1.2.6 The following approved EIA Reports covered the works under EP No. EP-376/2009:

- Wan Chai Development Phase II and Central-Wan Chai Bypass Environmental Impact Assessment Report (December 2007) (Register No. AEIAR-125/2008) (the WDII & CWB EIA Report).
- Central Reclaimation Phase III – Studies, Site Investigation, Design and Construction Environmental Impact Assessment Report (July 2001) (Register No.: AEIAR-040/2001)

1.2.7 The Road P2 and other ground level roads construction works are anticipated to commence on site in 2014, with completion of the works by 2016. The tentative construction programmes are presented in **Appendix** E for reference.

## 1.3 Environmental Monitoring and Audit Requirements

1.3.1 The following sub-sections summarise the EM&A requirements recommended in the EIA Report.

**Air Quality Impact**

***Construction Phase***

1.3.2 Construction activities for WDII, Trunk Road and CRIII Project will cause a cumulative dust impact on the nearby sensitive receivers.

1.3.3 The construction work will inevitably lead to dust emissions (as total suspended particulates, TSP), mainly from excavation, truck haulage and material handling. It is predicted that the dust generated will exceed the hourly and daily criteria of 500 $\mu g\ m^{-3}$ and 260 $\mu g\ m^{-3}$, respectively, at ASRs from Sheung Wan to Causeway Bay.

1.3.4 Mitigation measures have been proposed and are presented in Section 2.10. With implementation of the proposed dust suppression measures, good site practices and comprehensive dust monitoring and audit, the TSP levels at all ASRs will comply with the dust criteria. Dust monitoring requirements are recommended in Section 2 of this EM&A Manual to ensure the efficacy of the control measures.

***Operation Phase***

***Vehicular Emission Impact (Open Road)***

1.3.5 As presented in Volume 2, Section 3.7.8 of the WDII & CWB EIA Report, the predicted air quality due to traffic emission in the study area complies with the AQO. No mitigation measures or environmental monitoring are considered necessary during the operational phase of the Project. Regarding the odour issue, this Project will not create any new odour source during operational phase.

**Noise Impact**

***Construction Phase***

1.3.6 As presented in Volume 2, Section 4.6 of the WDII & CWB EIA Report. Schedule 2 Designated Project 2 is scheduled to be commenced in March 2014 and to be completed in November 2015. The construction tasks under DP2 include:

- Road P2 from Fleming Road to Marsh Road and associated works
- Road P2 from CRIII to Fleming Road and associated works

1.3.7 Construction noise impacts from this Project, in addition to the concurrent construction tasks of other projects such as CRIII and HKCEC ALE projects, are predicted at the NSRs identified in this EIA. Appropriate mitigation measures, including movable noise barriers and reducing the percentage of on-time operation of the powered mechanical equipment, are required in order to alleviate the impacts to meet the EIAO-TM criteria. Noise monitoring during construction phase will have to be carried out to ensure that such mitigation measures have been implemented properly. Details are provided in Section 3 of this EM&A Manual.

1.3.8 Noise measurement should be undertaken at all monitoring stations for a 30-minute period during the daytime and a 5-minute period during restricted hours when the noisiest activities are being carried out. Type 1 sound level meters, which comply with the International Electrochemical Commission (Publications 651:1979 and 804:1985), must be used for carrying out the noise measurement.

1.3.9 Ad hoc noise monitoring should also be carried out if necessary. To establish the prevailing background noise level, one $L_{eq\ (30\ minutes)}$, obtained between 0700 and 1900 hours of a normal weekday, and three consecutive $L_{eq\ (5\ minutes)}$ measurements, obtained from each monitoring period (between 1900 and 2300 hours; and between 2300 and 0700 hours), are required.

1.3.10 Baseline monitoring to establish the background noise environment will be required and should be carried out for at least 14 consecutive days prior to the commencement of the Project. During the construction phase, impact monitoring will be required in order to assess whether or not operations on site are in compliance with construction noise criteria stipulated in EIAO-TM.

***Operational Phase***

1.3.11 Road traffic noise impact would be the major issue of concerns during operation phase of the Project.

1.3.12 Road traffic noise will arise from new roads constructed under the Project, the new roads under DP1 and the existing roads.

1.3.13 Road traffic noise will arise from new roads constructed under the Project as well as the existing roads.

**Water Quality Impact**

1.3.14 The potential water quality impacts arising from the construction works for the Road P2 have been assessed and are presented in the EIA Report. Potential sources of water quality impacts arising from the construction phase will be similar to those of general land-based construction activities.

**Waste Management**

1.3.15 Waste management will be the Contractor's responsibility to ensure that all wastes produced during the construction of the Road P2 are handled, stored and disposed of in accordance with good waste management practices, and regulations and requirements of the Environmental Protection Department (EPD). The mitigation measures recommended in the EIA Report (also shown in Appendix A) should form the basis of the site Waste Management Plan to be developed by the Contractor at the construction stage.

1.3.16 It is recommended that the waste arisings generated during the construction activities should be audited periodically to determine if wastes are being managed in accordance with approved procedures and the site Waste Management Plan. The audits should look at all aspects of waste management including waste generation, storage, recycling, transport and disposal. An appropriate audit programme would be to undertake a first audit near the commencement of the construction works, and then to audit quarterly thereafter. Details are presented in Section 5 of this Manual.

**Landscape and Visual Impact**

*During Construction*

1.3.17 Sources of impacts in the construction phase would include:

- construction of primary/district distributor roads (DP2),
- construction traffic,
- the laying down of utilities, including water, drainage and power,
- temporary site access areas, site cabins and heavy machinery,
- construction site traffic on the reclamation,
- increased road traffic congestion,
- after dark lighting and welding, and
- dust during dry weather.

*Operation*

1.3.18 The sources of impacts of the project at the operational stage would be:

- at grade roads, new transport infrastructure (DP2).

## 1.4 Project Organisation

1.4.1 The leader of the ET shall be an independent party from the Contractor and have relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval by the ER and the EPD. The proposed project organization and lines of communication are shown in **Figure 1**.

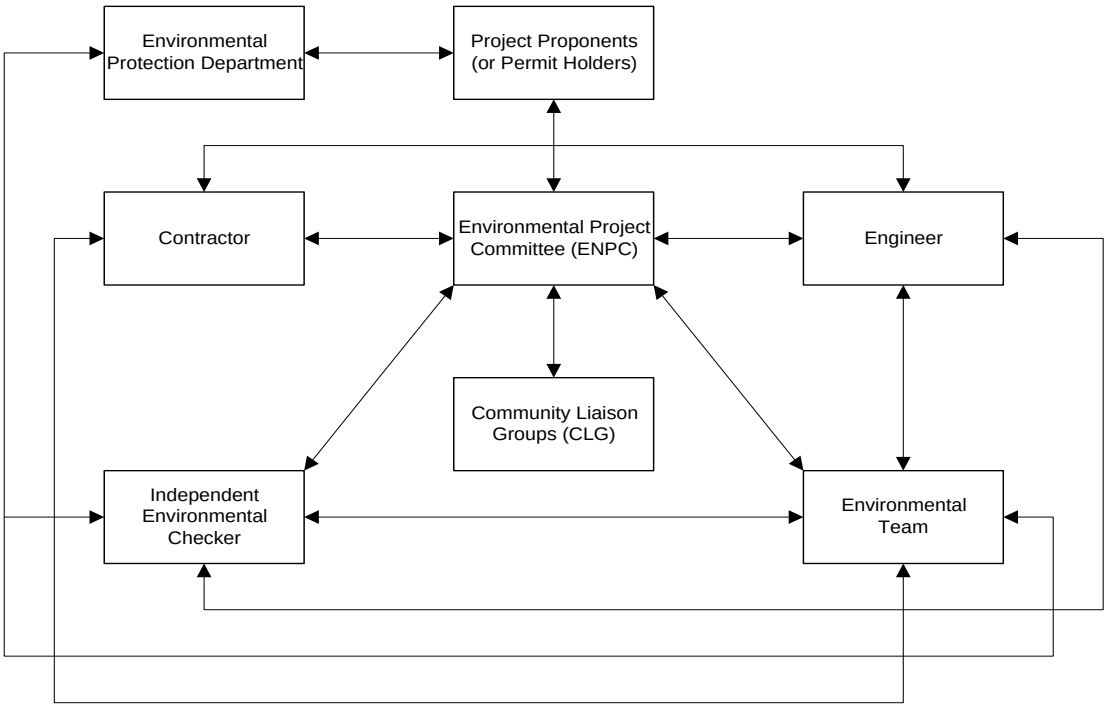


Figure 1. Project Organization Chart

1.4.2 It should be noted that as sections of the proposed CWB & IECL within the CRIII and the WDII will be entrusted under the corresponding CRIII and WDII contracts, the implementation of the proposed mitigation measures and the EM&A programme should be undertaken by the corresponding CRIII and WDII contractors and environmental teams.

1.4.3 The responsibility of respective parties are:

The Contractor:

- employ an ET to undertake monitoring, laboratory analysis and reporting of environmental monitoring and audit;
- provide assistance to ET in carrying out monitoring;
- submit proposals on mitigation measures in case of exceedances of Action and Limit levels in accordance with the Event and Action Plans;
- implement measures to reduce impact where Action and Limit levels are exceeded; and
- adhere to the procedures for carrying out complaint investigation in accordance with Section 9.3.

Environmental Team:

- monitor the various environmental parameters as required in the EM&A Manual;
- analyse the environmental monitoring and audit data and review the success of EM&A programme to cost-effectively confirm the adequacy of mitigatory measures implemented and the validity of the EIA predictions and to identify any adverse environmental impacts arising;
- carry out site inspection to investigate and audit the Contractors' site practice, equipment and work methodologies with respect to pollution control and environmental mitigation, and effect proactive action to pre-empt problems;
- audit and prepare audit reports on the environmental monitoring data and site environmental conditions;
- report on the environmental monitoring and audit results to the IEC, Contractor, the ER and EPD or its delegated representative;
- recommend suitable mitigation measures to the Contractor in the case of exceedance of Action and Limit levels in accordance with the Event and Action plans; and
- adhere to the procedures for carrying out complaint investigation in accordance with Section 9.3.

Engineer or Engineer's Representative:

- supervise the Contractor's activities and ensure that the requirements in the EM&A Manual are fully complied with;
- inform the Contractor when action is required to reduce impacts in accordance with the Event and Action Plans;

- employ an IEC to audit the results of the EM&A works carried out by the ET; and
- adhere to the procedures for carrying out complaint investigation in accordance with Section 9.3.

Independent Environmental Checker

- review the EM&A works performed by the ET (at not less than monthly intervals);
- audit the monitoring activities and results (at not less than monthly intervals);
- report the audit results to the ER and EPD in parallel;
- review the EM&A reports (baseline comma monthly and quarterly summary reports) submitted by the ET;
- review the proposal on mitigation measures submitted by the Contractor in accordance with the Event and Action plans; and
- adhere to the procedures for carrying out complaint investigation in accordance with Section 9.3.

1.4.4 Sufficient and suitably qualified professional and technical staff shall be employed by the respective parties to ensure full compliance with their duties and responsibilities, as required under the EM&A programme for the duration of the Project.

*Environmental Project Committee (ENPC)*

1.4.5 To oversee and facilitate effective control of the cumulative environmental impacts arising from potential multiple contracts for the construction of the entire Wan Chai Development Phase II (WDII) and Central-Wan Chai Bypass (CWB) (hereafter referred to as the whole Project), the Permit Holder shall set up an Environmental Project Committee (ENPC) before the commencement of construction of the earliest components of the whole Project. Regular members of the ENPC will include:

(a) the ET Leader;

(b) the IEC; and

(c) the permit holders of any environmental permit(s) and further environmental permit(s) for the whole Project.

The Community Liaison Group formed shall also work under the ENPC set-up to facilitate any necessary liaison works to address potential cumulative environmental impact issues arising from the whole Project. The ENPC shall make recommendation and update on how to enhance the monitoring and audit of the environmental performance of the whole Project on top of requirements as set out in Conditions 2.4 of the Environmental Permit or corresponding requirements set out under subsequent Environmental Permits issued for the whole Project.

In order to enhance the monitoring and audit environmental performance of the project, ENPC will be required to set up regular meeting on monthly basis in association with environmental site inspection for the entire Wan Chai Development Phase II (WDII) and Central-Wan Chai Bypass (CWB) to undertake the latest cumulative environmental impacts. The frequency of the meeting will be reviewed subject to the environmental performance of the whole Project and ad-hoc meeting will be required if necessary. The proposed terms of reference and details for the ENPC is presented in **Appendix E**.

*Community Liaison Group*

Community Liaison Group will comprise representatives from the relevant concerned and affected parties, including owners' corporation, management offices, local committee and schools of affected areas, including the North Point and Tin Hau areas, to facilitate communication, enquires and complaint handling on all environmental issues, including the follow up on the implementation of remedial mitigation measures. Regular meeting on monthly basis will be setup for the Community Liaison Group to update the latest cumulative environmental impacts due to the project. The frequency of the meeting will be reviewed subject to the environmental performance of the whole Project and ad-hoc meeting will be required if necessary.

The Permit Holder shall set up the CLG before the commencement of construction of the relevant component(s) of the WDII and CWB Project. The Permit Holder shall notify the Director the actual date of setting up the CLG, the membership, the terms of reference and the contact details. A designated complaint hotline shall also be set up for the Project to address such concerns and complaints in an efficient manner. The detailed arrangements of the CLG shall be reported to the ENPC and its activities be reflected as update under Condition 2.5(a) of the Environmental Permit. The proposed terms of reference and details for the CLG is presented in **Appendix E**.

CONTENTS

# 2 AIR QUALITY

## 2.1 Introduction

2.1.1 In this section, the requirements, methodology, equipment, monitoring locations, criteria and protocols for the monitoring and audit of air quality impacts during the construction phase of the Road P2 are presented. As construction dust is the prime concern, levels of Total Suspended Particulates (TSP) shall be monitored to evaluate the dust impact during the construction phase.

## 2.2 Air Quality Parameters

2.2.1 Monitoring of the TSP levels shall be carried out by the ET to ensure that deteriorating air quality could be readily detected and timely action taken to rectify the situation.

2.2.2 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. Upon approval of the ER, 1-hour TSP levels can be measured by direct reading methods which are capable of producing comparable results as that measured by the high volume sampling method, to indicate short event impacts.

2.2.3 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. A sample data sheet is shown in **Appendix B1**.

## 2.3 Monitoring Equipment

2.3.1 High volume samplers (HVSs) in compliance with the following specifications shall be used for carrying out the 1-hour and 24-hour TSP monitoring:

a) 0.6 - 1.7 $m^3$ per minute adjustable flow range;
b) equipped with a timing / control device with +/- 5 minutes accuracy for 24 hours operation;
c) installed with elapsed-time meter with +/- 2 minutes accuracy for 24 hours operation;
d) capable of providing a minimum exposed area of 406 $cm^2$;
e) flow control accuracy: +/- 2.5% deviation over 24-hour sampling period;
f) equipped with a shelter to protect the filter and sampler;
g) incorporated with an electronic mass flow rate controller or other equivalent devices;
h) equipped with a flow recorder for continuous monitoring;
i) provided with a peaked roof inlet;
j) incorporated with a manometer;
k) able to hold and seal the filter paper to the sampler housing at horizontal position;
l) easily changable the filter; and
m) capable of operating continuously for 24-hour period.

2.3.2 The ET is responsible for provision of the monitoring equipment. They shall ensure that sufficient number of HVSs with an appropriate calibration kit are available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. The HVSs shall be equipped with an electronic mass flow controller and be calibrated against a traceable standard at regular intervals. All the equipment, calibration kit, filter papers, etc. shall be clearly labelled.

2.3.3 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 recognised primary standard and be calibrated annually. The concerned parties such as ER shall properly document the calibration data for future reference. All the data should be converted into standard temperature and pressure condition.

2.3.4 The flow-rate of the sampler before and after the sampling exercise with the filter in position shall be verified to be constant and be recorded in the data sheet as mentioned in **Appendix B1**.

2.3.5 If the ET proposes to use a direct reading dust meter to measure 1-hour TSP levels, he shall submit sufficient information to the ER to prove that the instrument is capable of achieving a comparable result to the HVS. The instrument should also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method.

2.3.6 Wind data monitoring equipment shall also be provided and set up for logging wind speed and wind direction near the dust monitoring locations. The equipment installation location shall be proposed by the ET and agreed with the ER. For installation and operation of wind data monitoring equipment, the following points shall be observed:

a) The wind sensors should be installed 10 m above ground so that they are clear of obstructions or turbulence caused by buildings.
b) The wind data should be captured by a data logger. The data shall be downloaded for analysis at least once a month.
c) The wind data monitoring equipment shall be re-calibrated at least once every six months.
d) Wind direction should be divided into 16 sectors of 22.5 degrees each.

2.3.7 In exceptional situations, the ET may propose alternative methods to obtain representative wind data upon approval from the ER and agreement from the EPD.

## 2.4 Laboratory Measurement / Analysis

2.4.1 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.

2.4.2 If a site laboratory is set up or a non-HOKLAS accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment shall be approved by the ER and the measurement procedures shall be witnessed by the ER. Any measurement performed by the laboratory shall be demonstrated to the satisfaction of the IE(C) who shall regularly audit to the measurement performed by the laboratory to ensure the accuracy of measurement results. The ET Leader shall provide the ER with one copy of the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50), Appendix B for his reference.

2.4.3 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 sampling.

2.4.4 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.

2.4.5 All the collected samples shall be kept in a good condition for 6 months before disposal.

## 2.5 Monitoring Locations

2.5.1 Based on the relevant existing monitoring station(s) designated for construction dust impact during Schedule 2 DP3 Project works under approved EP-356/2009 EM&A manual (March 2011) and Schedule 2 DP1 Project works under approved EP-364/2009/B EM&A manual (December 2010), the proposed air quality monitoring locations for construction dust monitoring during Schedule 2 DP2 Project works were listed in **Table 2.1** and illustrated in **Figure 2.1.**

2.5.2 Based on the approved EP-356/2009 and EP-364/2009/B EM&A manual, the proposed monitoring locations represent the worst affected locations during reclamation works (DP3) and road tunnel works (DP1) at Wanchai Section and shall also represent the worst affected locations during WDII major roads (including Road P2).The works area for DP1,DP2 and DP3 shall be referred to Figure 1.2 of the approved EIA report.

2.5.3 The status and locations of dust sensitive receivers may change after issuing this manual. If such cases exist, the ET Leader shall propose the updated monitoring locations and seek approval from ER and IEC and agreement from EPD on the proposal.

**Table 2.1 Locations of Dust Monitoring Locations**

| Identification No. | Location | Level (in terms of no. of floor) |
|---|---|---|
| CMA5a | Wanchai – Children Playgrounds opposite to Pedestrian Plaza | G/F |
| CMA6a | WDII PRE Site Office | 1/F |

2.5.4 When alternative monitoring locations are proposed, the monitoring should, as far as practicable:

a) be at the site boundary or such locations close to the major dust emission source;
b) be close to the sensitive receptors; and
c) take into account the prevailing meteorological conditions.

2.5.5 The ET shall agree with the ER on the position of the HVS for the installation of the monitoring equipment. When positioning the samplers, the following points shall be noted:

a) a horizontal platform with appropriate support to secure the samplers against gusty wind should be provided;
b) no two samplers should be placed less than 2 meters apart;
c) the distance between the sampler and an obstacle, such as buildings, must be at least twice the height that the obstacle protrudes above the sampler;
d) a minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samplers;
e) a minimum of 2 meters separation from any supporting structure, measured horizontally is required;
f) no furnace or incinerator flue is nearby;
g) airflow around the sampler is unrestricted;
h) the sampler is more than 20 meters from the drip line;
i) any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring;
j) permission must be obtained to set up the samplers and to obtain access to the monitoring stations; and
k) a secured supply of electricity is needed to operate the samplers.

Commencement of Dust Monitoring Programme

2.5.6 As per the condition 2.5(b) under EP-376/2009, environmental monitoring and the execution of Event & Action Plan (EAP) are considered based on taken into account of the latest works schedules, division of responsibilities among different contracts in the Project, and latest project information. Division of work areas under different contracts will be managed under separate FEPs applied by individual contractors.

2.5.7 In terms of division of work areas, the proposed division of dust monitoring stations and its commencement in stages are summarized in **Table 2.2**.

**Table 2.2 Division of Dust Monitoring Stations for contracts with construction work to be commenced in 2015**

| Contract No. | Associated DP(s) | Relevant Dust Monitoring Stations | Commencement of air monitoring w.r.t. works commencement |
|---|---|---|---|
| HK/2012/08 | DP2 | CMA5a, CMA6a | March 2015 |

## 2.6 Baseline Monitoring

2.6.1 Baseline monitoring shall be carried out at all of the designated monitoring locations for at least 14 consecutive days prior to the commissioning of the construction works to obtain daily 24-hour TSP samples. The selected baseline monitoring stations should reflect baseline conditions at the impact stations. One-hour sampling should also be done at least 3 times per day while the highest dust impact is expected.

2.6.2 During the baseline monitoring, there should not be any construction or dust generation activities in the vicinity of the monitoring stations. Before commencing baseline monitoring the ET shall inform the ER of the baseline monitoring programme such that the ER can conduct on-site audit to ensure accuracy of the baseline monitoring results.

2.6.3 In case the baseline monitoring cannot be carried out at the designated monitoring locations during the baseline monitoring period, the ET Leader shall carry out the monitoring at alternative locations which can effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring locations shall be approved by the ER and IEC and agreed with EPD.

2.6.4 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the ER to agree on an appropriate set of data to be used as a baseline reference and submit to ER for approval.

2.6.5 Ambient conditions may vary seasonally and shall be reviewed once every three months. When the ambient conditions have changed, a repeat of the baseline monitoring is required to be carried out for obtaining the updated baseline levels. The monitoring should be at times when the Contractor's activities are not generating dust, at least in the proximity of the monitoring stations. Should change in ambient conditions be determined, the baseline levels and, in turn, the air quality criteria, should be revised. The revised baseline levels and air quality criteria shall be agreed with EPD.

## 2.7 Impact Monitoring of Construction Air Quality Impact

2.7.1 The ET shall carry out impact monitoring during the course of the Works. 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. Before commencing baseline monitoring, the ET shall inform the ER of the impact monitoring programme.

2.7.2 The specific time to start and stop the 24-hour TSP monitoring shall be clearly defined for each location and be strictly followed by the operator.

2.7.3 In case of non-compliance with the air quality criteria, more frequent monitoring, as specified in the Action Plan in the following section, shall be conducted within 24 hours after the result is obtained. This additional monitoring shall be continued until the excessive dust emission or the deterioration in air quality is rectified.

## 2.8 Environmental Quality Performance Limits

2.8.1 The baseline monitoring results form the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 24-hour TSP and 1-hour TSP. Table 2.2 shows the air quality criteria, namely Action and Limit levels to be used.

**Table 2.2 Action / Limit Levels for Air Quality**

| Parameters | Action | Limit |
|---|---|---|
| 24-hour TSP Level in mg $m^{-3}$ | For baseline level $\leq$ 200 mg $m^{-3}$, Action level = (baseline level * 1.3 + Limit level)/2;<br>For baseline level > 200 mg $m^{-3}$ Action level = Limit level | 260 |
| 1-hour TSP Level in mg $m^{-3}$ | For baseline level $\leq$ 384 mg $m^{-3}$, Action level = (baseline level * 1.3 + Limit level)/2;<br>For baseline level > 384 mg $m^{-3}$, Action level = Limit level | 500 |

## 2.9 Event and Action Plan for Construction Air Quality

2.9.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in Table 2.3 shall be carried out.

**Table 2.3 Event / Action Plan for Air Quality**

| EVENT | ACTION | | | |
|---|---|---|---|---|
| | ET | IEC | ER | CONTRACTOR |
| **ACTION LEVEL** | | | | |
| 1. Exceedance for one sample | 1. Identify source, investigate the causes of exceedance and propose remedial measures;<br>2. Inform IEC and ER;<br>3. Repeat measurement to confirm finding;<br>4. Increase monitoring frequency to daily. | 1. Check monitoring data submitted by ET;<br>2. Check Contractor's working method. | 1. Notify Contractor. | 1. Rectify any unacceptable practice;<br>2. Amend working methods if appropriate. |
| 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; | 1. Checking 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. | 1. Confirm receipt of notification of failure in writing;<br>2. Notify Contractor;<br>3. Ensure remedial measures properly implemented. | 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. |
| **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. | 1. 1. Checking monitoring data submitted by ET;<br>2. 2. Check Contractor's working method;<br>3. 3. Discuss with ET and Contractor on possible remedial measures;<br>4. 4. Advise the ER on the effectiveness of the proposed remedial measures;<br>5. 5. Supervise implementation of remedial measures. | 1. 1. Confirm receipt of notification of failure in writing;<br>2. 2. Notify Contractor;<br>3. 3. Ensure remedial measures properly implemented. | 1. 1. Take immediate action to avoid further exceedance;<br>2. 2. Submit proposals for remedial actions to IEC within 3 working days of notification;<br>3. 3. Implement the agreed proposals;<br>4. Amend proposal if appropriate. |
| 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. | 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. | 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. |

## 2.10 Construction Dust Mitigation Measures

### Construction phase

2.10.1 As described in the EIA Report, no exceedance would occur at the air sensitive receivers from during construction. In order to achieve the air quality objective, the following mitigation measures are recommended:

- Strictly limit the truck speed on site to below 10 km per hour and water spraying to keep the haul roads in wet condition;
- Watering during excavation and material handling;
- Provision of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads where necessary; and
- Tarpaulin covering of all dusty vehicle loads transported to, from and between site

2.10.2 In addition, good site practices shall be implemented to minimise the cumulative dust impacts and the requirements of the *Air Pollution Control (Construction Dust)Regulation* shall be adhered to.

2.10.3 If the above measures are not sufficient to restore the air quality to acceptable levels upon the advice of ET Leader, the Contractor shall liaise with the ET Leader on some other mitigation measures,propose to ER for approval, and implement the mitigation measures.

2.10.4 The implementation schedule for the mitigation measures is presented in **Appendix A**.

### Operation Phase

Traffic Emission Impact

2.10.5 The predicted air quality impacts on the ASRs are within the Air Quality Objectives. Exceedances of AQO criteria were predicted at some areas in the vicinity of Cross Harbour Tunnel. However, there would be no air sensitive uses in these areas. No mitigation measures will be required during the operation phase.

**CONTENTS**

# 3 NOISE

## 3.1 Introduction

3.1.1 In this section, the general requirements, methodology, equipment, and mitigation measures for the monitoring and audit of noise impacts associated with the construction and operation phase of the Designated Projects are described below.

## 3.2 Noise Parameters

***Construction Phase***

3.2.1 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.

3.2.2 As supplementary information for data auditing, statistical results such as $L_{10}$ and $L_{90}$ shall also be obtained for reference. A sample data record sheet is shown in **Appendix B2** for reference.

***Operation Phase***

3.2.3 The traffic noise level shall be measured twice within the first year of the road opening. Measurement shall be made in terms of A-weighted $L_{10}$ over three half-hour periods during the peak traffic hour. Other metrics like $L_{eq}$ may be added as seen fit. A sample data record sheet is shown in **Appendix B3** for reference.

## 3.3 Monitoring Equipment

3.3.1 As referred in the Technical Memorandum (TM) 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 agree to within 1.0 dB.

3.3.2 Noise measurements should not be made in the presence of fog, rain, and wind with a steady speed exceeding 5 m $s^{-1}$ or wind with gusts exceeding 10 m $s^{-1}$. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in meter per second.

3.3.3 The ET is responsible for provision of the monitoring equipment. He shall ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the baseline monitoring, regular impact monitoring and ad hoc monitoring. All the equipment and associated instrumentation shall be clearly labelled.

## 3.4 Baseline Monitoring

***Construction Phase***

3.4.1 The ET shall carry out baseline noise monitoring prior to the commencement of the construction works. The baseline monitoring shall be carried out daily for a period of at least two weeks. A schedule of baseline monitoring shall be submitted to the ER for approval before the monitoring starts.

3.4.2 There shall not be any construction activities in the vicinity of the stations during the baseline monitoring.

3.4.3 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET Leader shall liaise with the ER, EPD and IEC to agree on an appropriate set of data to be used as a baseline reference and submit to the ER and IEC for agreement and EPD for approval.

***Operation Phase***

3.4.4 No baseline operation noise monitoring is generally required.

## 3.5 Impact Monitoring of Construction Noise Impact

3.5.1 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 per week basis when noise generating activities are underway:

(a) one set of measurements between 0700 and 1900 hours on normal weekdays.

3.5.2 In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action Plan in Table 3.3, shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or proved to be irrelevant to the construction activities.

3.5.3 A schedule on the compliance monitoring shall be submitted to the ER and IEC for approval before the monitoring starts.

3.5.4 Based on the relevant existing monitoring station(s) designated for construction noise impact during Schedule 2 DP3 Project works under approved EP-356/2009 EM&A manual (March 2011) and Schedule 2 DP1 Project works under approved EP-364/2009/B EM&A manual (December 2010), the proposed noise monitoring locations for construction dust monitoring during Schedule 2 DP2 Project works were listed in **Table 3.1** and illustrated in **Figure 2.1.**

3.5.5 Based on the approved EP-356/2009 and EP-364/2009/B EM&A manual, the proposed monitoring locations represent the worst affected locations during reclamation works (DP3) and road tunnel works (DP1) at Wanchai Section and shall also represent the worst affected locations during WDII major roads (including Road P2).The works area for DP1,DP2 and DP3 shall be referred to Figure 1.2 of the approved EIA report.

**Table 3.1 Noise Monitoring Stations during Construction Phase**

| Noise Monitoring Station | Noise Monitoring Location | Level (in terms of no. of floor) |
|---|---|---|
| M1a | Harbour Road Sports Centre | 3/F |

3.5.6 Owing to the nature of the works under the project, construction activities will shift from one location to another from time to time. The ET shall select the monitoring locations from those in Table 3.1 based on the locations of the construction activities and seek approval from ER and agreement from the IEC and EPD to the proposal. The monitoring locations should be chosen based on the following criteria:

- at locations close to the major site activities which are likely to have noise impacts;
- close to the most affected existing noise sensitive receivers; and
- for monitoring locations located in the vicinity of the sensitive receivers, care should be taken to cause minimal disturbance to the occupants during monitoring.

3.5.7 The monitoring station shall normally be at a point 1 m from the exterior of the sensitive receiver building facade and be at a position 1.2 m above the ground. If there is problem with access to the normal monitoring position, an alternative position may be chosen, and a correction to the measurements shall be made. For reference, a correction of +3 dB(A) shall be made to the free field measurements. The ET shall agree with the IEC on the monitoring position and the corrections adopted. Once the positions for the monitoring stations are chosen, the baseline monitoring and the impact monitoring shall be carried out at the same positions.

3.5.8 If a school exists near the construction activity, noise monitoring shall be carried out at the monitoring stations for the schools during the school examination periods. The ET Leader shall liaise with the school's personnel and the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract.

***Operation Phase***

3.5.9 For the traffic noise, the measured/monitored noise levels shall be compared with the predicted results and the predicted traffic flow conditions (calculated noise levels based on concurrent traffic census obtained). In case discrepancies are observed, explanation shall be given to justify the discrepancies.

Commencement of Noise Monitoring Programme

3.5.10 As per the condition 2.5(b) under EP-376/2009, environmental monitoring and the execution of Event & Action Plan (EAP) are considered based on taken into account of the latest works schedules, division of responsibilities among different contracts in the Project, and latest project information. Division of work areas under different contracts will be managed under separate FEPs applied by individual contractors.

3.5.11 In terms of division of work areas, the proposed division of noise monitoring stations and its commencement in stages are summarized in **Table 3.2**

**Table 3.2 Division of Noise Monitoring Stations for contracts with construction work to be commenced in 2015**

| Contract No. | Associated DP(s) | Relevant Noise Monitoring Stations | Commencement of Noise monitoring w.r.t. works commencement |
|---|---|---|---|
| HK/2012/08 | DP2 | M1a | March 2015 |

### 3.6 Event And Action Plan For Construction Noise

3.6.1 The Action and Limit levels for construction noise are defined in Table 3.3. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Table 3.4, shall be carried out.

**Table 3.3 Action and Limit Levels for Construction Noise**

| Time Period | Action Level | Limit Level |
|---|---|---|
| 0700 - 1900 hours on normal weekdays | When one documented complaint is received | 75 dB(A) * |

Note: If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
* Reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

## 3.7 Noise Mitigation Measures

***Construction Phase***

3.7.1 The EIA has recommended noise control and mitigation measures during the construction and operation phases of the Project. In the event of exceedances or complaints, the Contractor shall be responsible for the design and implementation of these measures which are outlined in Implementation Schedule in **Appendix A**.

3.7.2 The Contractor is recommended to adopt quiet powered mechanical equipment (PME) for the following construction tasks of the Designated Projects DP2:

- Demolition of structure
- Road works construction

3.7.3 To alleviate the construction noise impact on the affected NSRs, two types of noise barriers (movable and temporary noise barriers during construction) are proposed to be provided for particular items of plant and construction works. The Contractor is recommended to adopt movable noise barriers with a cantilevered upper portion for the following items of plant:

- Excavator
- Bentonite Plants
- Poker Vibrator
- Diaphragm Wall Rigs
- Generator
- Air Compressor
- Concrete Pump
- Hand-held Breaker
- Breaker

3.7.4 There are also many good site practices recommended as follows:

- Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.
- Silencers or mufflers on construction equipment shall be utilised and shall be properly maintained during the construction program.
- Mobile plant, if any, shall be sited as far away from NSRs as possible.
- Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.
- Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
- Material stockpiles and other structures shall be effectively utilised, wherever practicable, in screening noise from on-site construction activities.

3.7.5 If the above measures are not sufficient to restore the construction noise quality to acceptable levels upon the advice of ET Leader, the contractor shall liaise with the ET Leader to identify further mitigation measures. They shall be proposed to ER for approval, and the contractor shall then implement these additional mitigation measures.

***Operational Phase***

**Traffic Noise**

3.7.6 No direct noise mitigation measures are proposed for DP2, road traffic noise monitoring would not be considered necessary

**Table 3.4 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. Identify source and investigate the cause of exceedance;<br>5. Carry out analysis of Contractor's working procedures;<br>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) |

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# 4 WATER QUALITY

## 4.1 Introduction

4.1.1 The potential water quality impacts arising from the proposed construction works for the Road P2 have been assessed and are presented in the EIA Report. As the water quality impacts arising from the reclamation for the construction of the WDII and CWB have been covered under the DP3 under the Environmental Permit No. EP-356/2009, the primary concern with regard to water quality under DP2 will be the control of runoff during construction. The EIA concluded that the identified water quality impacts could be controlled and reduced to within acceptable levels through effective mitigation. Monitoring of marine water quality during the construction phase is therefore not considered necessary.

4.1.2 During the site inspections, the ET Leader shall pay special attention to the issues relating to water quality, and check whether the Contractor has followed the relevant contract specifications and the procedures specified under the laws of Hong Kong. Stringent control and audit will be necessary to ensure that effective water pollution control measures are being implemented. Site inspection should include regular checking of the proposed measures and records of maintenance services to ensure their proper functioning.

4.1.3 The following is a summary of the recommended water quality mitigation measures. The implementation schedule for water pollution control is given in **Appendix A**.

## 4.2 Construction Phase

***Site Runoff***

4.2.1 All site construction runoff should be controlled and treated to prevent high levels of SS entering nearby water bodies. The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable in order to minimise surface runoff and the chance of erosion, and also to retain and reduce any SS prior to discharge. In particular:

- temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via sedimentation traps / silt retention ponds;
- permanent drainage channels should also incorporate sediment basins or traps, and baffles to enhance deposition rates;
- sand / silt removal facilities such as sand traps, silt traps and sediment basins should be provided to remove sand / silt particles from run-off. These facilities should be regularly cleaned and maintained by the Contractor. The design of silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94;
- collection of spent bentonite / other grouts in a separate slurry collection system for either cleaning and reuse or disposal to landfill should be implemented;
- maintenance and plant areas should be bunded and constructed on a hard standing with the provision of sediment traps and petrol interceptors;
- all drainage facilities must be adequate for the controlled release of storm flows;
- careful programming of the works to minimise surface excavation works during the rainy season;
- exposed soil areas should be minimised to reduce the potential for increased siltation and contamination of runoff;
- all fuel tanks and storage areas shall be contained (bunded) such that spills are not allowed to gain access to water bodies;
- open drainage channels and culverts adjacent to the site shall be kept safe and free from any debris and excavated materials arising from the works;
- open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 $m^3$ should be covered with tarpaulin or similar fabric during rainstorms; and
- as and when necessary, installation and regular maintenance of silt screen at seawater intakes in the vicinity of the site.

4.2.2 Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.

***Debris and Litter***

4.2.3 In order to maintain water quality of an aesthetically acceptable condition, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur. Entrapment boom should be installed to avoid loss of floating refuse from construction site. Regular scavenging shall be provided to collect both the trapped and escaped refuse.

***Oils and Solvents***

4.2.4 All fuel tanks and storage areas shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity. All maintenance and plant areas together with chemical and chemical waste storage areas shall be provided with cover to avoid ingress of rainwater. Waste chemical should be handled, treated and disposed of in accordance with the legislative requirements.

***Sewage Effluent***

4.2.5 Temporary sanitary facilities, such as portable chemical toilets, shall be provided on-site by a licensed contractor. A licensed contractor shall be responsible for appropriate disposal and maintenance of these facilities. There will be no new sewage outfall during construction and operation of the CWB & IECL.

## 4.3 Operational Phase

4.3.1 A surface water drainage system shall be provided to collect road runoff. The following operation stage mitigation measures are recommended to ensure road runoff would comply with the Technical Memorandum, Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters under the Water Pollution Control Ordinance (WPCO):

- The drainage from tunnel sections should be directed through petrol interceptors to remove oil and grease before being discharged to the nearby foul water manholes.
- Petrol interceptors should be regularly cleaned and maintained in good working condition.
- Road drainage should be provided with adequately designed silt trap so as to minimise discharge of silt runoff.
- Oily contents of the petrol interceptors should be collected and transferred to an appropriate disposal facility.

4.3.2 Sewage arising from ancillary facilities of CWB (for example, car park, control room, ventilation and administration buildings and tunnel portals) shall be connected to public sewerage system. Sufficient capacity in public sewerage shall be made available to the proposed facilities to avoid overflow.

4.3.3 The design of the operational stage mitigation measures should take into account the guidelines published in ProPECC PN 5/93 “Drainage Plans Subject to Comment by the EPD.” All discharges into drainage or sewerage systems during the operation phase shall be licensed by the EPD under the WPCO.

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# 5 SOLID WASTE MANAGEMENT

## 5.1 Introduction

5.1.1 Waste management will be the contractor's responsibility to ensure that all wastes produced during the construction of the Project are handled, stored and disposed of in accordance with the recommended good waste management practices and EPD's regulations and requirements.

5.1.2 Other waste materials generated during the construction activities, such as construction and demolition (C&D) materials, chemical wastes and general refuse from the workforce, are recommended to be audited at regular intervals (at least quarterly) to ensure that proper storage, transportation and disposal practices are being implemented. This monitoring of waste management practices will ensure that these solid and liquid wastes generated during construction are not disposed of into the surrounding marine waters. The Contractor will be responsible for the implementation of any mitigation measures to minimise waste or redress problems arising from the waste materials.

## 5.2 Waste Control and Mitigation Measures

5.2.1 Mitigation measures for waste management of the Projects are summarised below. The Implementation Schedule of the recommended mitigation measures is presented in **Appendix A**. With the appropriate handling, storage and removal of waste arisings during the construction of the Project as defined below, the potential to cause adverse environmental impacts will be minimised. In order to ensure that the mitigation measures are properly implemented by the Contractor, regular site inspections by the ET shall be carried out at least once per week. Details of the audit requirements are set out in Section 9 of this EM&A Manual.

***Good Site Practices***

5.2.2 Adverse impacts related to waste management are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:

- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.
- Training of site personnel in proper waste management and chemical waste handling procedures.
- Provision of sufficient waste disposal points and regular collection for disposal.
- Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.
- A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).

***Waste Reduction Measures***

5.2.3 Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Sort C&D waste from demolition of the existing waterfront structures to recover recyclable portions such as metals.
- Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.
- Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.
- Any unused chemicals or those with remaining functional capacity shall be recycled.
- Use of reusable non-timber formwork, such as in casting the tunnel box sections, to reduce the amount of C&D material.
- Proper storage and site practices to minimise the potential for damage or contamination of construction materials.
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.

5.2.4 In addition to the above measures, specific mitigation measures are recommended below for the identified waste arisings to minimise environmental impacts during handling, transportation and disposal of these wastes.

***General Refuse***

5.2.5 General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.

***Chemical Wastes***

5.2.6 After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Spent chemicals should 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.

***Construction and Demolition Material***

5.2.7 The C&D material should be sorted on-site into inert C&D material (that is, public fill) and C&D waste. Considering that a large quantity of C&D material will be generated from the demolition works and in order to minimise the impact resulting from collection and transportation of material for off-site disposal, it is recommended that the inert C&D material should be re-used on-site in the reclamation works as far as practicable. All the suitable (inert) material should be broken down to 250 mm in size for reuse as public fill and surcharge in the WDII reclamation. C&D waste, such as wood, glass, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill. It is recommended that a suitable area be designated to facilitate the sorting process and a temporary stockpiling area will be required for the separated materials.

5.2.8 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 should be included as one of the contractual requirements and implemented by an Environmental Team undertaking the Environmental Monitoring and Audit work. An Independent Environmental Checker should be responsible for auditing the results of the system.

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# 8 LANDSCAPE AND VISUAL

## 8.1 Introduction

8.1.1 The EIA has recommended landscape and visual mitigation measures to be undertaken during both the construction and operational phases of the project. This section outlines the monitoring and audit of these measures.

8.1.2 The key landscape resources, landscape character areas and visual sensitive receivers are shown in **Figures 8.1a, 8.1b, 8.2a, 8.2b, 8.3a, 8.3b, 8.3c**.

## 8.2 Monitoring Details

8.2.1 The design, implementation and maintenance of landscape mitigation measures should be checked to ensure that they are fully realized and that potential conflicts between the proposed landscape measures and any other project works and operational requirements are resolved at the earliest possible date and without compromise to the intention of the mitigation measures.

**Table 8.1 Monitoring Programme**

| Stage | Monitoring Task | Monitoring Report | Form of Approval | Frequency |
|---|---|---|---|---|
| Design | Monitoring of design works against the recommendations of the landscape and visual impact assessments within the EIA should be undertaken during detailed design and tender stages, to ensure that they fulfil the intentions of the mitigation measures. Any changes to the design, including design changes on site should also be checked. | Report by ER confirming that the design conforms to requirements of EP | Approved by Client | At Completion of Design Stage |
| Construction | Monitoring of the contractor's operations during the construction period. | Report on Contractor's compliance, by ET | Counter-signature of report by IEC | Weekly |
| Establishment Works | Monitoring of the planting works during the 12-month Establishment period after completion of the construction works. | Report on Contractor's compliance, by ET | Counter-signature of report by IEC | 3 months |
| Long Term Operation (5 years) | Monitoring of the long-term management of the planting works in the period up to 5 years after completion of the construction works. | Report on compliance by ET or Maintenance Agency | Counter-signature of report by Management Agency | 12 months |

Design

8.2.2 The mitigation measures proposed within the EIA to mitigate the landscape and visual impacts of the scheme should be embodied into the detailed engineering design and landscape design drawings and contract documents. Designs should be checked to ensure that the measures are fully incorporated and that potential conflicts with civil engineering, geo-technical, structural, lighting, signage, drainage, underground utility and operational requirements are resolved prior to construction.

8.2.3 The Client should prepare a detailed 5-Year Management Programme for the long-term management and maintenance of the planting works following the Establishment periods. The Programme should include evaluation and objectives for management, details of the operations to be undertaken to achieve these objectives, and outline of work programmes.

Construction & Establishment Period

8.2.4 The implementation of landscape construction works and subsequent maintenance operations during the 12-month establishment period must be supervised by fully qualified Landscape Resident Site Staff (Registered Landscape Architect or Professional Member of the Hong Kong Institute of landscape Architects).

8.2.5 Measures to mitigate landscape and visual impacts during construction should be checked to ensure compliance with the intended aims of the measures.

8.2.6 The progress of the engineering works shall be regularly reviewed on site to identify the earliest practical opportunities for the landscape works to be undertaken.

Long Term Management

8.2.7 The success or otherwise of all planting works intended to mitigate the visual and landscape impact of the roads, the noise barriers/screening/semi-enclosures and street lighting shall be monitored during the first ten years of the operational phase of the project. Any areas of vegetation which have failed to establish, should be corrected by the appropriate maintenance authorities at the earliest opportunity. Monitoring should include the long-term maintenance of the planting works under the detailed 5-Year Management Programme.

## 8.3 Baseline Monitoring

8.3.1 A photographic record of the site at the time of the contractor's possession of the site shall be prepared by the Contractor and approved by the ER. The approved photographic Record shall be submitted to the Project proponent, ET, IEC and EPD for record.

## 8.4 Event/Action Plan for Landscape and Visual Works

Should non-compliance of the landscape and visual impacts occur, actions in accordance with the action plan stated in **Table 8.2** and **8.3** should be carried out.

**Table 8.2 Construction & Establishment Periods**

| Event Action level | Action | | | |
|---|---|---|---|---|
| | ET | IEC | ER | Contractor |
| Design Check | • Check final design conforms to the requirements of EP and prepare report. | • Check report.<br>• Recommend remedial design if necessary | • Undertake remedial design if necessary | |
| Non-conformity on one occasion | • Identify Source<br>• Inform IEC and ER<br>• Discuss remedial actions with IEC, ER and Contractor<br>• Monitor remedial actions until rectification has been completed | • Check report<br>• Check Contractor's working method<br>• Discuss with ET and Contractor on possible remedial measures<br>• Advise ER on effectiveness of proposed remedial measures.<br>• Check implementation of remedial measures. | • Notify Contractor<br>• Ensure remedial measures are properly implemented | • Amend working methods<br>• Rectify damage and undertake any necessary replacement |

| Event Action level | Action | | | |
|---|---|---|---|---|
| | ET | IEC | ER | Contractor |
| Repeated Non-conformity | • Identify Source<br>• Inform IEC and ER<br>• Increase monitoring frequency<br>• Discuss remedial actions with IEC, ER and Contractor<br>• Monitor remedial actions until rectification has been completed<br>• If non-conformity stops, cease additional monitoring | • Check monitoring report<br>• Check Contractor's working method<br>• Discuss with ET and Contractor on possible remedial measures<br>• Advise ER on effectiveness of proposed remedial measures<br>• Supervise implementation of remedial measures. | • Notify Contractor<br>• Ensure remedial measures are properly implemented | • Amend working methods<br>• Rectify damage and undertake any necessary replacement |

**Table 8.3 Long Term Management**

| Event Action Level | Action | | | |
|---|---|---|---|---|
| | Maintenance Agency | Management Agency | | |
| Non-conformity | • Identify Source<br>• Discuss remedial actions with Management Agency<br>• Monitor remedial actions until rectification has been completed | • Check report<br>• Discuss with Maintenance Agency possible remedial measures<br>• Supervise implementation of remedial measures. | | |

## 8.5 Mitigation Measures

8.5.1 The landscape and visual impact assessment of the EIA recommends a series on mitigation measures, as noted below:

**Landscape and Visual Mitigation Measures during Construction Phase**

- Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical (CM1);
- Existing trees to be retained on site should be carefully protected during construction (CM2);
- Trees unavoidably affected by the works should be transplanted where practical (CM3);
- Compensatory tree planting should be provided to compensate for felled trees (CM4);
- Control of night-time lighting (CM5);
- Erection of decorative screen hoarding compatible with the surrounding setting (CM6).

**Landscape and Visual Mitigation Measures during Operation Phase**

- Aesthetic design of buildings and road-related structures, including viaducts, vent buildings, subways, footbridges and noise barriers and enclosure (OM1);
- Shrub and Climbing Plants to soften proposed structures (OM2);
- Buffer Tree and Shrub Planting to screen proposed roads and associated structures (OM3);
- Aesthetic streetscape design (OM5);
- Aesthetic design of roadside amenity areas (OM6).

# 9 SITE ENVIRONMENTAL AUDIT

## 9.1 Site Inspection

9.1.1 Site inspection provides a direct means to initiate and enforce specified environmental protection and pollution control measures. These shall be undertaken routinely to inspect construction activities in order to ensure that appropriate environmental protection and pollution control mitigation measures are properly implemented. The site inspection is one of the most effective tools to enforce the environmental protection requirements at the works area.

9.1.2 The ET Leader shall be responsible for formulating the environmental site inspection, the deficiency and action reporting system, and for carrying out the site inspection works. Within 21 days of the construction contract commencement, he shall submit a proposal for site inspection and deficiency and action reporting procedures to the Contractor for agreement, and to the ER for approval. The ET's proposal for rectification would be made known to the IEC.

9.1.3 Regular site inspections shall be carried out at least once per week. The areas of inspection shall not be limited to the environmental situation, pollution control and mitigation measures within the site; it should also review the environmental situation outside the works area which is likely to be affected, directly or indirectly, by the site activities. The ET Leader shall make reference to the following information in conducting the inspection:

(i) EIA recommendations on environmental protection and pollution control mitigation measures;

(ii) works progress and programme;

(iii) individual works methodology proposals (which shall include proposal on associated pollution control measures);

(iv) contract specifications on environmental protection;

(v) relevant environmental protection and pollution control laws; and

(vi) previous site inspection results.

9.1.4 The Contractor shall keep the ET Leader updated with all relevant information on the construction contract necessary for him to carry out the site inspections. Inspection results and associated recommendations for improvements to the environmental protection and pollution control works shall be submitted to the IEC and the Contractor within 24 hours. The Contractor shall follow the procedures and time-frame as stipulated in the environmental site inspection, and the deficiency and action reporting system formulated by the ET Leader, to report on any remedial measures subsequent to the site inspections.

9.1.5 Ad hoc site inspections shall also be carried out if significant environmental problems are identified. Inspections may also be required subsequent to receipt of an environmental complaint, or as part of the investigation work, as specified in the Action Plan for environmental monitoring and audit.

## 9.2 Compliance with Legal and Contractual Requirements

9.2.1 There are contractual environmental protection and pollution control requirements as well as environmental protection and pollution control laws in Hong Kong with which construction activities must comply.

9.2.2 In order that the works are in compliance with the contractual requirements, all works method statements submitted by the Contractor to the ER for approval shall be sent to the ET Leader for vetting to see whether sufficient environmental protection and pollution control measures have been included. The implementation schedule of mitigation measures is summarised in **Appendix A**.

9.2.3 The ET Leader shall also review the progress and programme of the works to check that relevant environmental laws have not been violated, and that any foreseeable potential for violating laws can be prevented.

9.2.4 The Contractor shall regularly copy relevant documents to the ET Leader so that works checking can be carried out. The document shall at least include the updated Works Progress Reports, updated Works Programme, any application letters for different licence / permits under the environmental protection laws, and copies of all valid licences / permits. The site diary shall also be available for the ET Leader's inspection upon his request.

9.2.5 After reviewing the document, the ET Leader shall advise the IEC and Contractor of any non-compliance with contractual and legislative requirements on environmental protection and pollution control for them to take follow-up actions. If the ET Leader's review concludes that the current status on licence / permit application and any environmental protection and pollution control preparation works may result in potential violation of environmental protection and pollution control requirements, he shall also advise the Contractor and the ER accordingly.

9.2.6 Upon receipt of the advice, the Contractor shall undertake immediate action to correct the situation. The ER shall follow up to ensure that appropriate action has been taken in order to satisfy contractual and legal requirements.

## 9.3 Environmental Complaints

9.3.1 Complaints shall be referred to the ET Leader for action. The ET Leader shall undertake the following procedures upon receipt of any complaint:

(i) log complaint and date of receipt onto the complaint database and inform the IEC immediately;

(ii) investigate the complaint to determine its validity, and assess whether the source of the problem is due to works activities;

(iii) identify mitigation measures in consultation with the IEC if a complaint is valid and due to works;

(iv) advise the Contractor if mitigation measures are required;

(v) review the Contractor's response to identified mitigation measures, and the updated situation;

(vi) if the complaint is transferred from the EPD, submit interim report to the EPD on status of the complaint investigation and follow-up action within the time frame assigned by the EPD;

(vii) undertake additional monitoring and audit to verify the situation if necessary, and review that circumstances leading to the complaint do not recur;

(viii) report investigation results and subsequent actions to complainant (if the source of complaint is EPD, the results should be reported within the timeframe assigned by the EPD); and

(ix) record the complaint, investigation, the subsequent actions and the results in the monthly EM&A reports.

9.3.2 During any complaint investigation work, the Contractor and ER shall co-operate with the ET Leader in providing all necessary information and assistance for completion of the investigation. If mitigation measures are identified as being required in the investigation, the Contractor shall promptly carry out the mitigation. The ER shall ensure that all necessary measures have been carried out by the Contractor.

# 10 REPORTING

## 10.1 General

10.1.1 Reports can be provided in an electronic medium upon agreeing the format with the ER and EPD. This would enable a transition from a paper / historic and reactive approach to an electronic / real time proactive approach. All the monitoring data (baseline and impact) shall also be submitted on diskettes. The formats for air quality, noise and water quality monitoring data to be submitted on diskette are shown in **Appendix B**.

10.1.2 Types of reports that the ET Leader shall prepare and submit include baseline monitoring report, monthly EM&A report, quarterly EM&A summary report and final EM&A review report. In accordance with Annex 21 of the EIAO-TM, a copy of the monthly, quarterly summary and final review EM&A reports shall be made available to the Director of Environmental Protection.

## 10.2 Baseline Monitoring Report

10.2.1 The ET Leader shall prepare and submit a Baseline Environmental Monitoring Report within 10 working days of completion of the baseline monitoring. Copies of the Baseline Environmental Monitoring Report shall be submitted to the Contractor, the IEC, the ER and the EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies they require. The report format and baseline monitoring data format shall be agreed with the EPD prior to submission.

10.2.2 The baseline monitoring report shall include at least the following:

(i) up to half a page executive summary;

(ii) brief project background information;

(iii) drawings showing locations of the baseline monitoring stations;

(iv) monitoring results (in both hard and diskette copies) together with the following information:

- monitoring methodology;
- name of laboratory and types of equipment used and calibration details;
- parameters monitored;
- monitoring locations;
- monitoring date, time, frequency and duration; and
- quality assurance (QA) / quality control (QC) results and detection limits;

(v) details of influencing factors, including:

- major activities, if any, being carried out on the site during the period;
- weather conditions during the period; and
- other factors which might affect results;

(vi) determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data, the analysis shall conclude if there is any significant difference between control and impact stations for the parameters monitored;

(vii) revisions for inclusion in the EM&A Manual; and

(viii) comments, recommendations and conclusions.

## 10.3 Monthly EM&A Reports

10.3.1 The results and findings of all EM&A work required in the Manual shall be recorded in the monthly EM&A reports prepared by the ET Leader. The EM&A report shall be prepared and submitted within 10 working days of the end of each reporting month, with the first report due the month after construction commences. Each monthly EM&A report shall be submitted to the following parties: the Contractor, the IEC, the ER and the EPD. Before submission of the first EM&A report, the ET Leader shall liaise with the parties on the required number of copies and format of the monthly reports in both hard copy and electronic medium.

10.3.2 The ET leader shall review the number and location of monitoring stations and parameters every six months, or on as needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

***First Monthly EM&A Report***

10.3.3 The first monthly EM&A report shall include at least the following :

(i) Executive summary (1-2 pages):

- breaches of Action and Limit levels;
- complaint log;
- notifications of any summons and successful prosecutions;
- reporting changes; and
- future key issues.

(ii) Basic project information:

- project organisation including key personnel contact names and telephone numbers;
- programme;
- management structure, and
- works undertaken during the month;

(iii) Environmental status:

- Advice on the status of statutory environmental compliance, the status of compliance with environmental permit (EP) conditions under the EIA Ordinance, submission status under the EP and implementation status of mitigation measures.
- works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc); and
- drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations (with co-ordinates of the monitoring locations);

(iv) A brief summary of EM&A requirements including:

- all monitoring parameters;
- environmental quality performance limits (Action and Limit levels);
- Event-Action Plans;

- environmental mitigation measures, as recommended in the project EIA study final report; and
- environmental requirements in contract documents;

(v) Implementation status:

- advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA;

(vi) Monitoring results (in both hard and diskette copies) together with the following information:

- monitoring methodology;
- name of laboratory and types of equipment used and calibration details;
- parameters monitored;
- monitoring locations;
- monitoring date, time, frequency, and duration;
- weather conditions during the period;
- graphical plots of the monitored parameters in the month annotated against;
  - (i) major activities being carried out on site during the period
  - (ii) weather conditions that may affect the results
  - (iii) any other factors which might affect the monitoring results
- any other factors which might affect the monitoring results; and
- QA/QC results and detection limits;

(vii) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:

- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
- record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
- review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance;

(viii) others

- compare and contrast the EM&A data in the month with the EIA predictions and annotate with explanation for any discrepancies;
- an account of the future key issues as reviewed from the works programme and work method statements;
- advice on the solid and liquid waste management status; and
- comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions.

***Subsequent EM&A Reports***

10.3.4 Subsequent monthly EM&A reports shall include the following:

(i) executive summary (1 - 2 pages):

- breaches of Action and Limit levels;
- complaints log;
- notifications of any summons and successful prosecutions;
- reporting changes; and
- future key issues.

(ii) basic project information:

- project organisation including key personnel contact names and telephone numbers;
- programme;
- management structure; and
- work undertaken during the month;

(iii) environmental status:

- works undertaken during the month with illustrations (such as location of works, daily excavation rate, etc.); and
- drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations.
- Advice on the status of statutory environmental compliance, the status of compliance with environmental permit (EP) conditions under the EIA Ordinance, submission status under the EP and implementation status of mitigation measures.

(iv) implementation status:

- advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA;

(v) monitoring results (in both hard and diskette copies) together with the following information:

- monitoring methodology;
- name of laboratory and types of equipment used and calibration details;
- parameters monitored;
- monitoring locations;
- monitoring date, time, frequency, and duration;
- weather conditions during the period;
- graphical plots of the monitored parameters in the month annotated against;
  - (i) major activities being carried out on site during the period
  - (ii) weather conditions that may affect the results
  - (iii) any other factors which might affect the monitoring results
- any other factors which might affect the monitoring results; and
- QA / QC results and detection limits.

(vi) report on non-compliance, complaints, and notifications of summons and successful prosecutions:

- record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);
- record of all complaints received (written or verbal) for each media, including locations and nature of complaints investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary;
- record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
- review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
- description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.

(vii) others

- compare and contrast the EM&A data in the month with the EIA predictions and annotate with explanation for any discrepancies;
- an account of the future key issues as reviewed from the works programme and work method statements;
- advice on the solid and liquid waste management status; and

- comments (for examples, effectiveness and efficiency of the mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions.

(viii) Appendix

- Action and Limit levels;
- graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:

  a) major activities being carried out on site during the period;

  b) weather conditions during the period; and

  c) any other factors that might affect the monitoring results.
- monitoring schedule for the present and next reporting period;
- cumulative statistics on complaints, notifications of summons and successful prosecutions; and
- outstanding issues and deficiencies.

## 10.4 Quarterly EM&A Summary Reports

10.4.1 A quarterly EM&A summary report of around 5 pages shall be produced and shall contain at least the following information:

(i) executive summary (1 - 2 pages);

(ii) basic project information including a synopsis of the project organisation, programme, contacts of key management, and a synopsis of works undertaken during the quarter;

(iii) a brief summary of EM&A requirements including:

- monitoring parameters;
- environmental quality performance limits (Action and Limit levels); and
- environmental mitigation measures, as recommended in the project EIA Final Report;

(iv) advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Final Report, summarised in the updated implementation schedule;

(v) drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

(vi) graphical plots of any trends in monitored parameters over the past four months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against:

- the major activities being carried out on site during the period;
- weather conditions during the period; and
- any other factors which might affect the monitoring results;

(vii) advice on the solid and liquid waste management status;

(viii) a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

(ix) a brief review of the reasons for and the implications of any non-compliance, including a review of pollution sources and working procedures;

(x) a summary description of actions taken in the event of non-compliance and any follow-up procedures related to any earlier non-compliance;

(xi) a summarised record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;

(xii) comments (for examples, a review of the effectiveness and efficiency of the mitigation measures and the performance of the environmental management system, that is, of the overall EM&A programme); recommendations (for example, any improvement in the EM&A programme) and conclusions for the quarter; and

(xiii) proponents' contacts and any hotline telephone number for the public to make enquiries.

## 10.5 Final EM&A Review Reports

10.5.1 The EM&A program shall be terminated upon completion of those construction activities that have the potential to result in a significant environmental impact.

10.5.2 Prior to the proposed termination, it may be advisable to consult relevant local communities. The proposed termination should only be implemented after the proposal has been endorsed by the IEC, the Engineer and the Project Proponent followed by final approval from the Director of Environmental Protection.

10.5.3 The ET Leader shall prepare and submit a final EM&A report within 14 working days after the completion of those construction activities that have the potential to result in a significant environmental impact. The final EM&A report should contain at least the following information:

(i) executive summary (1 - 2 pages);

(ii) drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;

(iii) basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of work undertaken during the course of the project or past twelve months;

(iv) a brief summary of EM&A requirements including:

- environmental mitigation measures, as recommended in the project EIA Report;
- environmental impact hypotheses tested;
- environmental quality performance limits (Action and Limit levels);
- all monitoring parameters;
- Event-Action Plans;

(v) a summary of the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the project EIA Report, summarised in the updated implementation schedule;

(vi) graphical plots and the statistical analysis of the trends of monitored parameters over the course of the project, including the post-project monitoring for all monitoring stations annotated against:

- the major activities being carried out on site during the period;
- weather conditions during the period; and
- any other factors which might affect the monitoring results;

(vii) a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels);

(viii) a review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures as appropriate;

(ix) a description of the actions taken in the event of non-compliance;

(x) a summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;

(xi) a summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection / pollution control legislation, locations and nature of the breaches, investigation follow-up actions taken and results;

(xii) a review of the validity of EIA predictions and identification of shortcomings in EIA recommendations; and

(xiii) comments (for examples, a review of the effectiveness and efficiency of the mitigation measures and of the performance of the environmental management system, that is, of the overall EM&A programme);

(xiv) recommendations and conclusions (for example, a review of success of the overall EM&A programme to cost-effectively identify deterioration and to initiate prompt effective mitigation action when necessary).

## 10.6 Operation Phase EM&A Reporting

10.6.1 Since the predicted air quality due to traffic emission in the study area complies with the AQO, no environmental monitoring and audit is proposed. Nevertheless, the operator for the proposed CWB tunnel, HyD, will conduct air quality monitoring for the operation performance of the EVB and associated East Vent Shaft.

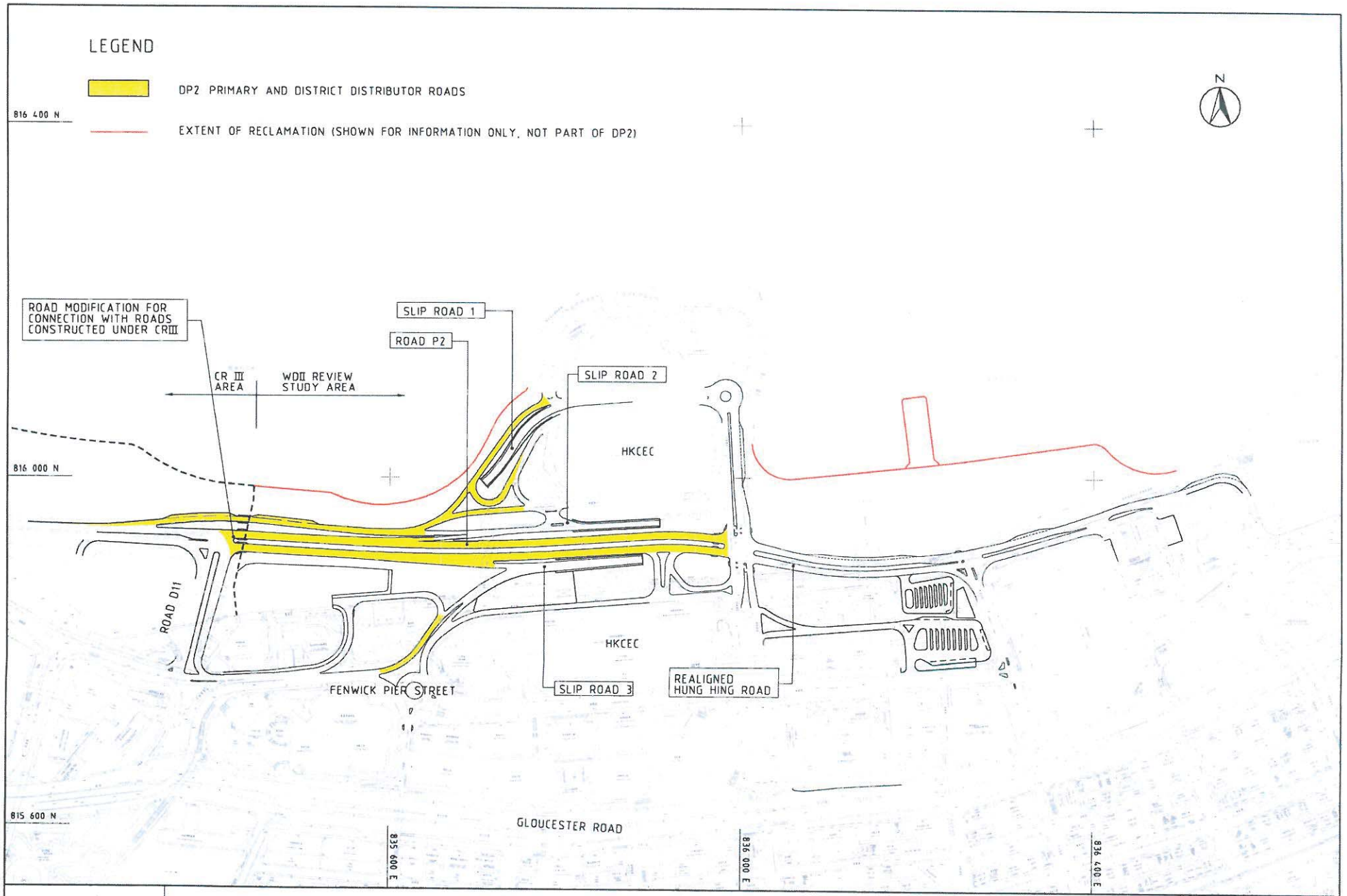
## 10.7 Data Keeping

10.7.1 No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the monthly EM&A reports. However, any such document shall be well kept by the ET Leader and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. Monitoring data shall also be recorded in magnetic media form, and the software copy must be available upon request. Data format shall be agreed with the EPD. All documents and data shall be kept for at least one year following completion of the construction contract.

## 10.8 Interim Notifications of Environmental Quality Limit Exceedances

10.8.1 With reference to the Event and Action Plan, when the environmental quality performance limits are exceeded, the ET Leader shall immediately notify the IEC and EPD, as appropriate. The notification shall be followed up with advice to IEC and EPD on the results of the investigation, proposed actions and success of the actions taken, with any necessary follow-up proposals. A sample template for the interim notifications is presented in **Appendix C**.

# Figures

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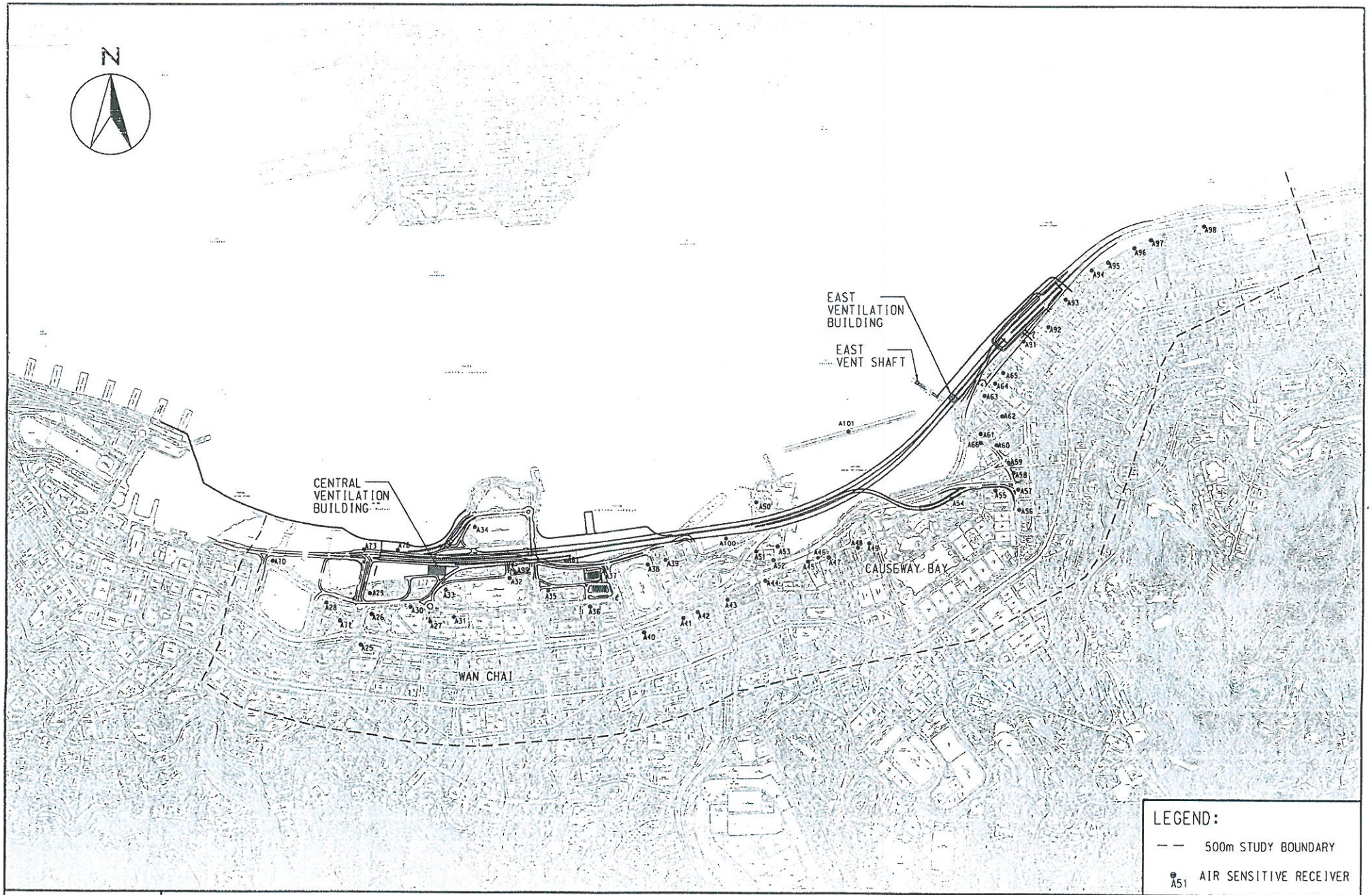
DESIGNATED PROJECT 2 -
ROAD P2 AND OTHER ROADS WHICH ARE CLASSIFIED AS PRIMARY/DISTRICT DISTRIBUTOR ROADS

FIGURE 1.1

DATE 2007-10-15 14:48:42

p:\projects\97103\drawing\report\EIA 200710\FIGURE 1-2B.dgn

SCALE 1:4000 (A3)

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LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

FIGURE 2.1

P/60017193/REPORT/DRAWINGS/EM&A-0708/AIR/FIG 2.1.DGN

SCALE 1:12500 (A3)

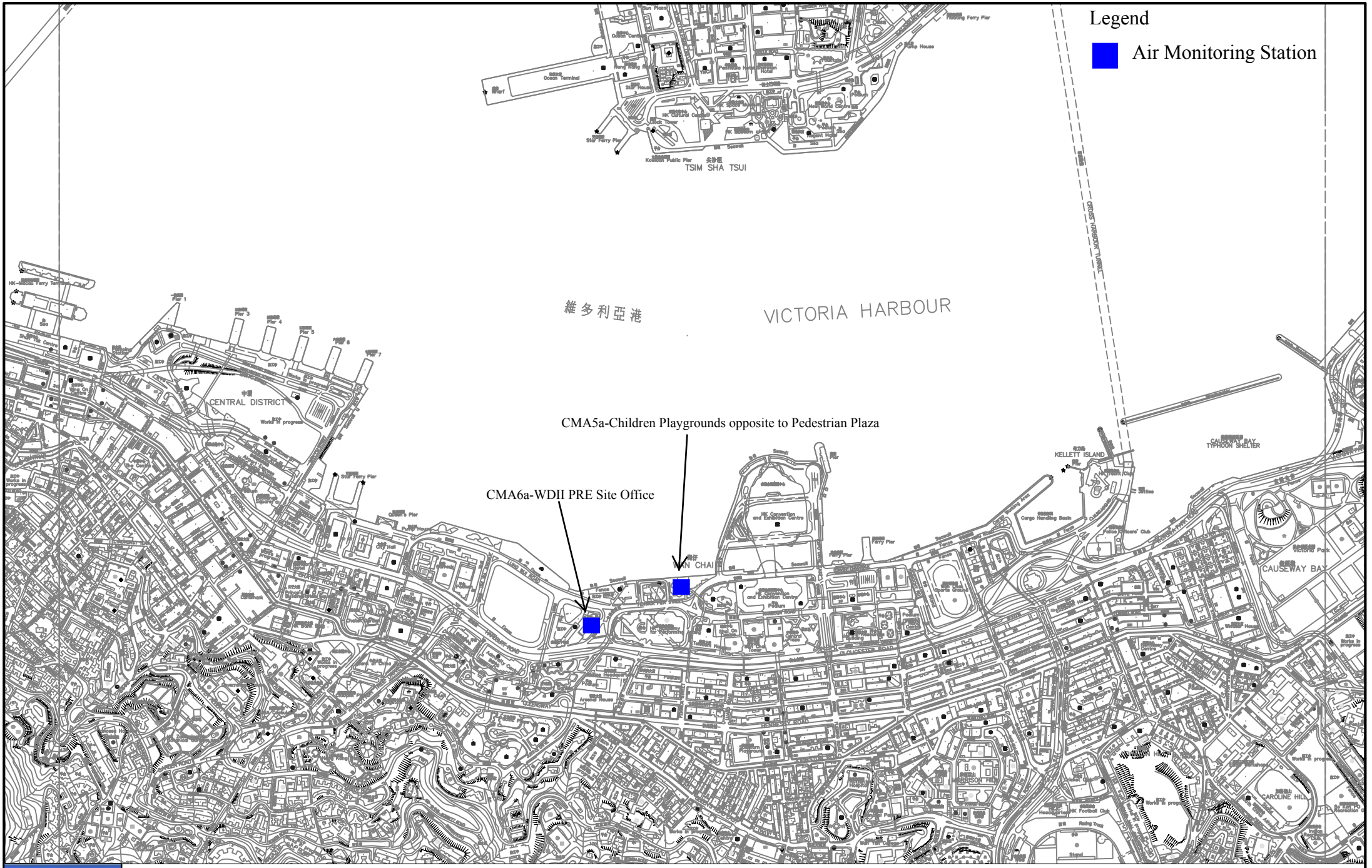
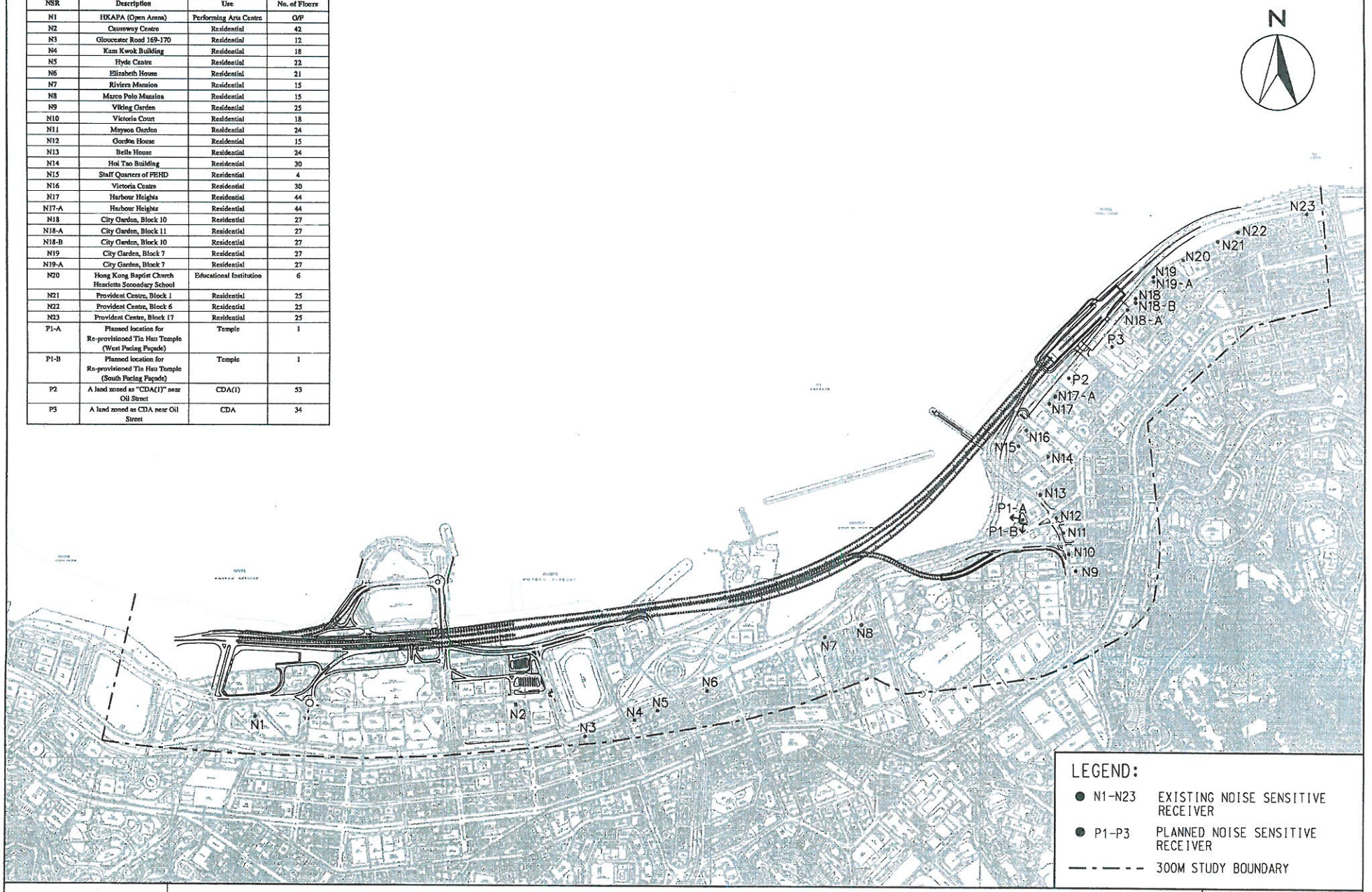



Fig 2.2 Contract no. HK/2011/07 Wan Chai Development Phase II and Central-Wan Chai Bypass
Locations of Construction Air Quality Monitoring Stations

| NSR | Description | Use | No. of Floors |
|---|---|---|---|
| N1 | HKAPA (Open Arena) | Performing Arts Centre | G/F |
| N2 | Causeway Centre | Residential | 42 |
| N3 | Gloucester Road 169-170 | Residential | 12 |
| N4 | Kam Kwok Building | Residential | 18 |
| N5 | Hyde Centre | Residential | 22 |
| N6 | Elizabeth House | Residential | 21 |
| N7 | Riviera Mansion | Residential | 15 |
| N8 | Marco Polo Mansion | Residential | 15 |
| N9 | Viking Garden | Residential | 25 |
| N10 | Victoria Court | Residential | 18 |
| N11 | Mayson Garden | Residential | 24 |
| N12 | Gordon House | Residential | 15 |
| N13 | Belle House | Residential | 24 |
| N14 | Hoi Tao Building | Residential | 30 |
| N15 | Staff Quarters of FEHD | Residential | 4 |
| N16 | Victoria Centre | Residential | 30 |
| N17 | Harbour Heights | Residential | 44 |
| N17-A | Harbour Heights | Residential | 44 |
| N18 | City Garden, Block 10 | Residential | 27 |
| N18-A | City Garden, Block 11 | Residential | 27 |
| N18-B | City Garden, Block 10 | Residential | 27 |
| N19 | City Garden, Block 7 | Residential | 27 |
| N19-A | City Garden, Block 7 | Residential | 27 |
| N20 | Hong Kong Baptist Church Henrietta Secondary School | Educational Institution | 6 |
| N21 | Provident Centre, Block 1 | Residential | 25 |
| N22 | Provident Centre, Block 6 | Residential | 25 |
| N23 | Provident Centre, Block 17 | Residential | 25 |
| P1-A | Planned location for Re-provisioned Tin Hau Temple (West Facing Façade) | Temple | 1 |
| P1-B | Planned location for Re-provisioned Tin Hau Temple (South Facing Façade) | Temple | 1 |
| P2 | A land zoned as "CDA(1)" near Oil Street | CDA(1) | 53 |
| P3 | A land zoned as CDA near Oil Street | CDA | 34 |

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# LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

FIGURE 3.1

P:/60017193/REPORT/DRAWINGS/EM&A-0710/Noise/FIGURE_3-1.DGN

SCALE 1:10000 [A3]

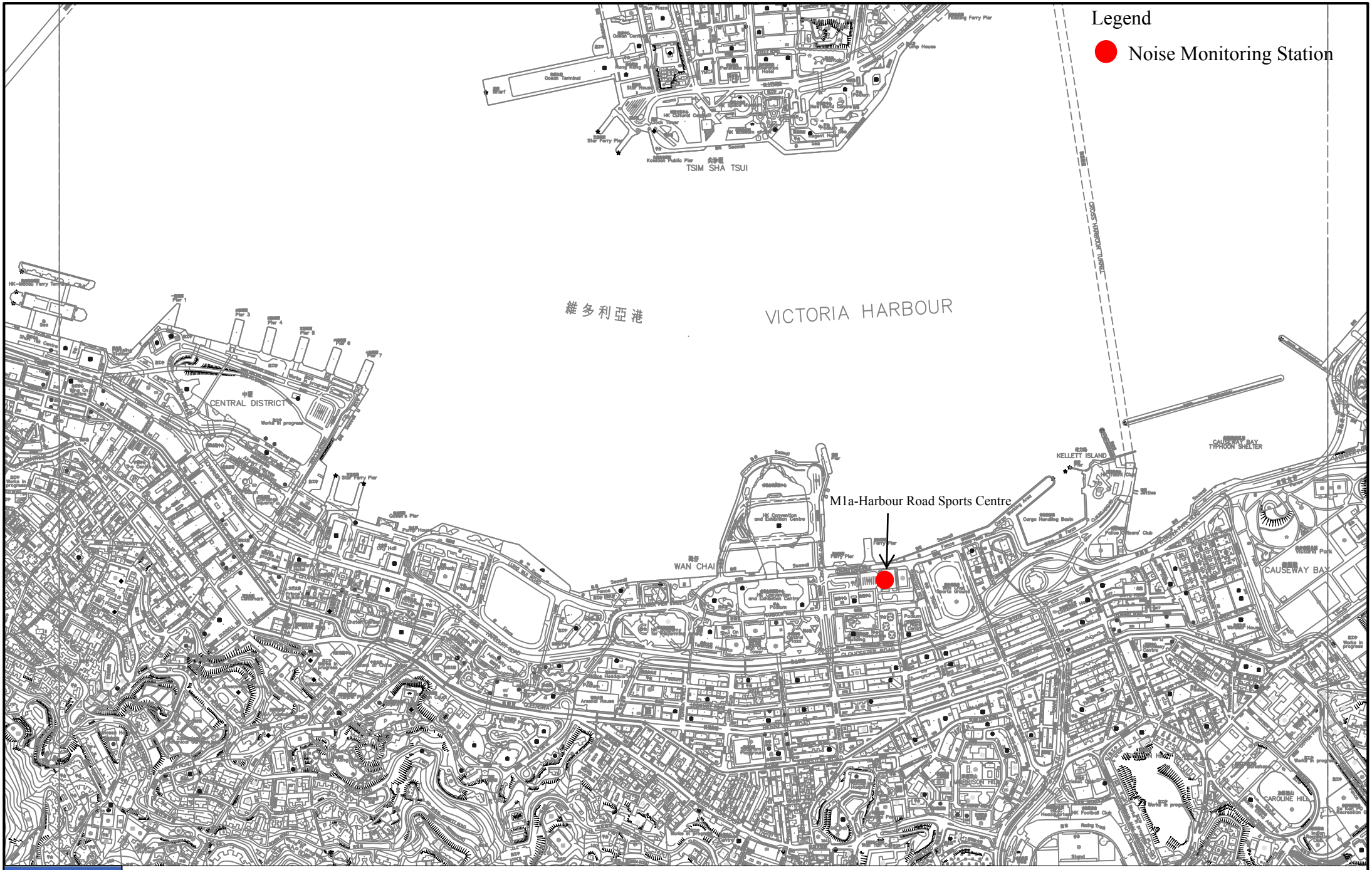
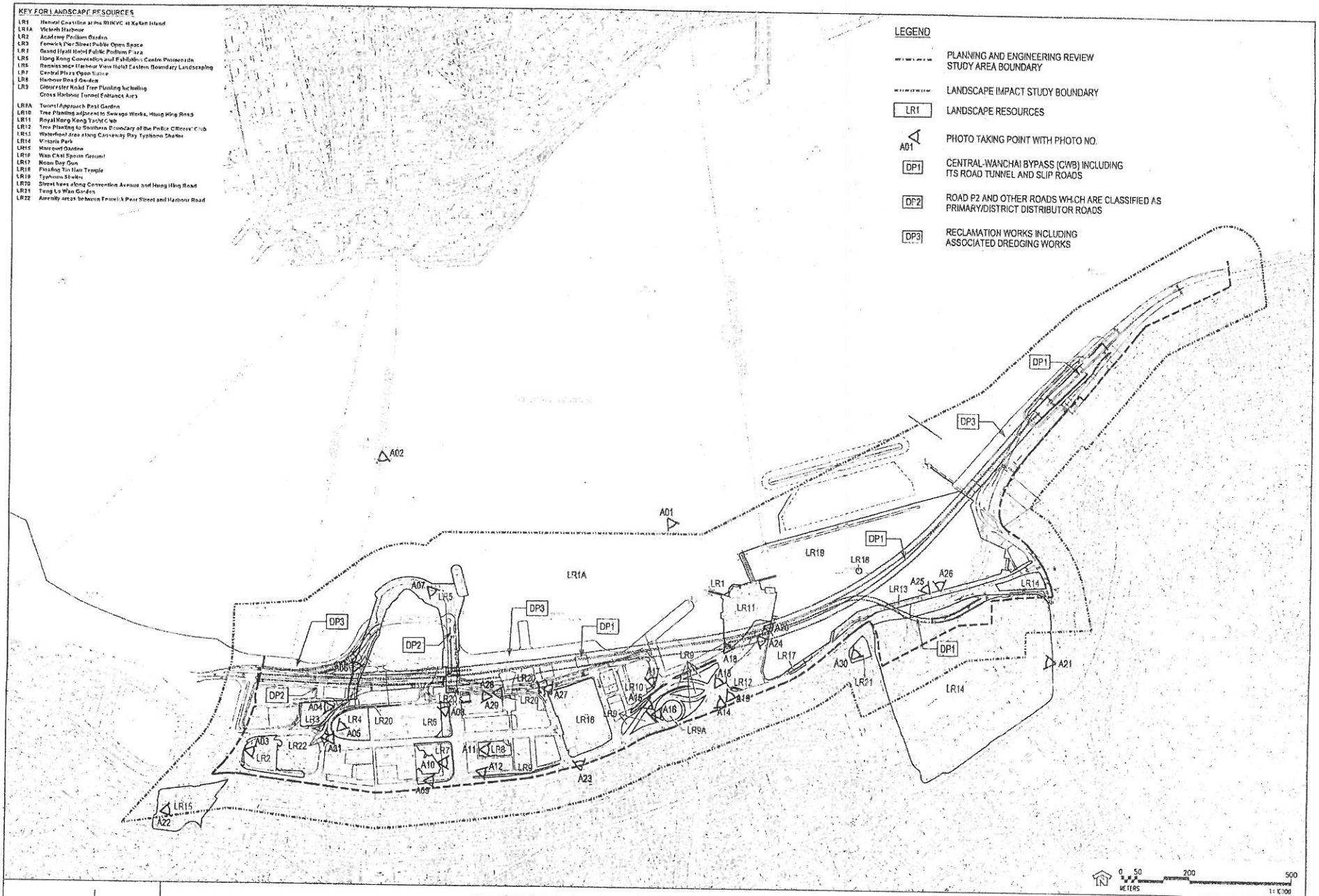



Fig 3.2 Contract no. HK/2011/07 Wan Chai Development Phase II and Central-Wan Chai Bypass
Locations of Construction Noise Monitoring Stations

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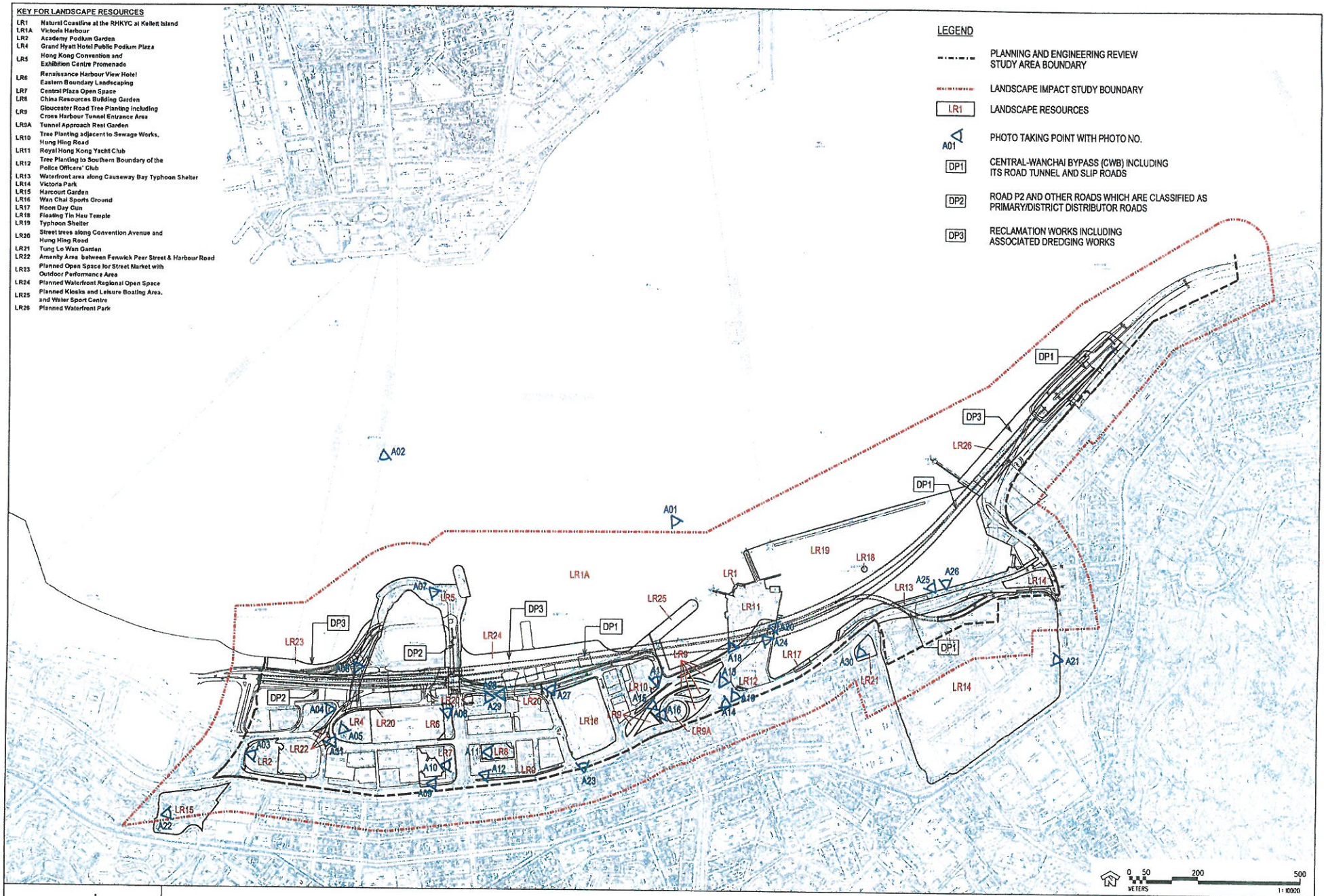
# BASELINE LANDSCAPE RESOURCES DURING CONSTRUCTION

FIGURE 8.1 a

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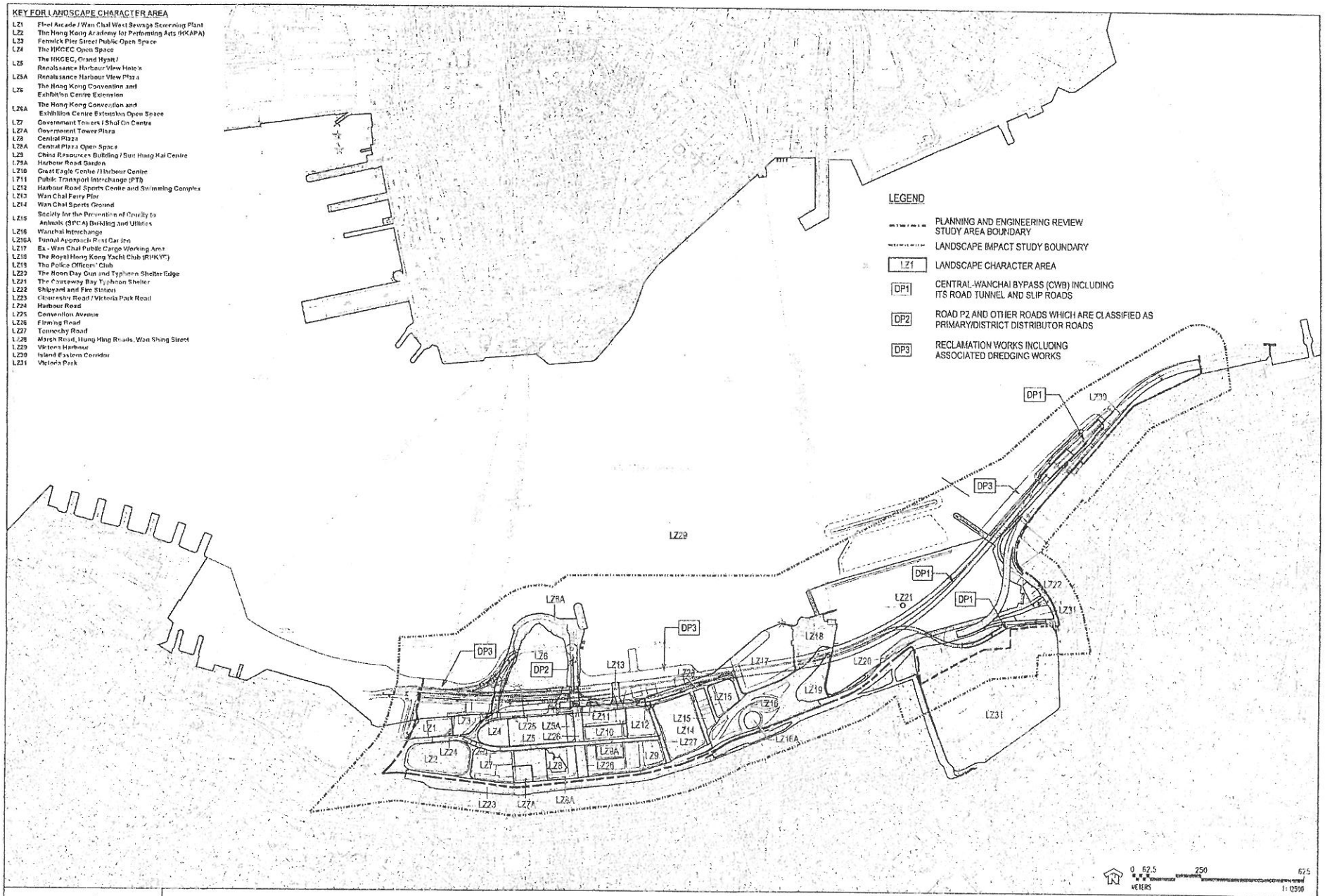
# BASELINE LANDSCAPE RESOURCES DURING OPERATION

FIGURE 8.1b

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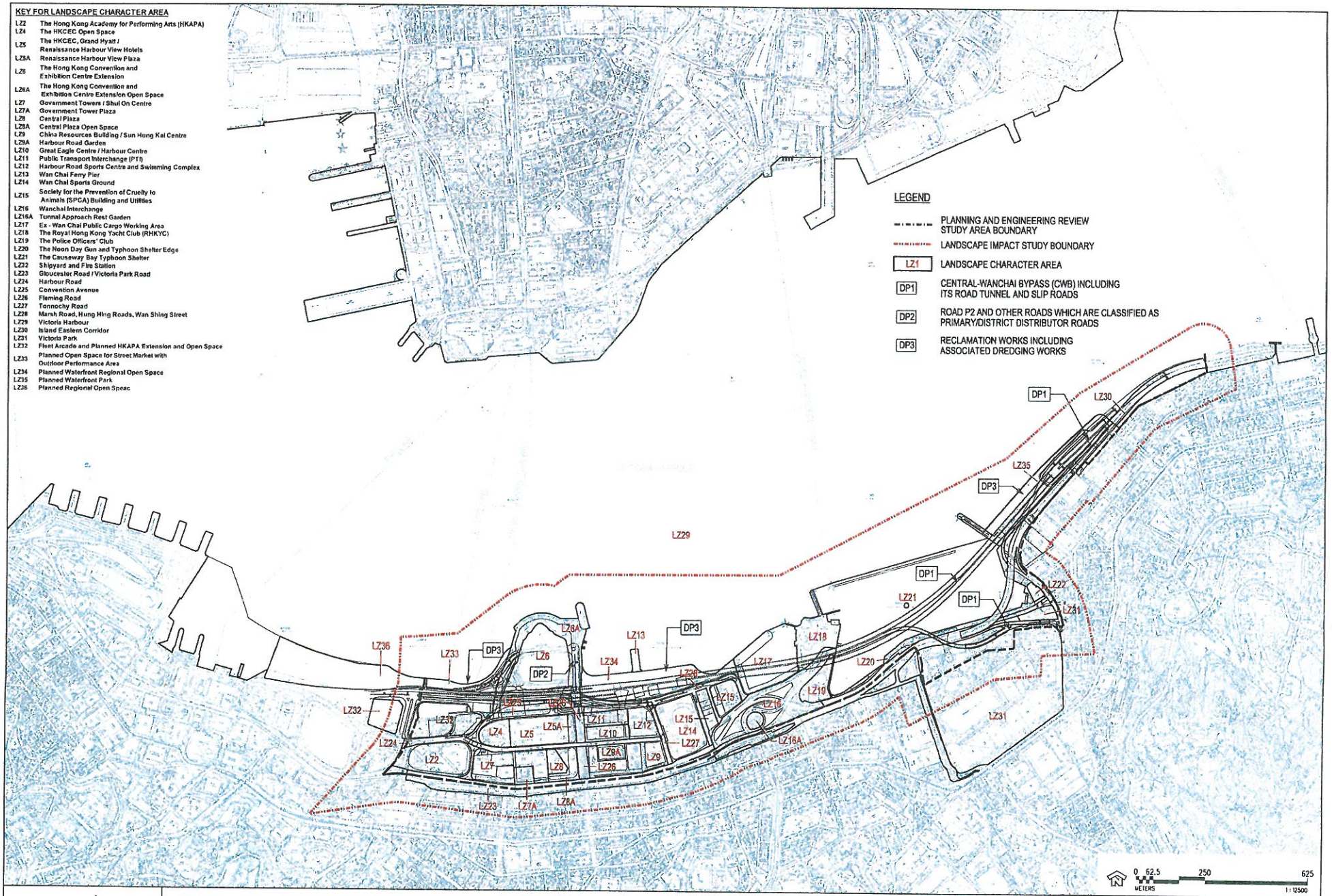
# BASELINE LANDSCAPE CHARACTER AREAS DURING CONSTRUCTION

FIGURE 8.2 a

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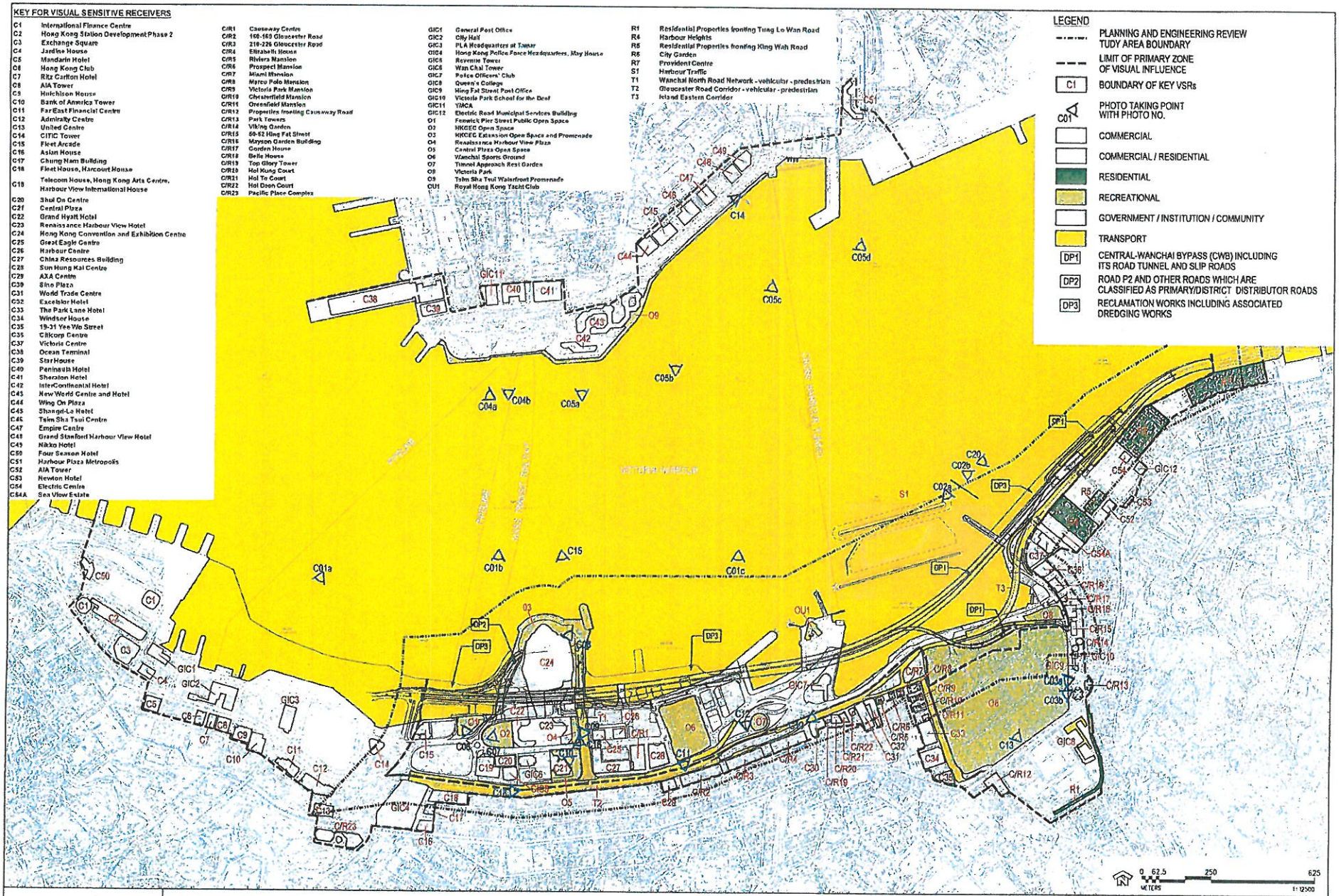
# BASELINE LANDSCAPE CHARACTER AREAS DURING OPERATION

FIGURE 8.2b

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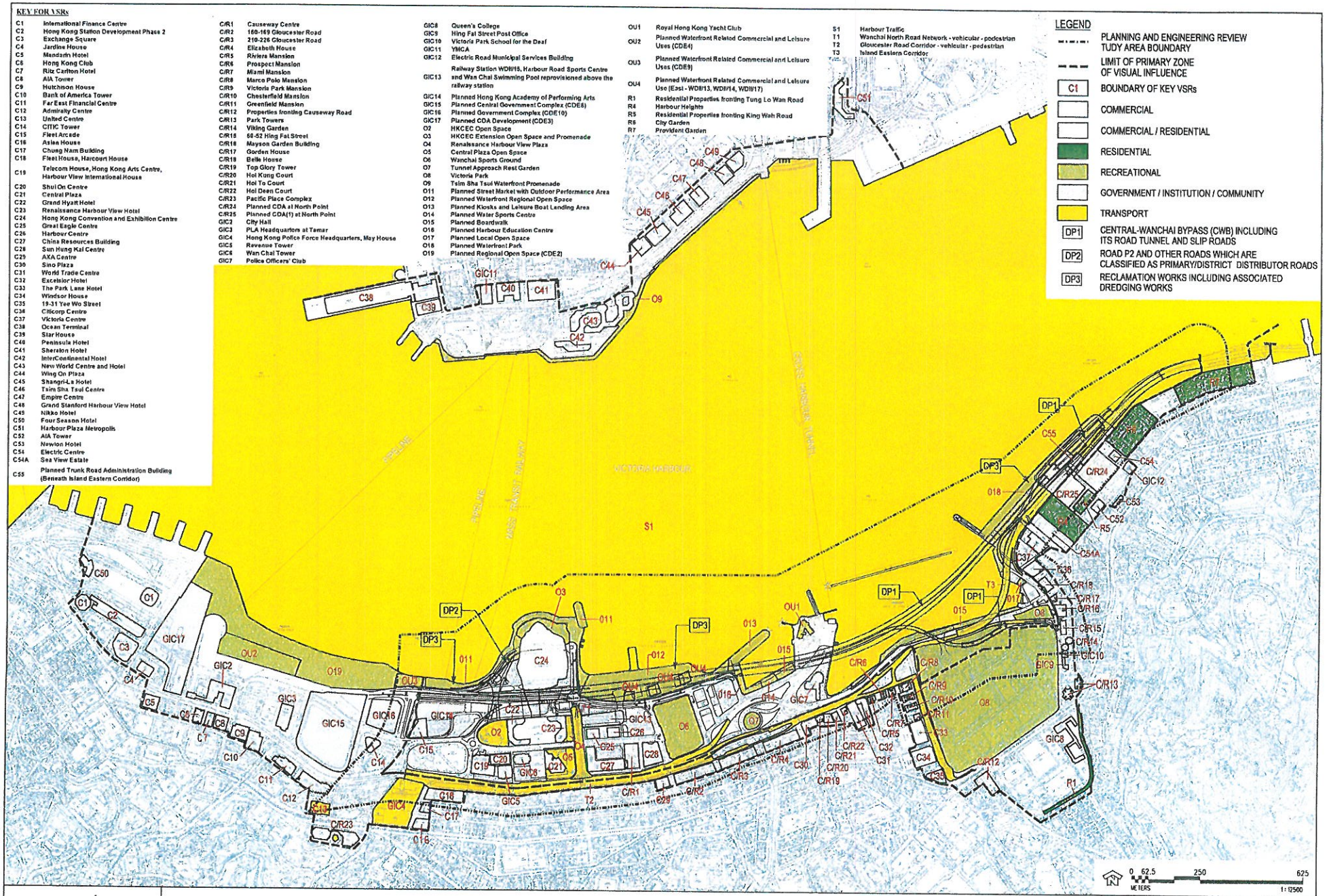
WAN CHAI DEVELOPMENT PHASE II - PLANNING AND ENGINEERING REVIEW

KEY VSRs AND PRIMARY ZONE OF VISUAL INFLUENCE DURING CONSTRUCTION

FIGURE 8.3 a

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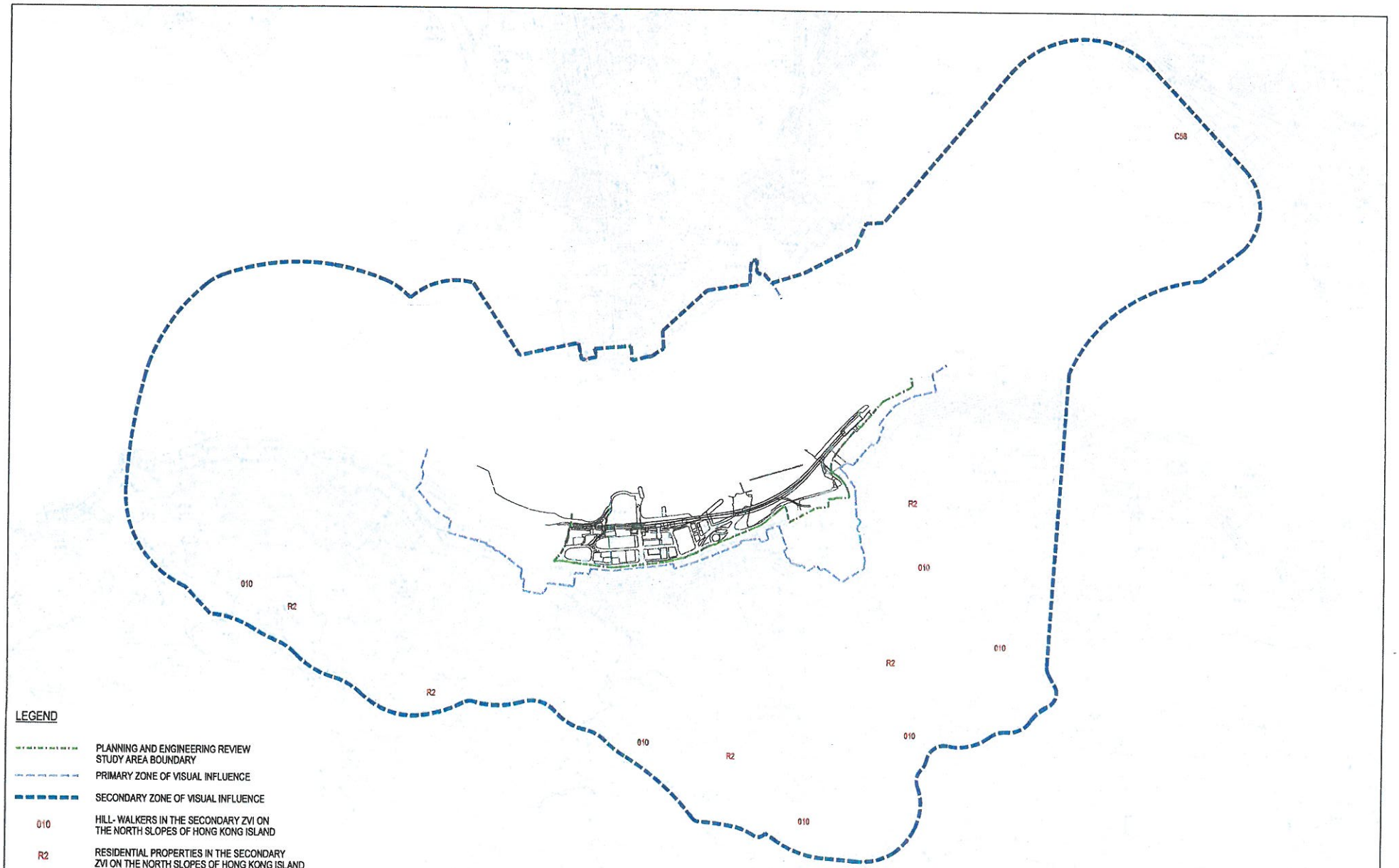
# KEY VSRs AND PRIMARY ZONE OF VISUAL INFLUENCE DURING OPERATION

FIGURE 8.3 b

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KEY VSRs AND SECONDARY ZONE OF VISUAL INFLUENCE

FIGURE 8.3 c

**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 B
# Sample Data Sheets for Air Quality, Noise and Water Quality Monitoring

**APPENDIX B1 Data Record Sheet for TSP Monitoring**

| | | |
|---|---|---|
| Monitoring Location | | |
| Details of Location | | |
| Sampler Identification | | |
| Date & Time of Sampling | | |
| Elapsed-time Meter Reading | Start (min.) | |
| | Stop (min.) | |
| Total Sampling Time (min.) | | |
| Weather Conditions | | Sunny / Fine / Cloudy / Rainy |
| Site Conditions | | |
| Initial Flow Rate, Qsi | Pi (mmHg) | |
| | Ti (°C) | |
| | Hi (in.) | |
| | Qsi (Std. $m^3$) | |
| Final Flow Rate, Qsf | Pf (mmHg) | |
| | Tf (°C) | |
| | Hf (in.) | |
| | Qsf (Std. $m^3$) | |
| Average Flow Rate (Std. $m^3$) | | |
| Total Volume (Std. $m^3$) | | |
| Filter Paper Identification No. | | |
| Initial Wt. of Filter Paper (g) | | |
| Final Wt. of Filter Paper (g) | | |
| Measured TSP Level ($\mu g/m^3$) | | |
| Other Dust Emission Source(s) Observed | | |
| Remarks /Other Observations | | |

| | Name & Designation | Signature | Date |
|---|---|---|---|
| Field Operator: | _____ | _____ | _____ |
| Laboratory Staff: | _____ | _____ | _____ |
| Checked by: | _____ | _____ | _____ |

**APPENDIX B2 Construction Noise Monitoring Field Record Sheet**

| | | |
|---|---|---|
| Monitoring Location | | |
| Description of Location | | |
| Date of Monitoring | | |
| Measurement Start Time (hh:mm) | | |
| Measurement Time Length (min.) | | |
| Noise Meter Model/Identification | | |
| Calibrator Model/Identification | | |
| Measurement Results | $L_{90}$ (dB(A)) | |
| | $L_{10}$ (dB(A)) | |
| | $L_{eq}$ (dB(A)) | |
| Major Construction Noise Source(s) During Monitoring | | |
| Other Noise Source(s) During Monitoring | | |
| Remarks / Other Observations | | |

| | Name & Designation | Signature | Date |
|---|---|---|---|
| Recorded by: | | | |
| Checked by: | | | |

**APPENDIX B3 Operational Stage Traffic Noise Monitoring – Field Survey Record Sheet**

**General**

| | |
|---|---|
| Monitoring Location/Reference No. | |
| Person-in-charge | |
| Date and Day of Monitoring | |
| Measurement Time | From to |
| Description of Location (incl. Floor level) (attach plan separately) | |
| Microphone Position | |

**Weather Conditions**

| | |
|---|---|
| Weather Conditions. | |
| Temperature ($^0$C) | |
| Wind Speed ($ms^{-1}$) | |

**Equipment**

| Instrument. | Type | Serial No. | Setting |
|---|---|---|---|
| Sound Level Meter | | | |
| Calibration | | | |
| | | | |

**Calibration**

| | |
|---|---|
| Before Measurement: | After Measurement: |

**Raw Data**

| Time | Traffic data* | | | | Noise Level (30 min) dB(A) | | | | Average Speed kph |
|---|---|---|---|---|---|---|---|---|---|
| | Near Side | | Far Side | | | | | | |
| | LV | HV | LV | HV | $L_{10}$ | $L_{90}$ | $L_{eq}$ | $L_{max}$ | a/b \| c/d # |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Note: LV - light vehicle (i.e. private car, motorcycle, taxis and van)
HV - heavy vehicle (i.e. other than LV)
* - traffic count for a duration of 15 minutes
\# - a/b | c/d = near side LV/near side HV | far side LV/far side HV

**APPENDIX B3 Operational Stage Traffic Noise Monitoring – Field Survey Record Sheet (cont'd)**

**Others**

| | |
|---|---|
| Mitigation Measures in Pace Near Measurement Location | |
| Other Noise source(s) during monitoring | |
| Remarks | |

**Personnel**

| | Name | Designation | Signature | Date |
|---|---|---|---|---|
| Recorded by | | | | |
| Checked by | | | | |

# Appendix C
# Sample Template for the Interim Notifications

**Appendix C Sample Template for the Interim Notification**

**Incident Report on Action Level or Limit Level Exceedance**

| | |
|---|---|
| Project | |
| Date | |
| Time | |
| Monitoring Location | |
| Parameter | |
| Action & Limit Levels | |
| Measured Level | |
| Possible reason for Action or Limit Level Non-compliance | |
| Actions taken / to be taken | |
| Remarks / Other Observations | |

Prepared by: _____

Designation: _____

Signature: _____

Date: _____

# Appendix D
# Terms of Reference and Details for the ENPC and CLG

File : 60041297/10.22

*(version 1.5)*

# Environmental Project Committee (ENPC) set up under Environmental Permits No. EP-356/2009, No. EP-364/2009 and EP-376/2009

## 1. Aim of ENPC

1.1 The Condition 2.3 of the Environmental Permit No. EP-356/2009 stipulates that to oversee and facilitate effective control of the cumulative environmental impacts arising from potential multiple contracts for the construction of the entire Wan Chai Development Phase II (WDII) and Central-Wanchai Bypass (CWB) (hereafter referred to as the whole Project), the Permit Holder shall set up an Environmental Project Committee (ENPC) before the commencement of construction of the earliest components of the whole Project.

1.2 The Condition 2.3 of the Environmental Permit No. EP-364/2009 also stipulates that to oversee and facilitate effective control of the cumulative environmental impacts arising from potential multiple contracts for the construction of the entire Wan Chai Development Phase II (WDII) and Central-Wanchai Bypass (CWB) (hereafter referred to as the whole Project), the Permit Holder shall liaise with the permit holder of environmental permit No. EP-356/2009 to jointly set up an Environmental Project Committee (ENPC). The ENPC shall be set up before the commencement of construction of the earliest components of the whole Project.

1.3 The Condition 2.3 of the Environmental Permit No. EP-376/2009 also stipulates that to oversee and facilitate effective control of the cumulative environmental impacts arising from potential multiple contracts for the construction of the entire Wan Chai Development Phase II (WDII) and Central-Wan Chai Bypass (CWB) (hereafter referred to as the whole Project), the Permit Holder shall liaise with the permit holder of environmental permit No. EP-356/2009 and the permit holder of environmental permit No. EP-364/2009 to jointly set up an Environmental Project Committee (ENPC). The ENPC shall be set up before the commencement of construction of the earliest components of the whole Project.

1.4 Hence the ENPC is set up to specifically meet the requirements in the Condition 2.3 of the Environmental Permits No. EP-356/2009, No. EP-364/2009 and No. EP-376/2009 (the EPs).

## 2. Terms of Reference

2.1 The ENPC is set up to oversee and facilitate effective control of the cumulative environmental impacts arising from potential multiple contracts for the construction of the entire Wan Chai Development Phase II (WDII) and Central-Wan Chai Bypass (CWB) (hereafter referred to as the whole Project).

2.2 Specifically the ENPC will :

(a) review regularly the cumulative environmental impacts arising from the works contracts for the construction of the whole Project;

(b) review the environmental performance of individual works contracts under the whole Project;

(c) coordinate the actions of the parties concerned for improving the environmental performance of the works contracts under the whole Project in order to ensure compliance of the environmental permits conditions and the relevant legislations;

(d) discuss any necessary liaison works to be conducted by the Community Liaison Groups (CLGs) set up under the EPs to address potential cumulative environmental impact issues arising from the whole Project;

(e) coordinate the actions in respect of handling and resolving environmental complaints and issues raised in the CLGs;

(f) communicate with Environmental Protection Department in respect of the ENPC; and

(g) make recommendations and update under the relevant condition of the Permits on how to enhance the monitoring and audit of the environmental performance of the whole Project on top of requirements as set out in the Permit Conditions or corresponding requirements set out under subsequent Environmental Permits issued for the whole Project.

3. Membership

Chair : The ENPC will be co-chaired by Civil Engineering and Development Department (Permit Holder of Environmental Permits No. EP-356/2009 and No. EP-376/2009) and Highways Department (Permit Holder of Environmental Permit No. EP-364/2009).

Members :

(a) Engineer of the WDII project (WDII consultants).

(b) Engineer of the CWB project (CWB consultants).

(c) Engineer's Representative of the WDII works contracts.

(d) Engineer's Representative of the CWB works contracts.

(e) the Environmental Team (ET) Leader.

(f) the Independent Environmental Checker (IEC).

(g) the permit holders of the further EPs of the whole Project.

(h) the contractors of works contracts under the whole Project.

(i) representative of respective CLGs (representative to be appointed by CLGs).

Secretaries : RE/Environmental for the WDII works contracts and RE/Environmental for the CWB works contracts.

4. Operation of ENPC

4.1 ENPC Meetings

(a) The ENPC will meet on monthly basis, or as required by the activities of the whole Project, or as requested by the ENPC. However, the frequency of the ENPC Meetings will be reconsidered when the majority of the works contracts under the whole Project are completed.

(b) CEDD and HyD will chair the ENPC meeting alternatively.

(c) The dates of the meetings will be determined at the ENPC meetings. Normally the monthly meetings will be held following the submission of the monthly EM&A Reports by the ET Leader to ensure that the most up to date information in respect of EM&A can be discussed at the meetings.

(d) The ENPC Secretaries will take up the secretarial works for the ENPC meeting.

(e) The secretaries will prepare the proposed meeting agenda and circulate it to members for comments prior to each ENPC meeting. The meeting agenda will contain the following major items :
- Report on matters related to the EM&A by the ET Leader and the IEC.
- Issues related to the CLG.
- Specific environmental issues raised.
- Review of actions from the previous meeting.

4.2 Communications

External communications of the ENPC shall be through the Chair.

5. Responsibilities

The ENPC is only to coordinate the actions by the respective parties to oversee and facilitate effective control of the cumulative environmental impacts arising from the multiple contracts for the construction of the whole Project. The decisions made or the actions agreed at the ENPC should not be considered as constituting instructions under individual works contracts of the whole Project. The Employers, the Engineers, the Engineer's Representatives, the ET Leader, and the IEC for individual works contracts shall carry out their own necessary contract administrative procedures for implementing the actions as agreed at the ENPC.

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# Community Liaison Groups (CLG) Set Up under Environmental Permits No. EP-356/2009, No. EP-364/2009 and EP-376/2009

1. Aim of CLG

1.1 Condition 2.4 of the Environmental Permits No. EP-356/2009, No. EP-364/2009 and No. EP-376/2009 (the EPs) stipulates that the Permit Holders shall set up a Community Liaison Group (CLG) comprising representatives from the relevant concerned and affected parties, including owners' corporations, management offices, local committees and schools of affected areas, including the North Point and Tin Hau areas, to facilitate communication, enquiries and complaints handling on all environmental issues, including the follow up on the implementation of remedial mitigation measures. The Permit Holders shall set up the CLG before the commencement of construction of the relevant component(s) of the WDII and CWB Project. A designated complaint hotline shall also be set up for the Project to address such concerns and complaints in an efficient manner. The detailed arrangements of the CLG shall be reported to the Environmental Project Committee (ENPC) and its activities be reflected as update in the EM&A Manuals for the Project.

1.2 Hence the CLG is set up to specifically meet the above requirements in Condition 2.4 of the EPs.

2. Terms of Reference

2.1 The role of CLG is consultative. It is set up to facilitate communication, enquiries and complaints handling on all environmental issues including the follow up on the implementation of remedial mitigation measures.

2.2 Specifically the CLG will meet regularly :

(a) to provide a platform for the Permit Holders to communicate with the public to understand the construction activities of the Project and the associated environmental issues to the community;

(b) to review the environmental concerns and complaints received from the public and to report any exceedence of limits observed; and

(c) to review the follow-up on the implementation of remedial mitigation measures.

3 Setting-up CLGs

3.1 As the stakeholders for different parts of the project area are different, separate CLG will be formed for different areas to facilitate effective and efficient communication with the community. The following four CLGs will be formed :

(a) North Point CLG for Highways Department's works contracts at North Point and covering the community of the North Point and Tin Hau areas.

(b) Causeway Bay CLG for Highways Department's works contracts at Causeway Bay and covering the community of the Causeway Bay area.

(c) Wan Chai CLG for Civil Engineering and Development Department's works contracts at

Wan Chai and covering the community of the Wan Chai area.

(d) Central CLG for Highways Department's works contracts at Central and covering the community of the Central area.

The extent of the community to be invited to join each of the above CLGs will be determined by the relevant EP Holders and the Engineer's Representatives, taking into account the likely extents of the environmental impacts and the public liaison requirements.

4. Membership

4.1 Chair : The CLG will be chaired by the Engineer's Representatives of the CWB and WDII works contracts. (If there are more than one works contracts and hence more than one Engineer's Representatives, only one Engineer's Representative is to be assigned to chair one CLG.)

4.2 Members :

(a) Engineer's Representatives for the works contracts.

(b) Environmental Team (ET) Leader.

(c) Independent Environmental Checker (IEC).

(d) representative from the relevant EP Holders and FEP Holders (including the persons responsible for public relation issues from the works contractors)

(e) the environmental consultants of WDII project and CWB project

(f) Representatives from District Offices will be invited to attend on as-needed basis.

(g) representatives from concerned stakeholders of the relevant community (as listed in Appendix A).

4.3 Secretaries : RE/Environmental (or RE/Public Liaison) for the works contracts.

5. Operation of CLG

5.1 CLG Meetings

(a) The CLG will meet as required by the activities of the Project or by the request of the Chair.

(b) Meeting notes will be taken and distributed by the CLG Secretaries.

(c) The secretaries will prepare the proposed meeting agenda with agreement of the Chair prior to each CLG meeting. The meeting agenda will contain the following major items :
- Updates on the Project and construction activities.
- Specific environmental issues raised.
- Review of the implementation of remedial mitigation measures.
- Review of actions from the previous meeting.

(d) The detailed arrangements of CLG shall be reported to ENPC.

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## Appendix A

Remarks:

1. The Owner's Corporations are deemed to be represented by their appointed management offices. If the Owner's Corporation prefers to be member of the CLG, it will replace the corresponding management office as the CLG member.

2. The lists below are to be updated in the course of the relevant works.

### A. North Point CLG members from the community of the North Point and Tin Hau areas

| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 1. | PLK Yu Lee Mo Fan Memorial school | 19 Wharf Road,<br>North Point, Hong Kong<br>Tel :2566 3805 | To be confirmed |
| 2. | Hong Kong Baptist Church Henrietta Secondary School | 2 City Garden Road,<br>North Point, Hong Kong<br>Tel :25701466 | Mr. Dai |
| 3. | Management Office of City Garden | 9 City Garden Road,<br>North Point, Hong Kong<br>Tel :270 4584 | Mr. Chin |
| 4. | Harbour Grand Hong Kong | 23 Oil Street,<br>North Point, Hong Kong<br>Tel :2121 2688 | To be confirmed |
| 5. | Management Office of Fu Lee Loy Mansion | 9-27 King Wah Road,<br>North Point, Hong Kong | To be confirmed |
| 6. | Wan Wah Mansion | 11-13 Oil Street,<br>North Point, Hong kong | To be confirmed |
| 7. | Wang Fa Mansion | 2 Wang On Road,<br>North Point, Hong Kong | To be confirmed |
| 8. | Victor Court | 14-28 Wang On Rd,<br>North Point, Hong Kong | To be confirmed |
| 9. | Causeway Bay Community Centre | 7 Fook Yum Road,<br>North Point, Hong Kong<br>Tel :3104 2303 | Ms. Emily Cheng |
| 10. | Management Office of Harbour Heights | 3 Fook Yum Road,<br>North Point, Hong Kong | To be confirmed |

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| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 11. | Management Office of Sea View Estate | 29-41 Tong Chong Street Quarry Bay, Hong Kong | To be confirmed |
| 12. | Management Office of Victoria Centre | 15 Watson Road, Causeway Bay, Hong Kong | To be confirmed |
| 13. | Management Office of Hoi Tao Building | 3 King Ming Road, Causeway Bay, Hong Kong | To be confirmed |
| 14. | Kam Tao Building | 4 Whitfield Road, Causeway Bay, Hong Kong | To be confirmed |
| 15. | Ngan Tao Building | 8 Whitfield Road, Causeway Bay, Hong Kong | To be confirmed |
| 16. | Management Office of Citicorp Centre | 18 Whitfield Road, Causeway Bay, Hong Kong | To be confirmed |
| 17. | Management Offices of Belle House | 98 Hing Fat Street, Causeway Bay, Hong Kong | To be confirmed |
| 18. | Whitfield Mansion | 15-19 Whitfield Road, Causeway Bay, Hong Kong | To be confirmed |
| 19. | Shun Hing Building | 11-13 Whitfield Road, Causeway Bay | To be confirmed |
| 20. | Hoi Sing Building | 128-142 2nd Street, Sai Ying Pun – located at Kenny Town, to be further checked | To be confirmed |
| 21. | Ming Hing Building | 9-11 Gordon Road, Causeway Bay, Hong Kong | To be confirmed |
| 22. | Management Office of Gordon House | 62-86 Hing Fat Street Causeway Bay, Hong Kong | To be confirmed |

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| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 23. | Management Office of Mayson Garden Building | 1A-1B Tsing Fung Street, Causeway Bay, Hong Kong | To be confirmed |
| 24. | Management Office Victoria Court | 2A Tsing Fung Street, Causeway Bay, Hong Kong or 50-56 Hing Fat Street, Causeway Bay Hong Kong | To be confirmed |
| 25. | Management Office of Viking Garden | 40 Hing Fat Street, Causeway Bay, Hong Kong | To be confirmed |
| 26. | Victoria Park School for the Deaf | 38 Hing Fat Street, Causeway Bay, Hong Kong | To be confirmed |
| 27. | Management Office of Park Towers | 1 King's Road, Causeway Bay, Hong Kong | To be confirmed |
| 28. | Operations Branch of Water Supplies Department | WSD Hong Kong Regional Building, 611 King's Road, North Point, Hong Kong | To be confirmed |
| 29. | Harbour Grand Hong Kong | 23 Oil Street, North Point, Hong Kong | To be confirmed |
| 30. | Management Office of Provident Centre | 23 Wharf Road, North Point, Hong Kong | To be confirmed |
| 31. | Management Office of King Wah House | 5-7 King Wah Road, North Point, Hong Kong | To be confirmed |

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| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 32. | FEHD Whitfield Depot | AECOM Asia Co. Ltd.<br>at 12th Floor, Grand<br>Central Plaza, Tower 2<br>138 Sha Tin Rural<br>Committee Road<br>Sha Tin,<br>New Territories,<br>Hong Kong<br>or<br>Public Relations Unit,<br>Headquarters<br>5th floor, Ho Man Tin<br>Government Offices<br>88 Chung Hau Street<br>Ho Man Tin, Kowloon. | Mr. Charlton Wong |

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**B. Causeway Bay CLG members from the community of the Causeway Bay area**

| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 1. | Management Offices of Prospect Mansion | 66-72 Paterson Street, Causeway Bay | To be supplemented |
| 2. | Management Offices of Welcome Mansion | 58-64 Paterson Street, Causeway Bay | To be supplemented |
| 3. | Management Offices of Towning Mansion | 50-56 Paterson Street, Causeway Bay | To be supplemented |
| 4. | Management Offices of Causeway Bay Mansion | 42-48 Paterson Street, Causeway Bay | To be supplemented |
| 5. | Management Offices of Miami Mansion | 13-15 Cleveland Street, Causeway Bay | To be supplemented |
| 6. | Management Offices of Florida Mansion | 9-11 Cleveland Street, Causeway Bay | To be supplemented |
| 7. | Management Offices of Cleveland Mansion | 5-7 Cleveland Street, Causeway Bay | To be supplemented |
| 8. | Management Offices of Hamilton Mansion | 1-3 Cleveland Street, Causeway Bay | To be supplemented |
| 9. | Management Offices of Highland Mansion | 8 Cleveland Street, Causeway Bay | To be supplemented |
| 10. | Management Offices of Marco Polo Mansion | 10 Cleveland Street, Causeway Bay | To be supplemented |
| 11. | Management Offices of Newtown Mansion | 6 Cleveland Street, Causeway Bay | To be supplemented |
| 12. | Management Offices of Victoria Park Mansion | 15 Kingston Street, Causeway Bay | To be supplemented |
| 13. | Management Offices of Clarke Mansion | 9 Kingston Street, Causeway Bay | To be supplemented |
| 14. | Management Offices of Chesterfield Mansion | 11 Kingston Street, Causeway Bay | To be supplemented |
| 15. | Management Offices of Riviera Mansion | 59-65 Paterson Street, Causeway Bay | To be supplemented |
| 16. | Management Offices of Haywood Mansion | 57 Paterson Street, Causeway Bay | To be supplemented |
| 17. | Management Offices of Vienna Mansion | 55 Paterson Street, Causeway Bay | To be supplemented |

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| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 18. | Management Offices of Hyde Park Mansion | 53 Paterson Street, Causeway Bay | To be supplemented |
| 19. | Management Offices of Fairview Mansion | 51 Paterson Street, Causeway Bay | To be supplemented |
| 20. | Excelsior Hong Kong | 281 Gloucester Road, Causeway Bay | To be supplemented |
| 21. | World Trade Centre | 280 Gloucester Road, Causeway Bay | To be supplemented |
| 22. | Management Office of Windsor House | 311 Gloucester Road, Causeway Bay | To be supplemented |
| 23. | Management Office of Hoi Deen Court | 276-279 Gloucester Road, Causeway Bay | To be supplemented |
| 24. | Management Office of Hoi Tao Court | 271-275, Gloucester Road, Causeway Bay | To be supplemented |
| 25. | Management Office of Hoi Kung Court | 264-269 Gloucester Road, Causeway Bay | To be supplemented |
| 26. | Top Glory Tower | 262 Gloucester Road, Causeway Bay | To be supplemented |
| 27. | Sino Plaza | 256-257 Gloucester Road, Causeway Bay | To be supplemented |
| 28. | Management Office of Elizabeth House | 250-254 Gloucester Road, Causeway Bay | To be supplemented |
| 29. | Royal Hong Kong Yacht Club | Royal Hong Kong Yacht Club, Causeway Bay | To be supplemented |
| 30. | Police Officers' Club | Police Officers' Club, Causeway Bay | To be supplemented |
| 31. | Operations Branch of Water Supplies Department | Hong Kong and Islands Regional Office<br>WSD Hong Kong Regional Building<br>611 King's Road, North Point<br>Tel: 2880 2555 | CE/HK Mr Yeung Sek Kui |

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| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 32. | Hong Kong Transport, Logistics & Management Co. Ltd | Administration Building Cross-Harbour Tunnel Hunghom, Kowloon, Hong Kong | To be supplemented |
| 33. | Causeway Bay Typhoon shelter Mutual Aid Committee | To be confirmed | To be supplemented |
| 34. | Hong Kong Cargo-Vessel Traders' Association Limited | 2/F, 21-23 Man Wai Building, Man Cheong Street | To be supplemented |
| 35. | Hong Kong Pilots Association | 1601-1606, Hong Kong Plaza, 186-191 Connaught Road West, Hong Kong. | To be supplemented |
| 36. | Owners of temporary structures at CBTS | To be confirmed | To be supplemented |
| 37. | 香港漁民近岸作業協會 | Rm 1209, Sui Yick hse, Siu Sai Wan Est, Chai Wan Tel: 9088 8728 | Mr. Lai Tai Hei |
| 38. | 銅鑼灣廟船 | To be confirmed | To be supplemented |
| 39. | 海上業界聯席會議 | To be confirmed | To be supplemented |
| 40. | 港九電船拖輪商會 | 46 & 48 Man Cheong Bldg., 3/F., Ferry Point, Kowloon , Hong Kong . | To be supplemented |
| 41. | 海上遊覽業聯會 | Rm 1615, One Grand Tower, 639 nathan Rd, Mong Kok Tel: 9484 5417 | 張有光 |

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## C. Wan Chai CLG members from the community of the Wan Chai area

| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 1 | Hong Kong Convention and Exhibition Centre (Management) Ltd | Tel.: 2582 7070 | P K Chan |
| 2 | Kiu Lok Service Management Co. Ltd. | Room 1108, Office Tower, Convention Plaza, 1 Harbour Road, Wan Chai<br>Tel: 2802 7966 | Mr. C. K. Wu |
| 3 | Management Office of the Hong Kong Academy for Performing Arts | 1 Gloucester Road, Wan Chai<br>Tel: 2584 8500 | Mr. Joseph Law |
| 4 | Management Office of Hong Kong Arts Centre | 2 Harbour Road<br>Tel.:2584 8690 | Mr. Kwok |
| 5 | Management Office of Shui On Centre | Room 102, 1/F, Shui On Centre, 6-8 Harbour Road, Hong Kong<br>Tel: 2879 1803 | Ms. Eva Wong |
| 6 | Management Office of Sun Hung Kai Centre | 26/F., Sun Hung Kai Centre, 30 Harbour Road, Wan Chai<br>Tel: 2828 5218 | Mr. Ricky Kwan |
| 7 | Management Office of Great Eagle/Harbour Centre | Suite 3206, Great Eagle Centre, 23 Harbour Road, Wan Chai<br>Tel: 2879 2118 (for Great Eagle Centre)<br>26/F., Sun Hung Kai Centre, 30 Harbour Road, Wan Chai<br>Tel: 2828 0852 (for Harbour Centre) | Ms. Polly Lo<br>Mr. S. C. Ip |
| 8 | Management Office of China Resources Building | Room 4206-10, 42/F., China Resources Building, 26 Harbour Road, Hong Kong<br>Tel: 2828 5688 | Mr. Dave Law |
| 9 | Management Office for Convention Plaza Apartments | Convention Plaza Apartments, 1 Harbour Road, Wan Chai<br>Tel.: 2829 7098 | Mr. George Lau |
| 10 | Telecom House (managed by REACH) | 19th Floor, Telecom House, 3 Gloucester Road, Wan Chai<br>Tel: 2983 3719 | Mr. Herrick Chong |

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| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 11 | Grand Hyatt Hong Kong Hotel | 1 Harbour Road<br>Hong Kong<br>Tel.:2584 7021 | Mr. Kwong |
| 12 | Renaissance Harbour View Hotel | 1 Harbour Road,<br>Wanchai<br>Tel.:2802 8888 | Ms. Siu |
| 13 | Management Office of Central Plaza | Suite 2802, 28/F,<br>Central Plaza<br>18 Harbour Road,<br>Wanchai, Hong Kong<br>Tel.:2586 8111 | To be confirmed |
| 14 | Society for the Prevention of Cruelty to Animals Hong Kong, SPCA(HK) | 5, Wan Shing Street,<br>Wan Chai<br>Tel.: 2232 5516 | Ms. Leung |
| 15 | Management Office of Causeway Bay | Block A, Causeway Centre<br>28 Harbour Road, Wan Chai | To be confirmed |
| 16 | ECO gas station at Wan Shing Street | To be confirmed | To be confirmed |
| 17 | Operations Branch of Water Supplies Department | To be confirmed | To be confirmed |
| 18 | Representative of EMSD (for the operation of the seawater cooling system for the government offices at Wan Chai North) | Electrical and Mechanical Services Department<br>3 Kai Shing Street,<br>Kowloon, Hong Kong<br>Tel: 3155 4304 | Mr. Ernest Li |
| 19 | Representative of LCSD (for the operation of the Wan Chai Sports Ground) | Tel.:2827 7720 | Ms. Mabel Chan |

## D. Central CLG members from the community of the Central area

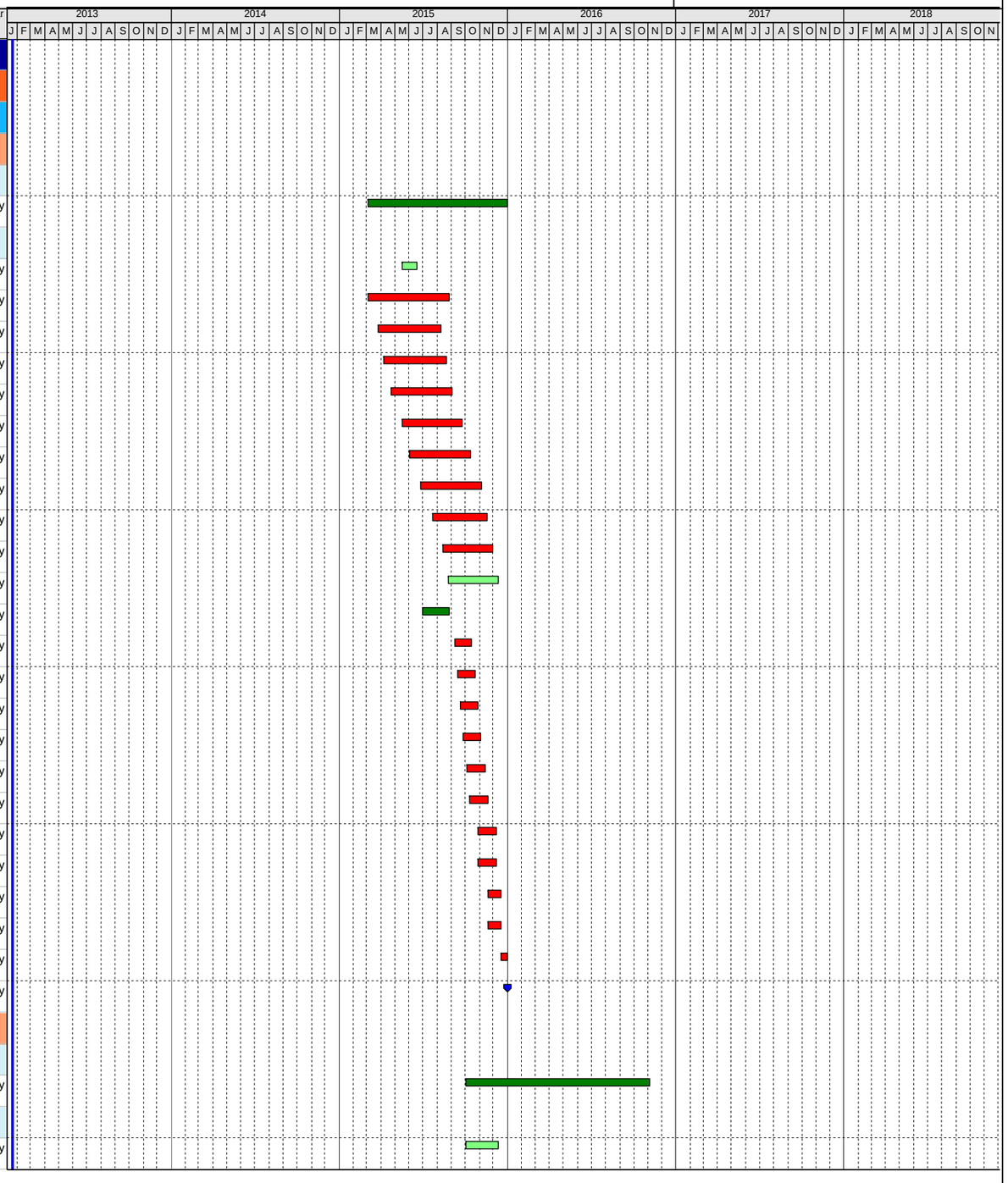
| Item | The Community | Address and Contact Telephone Number | Contact Person |
|---|---|---|---|
| 1. | IFC | 1 Harbour View Street | To be supplemented |
| 2. | Four Seasons Hotel Hong Kong and Four Seasons Place | 8 Finance Street,<br>Central | To be supplemented |
| 3. | Management Offices of the Bauhinia (Korea Centre) | 119-120 Connaught Rd Central, Sheung Wan | To be supplemented |

# Appendix E
# Construction Programmes of Works Contracts

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

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

| Activity ID | Activity Name | user_text2 | Orig Dur | Early Start | Early Finish | Total Float | Calendar |
|---|---|---|---|---|---|---|---|
| **HK/2012/08 Works Programme - (Conforming) - Rev.0/1 (Approved)** | | | | | | | |
| **Works for Section Completion** | | | | | | | |
| **Construction** | | | | | | | |
| **Section III - Road D11 & Part of Road P2, Area 4, Implement 1st Stage ITA** | | | | | | | |
| **Summary of Section III - Road D11 & Part of Road P2, Area 4, Implement 1st Stage ITA** | | | | | | | |
| SIII10000 | Summary - Section III - Roadwork and Implement 1st Stage ITA | | 248 | 03-Mar-15 | 31-Dec-15 | 0 | C3 - 6D w/ holiday |
| **Roadwork & Utilities** | | | | | | | |
| SIII10020 | remove silo plant | | 26 | 18-May-15 | 17-Jun-15 | 44 | C3 - 6D w/ holiday |
| SIII10040 | Sec III - roadwork & utilities - storm water drain & subsoil drain | main pipe 520m; subsoil drain 380m @7d/20m+3d | 145 | 03-Mar-15 | 27-Aug-15 | 0 | C3 - 6D w/ holiday |
| SIII10060 | Sec III - roadwork & utilities - Watermain & Irrigation Mains | FW 80m; IM 400m @5d/20m +3d cycle | 110 | 26-Mar-15 | 10-Aug-15 | 0 | C3 - 6D w/ holiday |
| SIII10080 | Sec III - roadwork & utilities - gas main and valve chamber | 330m; @6d/20m +4d cycle | 110 | 08-Apr-15 | 21-Aug-15 | 0 | C3 - 6D w/ holiday |
| SIII10100 | Sec III - roadwork & utilities - HEC cable duct and catchpit | 390m; @6d/20m +3d cycle | 110 | 23-Apr-15 | 02-Sep-15 | 0 | C3 - 6D w/ holiday |
| SIII10120 | Sec III - roadwork & utilities - sub-base | 7,760m2; 50mx6m =300m2; 26bays | 110 | 18-May-15 | 25-Sep-15 | 0 | C3 - 6D w/ holiday |
| SIII10140 | Sec III - roadwork & utilities - Road kerb | 1,600m @5d/20m +4d cycle [3WF] | 110 | 03-Jun-15 | 13-Oct-15 | 0 | C3 - 6D w/ holiday |
| SIII10160 | Sec III - roadwork & utilities - flexible pavement | 7,760m2 | 110 | 27-Jun-15 | 06-Nov-15 | 0 | C3 - 6D w/ holiday |
| SIII10180 | Sec III - roadwork & utilities - Road Lighting, TCSS Ducts &Traffic Signs | | 100 | 22-Jul-15 | 18-Nov-15 | 0 | C3 - 6D w/ holiday |
| SIII10200 | Sec III - roadwork & utilities - pave footpath concrete | 350m2 | 90 | 14-Aug-15 | 30-Nov-15 | 0 | C3 - 6D w/ holiday |
| SIII10220 | Sec III - roadwork & utilities - lay footpath concrete paver | 5,250m2 | 90 | 26-Aug-15 | 11-Dec-15 | 5 | C3 - 6D w/ holiday |
| SIII10240 | [Summary] reinstatement of Box Culvert K | | 50 | 30-Jun-15 | 27-Aug-15 | 0 | C3 - 6D w/ holiday |
| SIII10300 | Sec III - roadwork & utilities above box culvert K - storm water drain & subsoil drain | main pipe 60m; subsoil drain 50m @7d/20m+4d | 30 | 09-Sep-15 | 15-Oct-15 | 0 | C3 - 6D w/ holiday |
| SIII10320 | Sec III - roadwork & utilities above box culvert K - Watermain & Irrigation Mains | FW 10m; IM 50m @5d/20m +3d cycle | 30 | 15-Sep-15 | 22-Oct-15 | 0 | C3 - 6D w/ holiday |
| SIII10340 | Sec III - roadwork & utilities above box culvert K - gas main and valve chamber | 40m; @6d/20m +4d cycle | 30 | 21-Sep-15 | 28-Oct-15 | 0 | C3 - 6D w/ holiday |
| SIII10360 | Sec III - roadwork & utilities above box culvert K - HEC cable duct and catchpit | 50m; @6d/20m +3d cycle | 30 | 26-Sep-15 | 03-Nov-15 | 0 | C3 - 6D w/ holiday |
| SIII10380 | Sec III - roadwork & utilities above box culvert K - sub-base | 870m2; | 35 | 05-Oct-15 | 14-Nov-15 | 0 | C3 - 6D w/ holiday |
| SIII10400 | Sec III - roadwork & utilities above box culvert K - Road kerb | 180m @5d/20m +4d cycle [3WF] | 35 | 10-Oct-15 | 20-Nov-15 | 0 | C3 - 6D w/ holiday |
| SIII10420 | Sec III - roadwork & utilities above box culvert K - flexible pavement | 870m2 | 35 | 29-Oct-15 | 08-Dec-15 | 0 | C3 - 6D w/ holiday |
| SIII10440 | Sec III - roadwork & utilities above box culvert K - Road Lighting, TCSS Ducts &Traffic Signs | | 35 | 29-Oct-15 | 08-Dec-15 | 0 | C3 - 6D w/ holiday |
| SIII10460 | Sec III - roadwork & utilities above box culvert K - pave footpath concrete | 40m2 | 25 | 19-Nov-15 | 17-Dec-15 | 0 | C3 - 6D w/ holiday |
| SIII10480 | Sec III - roadwork & utilities above box culvert K - lay footpath concrete paver | 440m2 | 25 | 19-Nov-15 | 17-Dec-15 | 0 | C3 - 6D w/ holiday |
| SIII10485 | Sec III - 1st Stage of Interim Traffic Arrangement | | 10 | 18-Dec-15 | 31-Dec-15 | 0 | C3 - 6D w/ holiday |
| SIII10490 | Achievement of Section III of the Works | | 0 | | 31-Dec-15 | 0 | C3 - 7D w/o holiday |
| **Section III A - Road A2, A4, A5, Area 11; Implement 2nd Stage ITA** | | | | | | | |
| **Summary of Section IIIA - Road A2, A4, A5, Area 11; Implement 2nd Stage ITA** | | | | | | | |
| SIIIA10560 | Summary - Section III A - Roadwork and 2nd stage ITA | | 324 | 02-Oct-15 | 05-Nov-16 | 0 | C3 - 6D w/ holiday |
| **Roadwork & Utilities** | | | | | | | |
| SIIIA10260 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - Backfill to pavement founding level | | 60 | 02-Oct-15 | 11-Dec-15 | 94 | C3 - 6D w/ holiday |




Data Date:
22-Jan-13

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

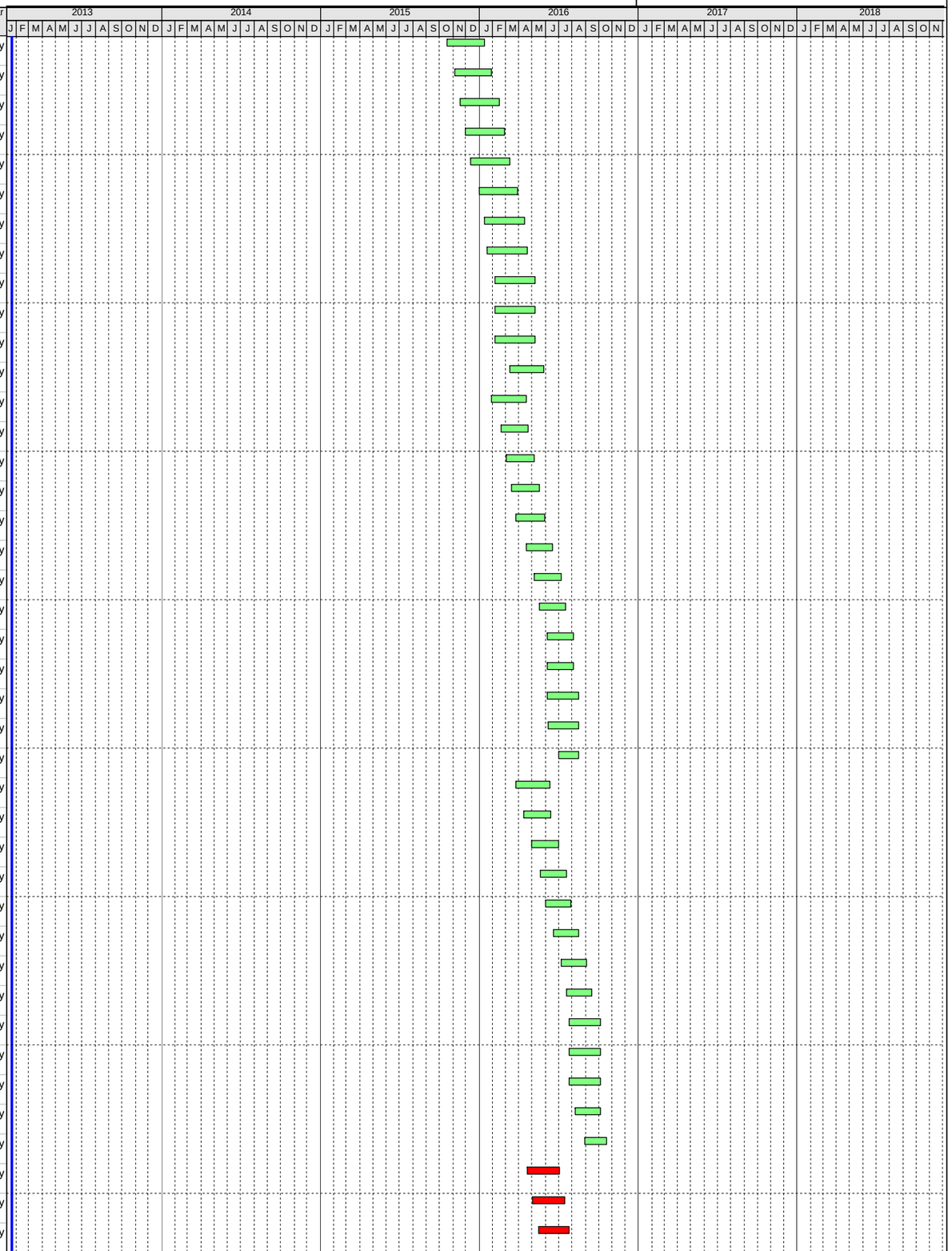
## Detail Works Programme
(Road P2)

| Date | Revision | Checked | Approved |
|---|---|---|---|
| 22-Aug-13 | Rev. 0/1 | | |

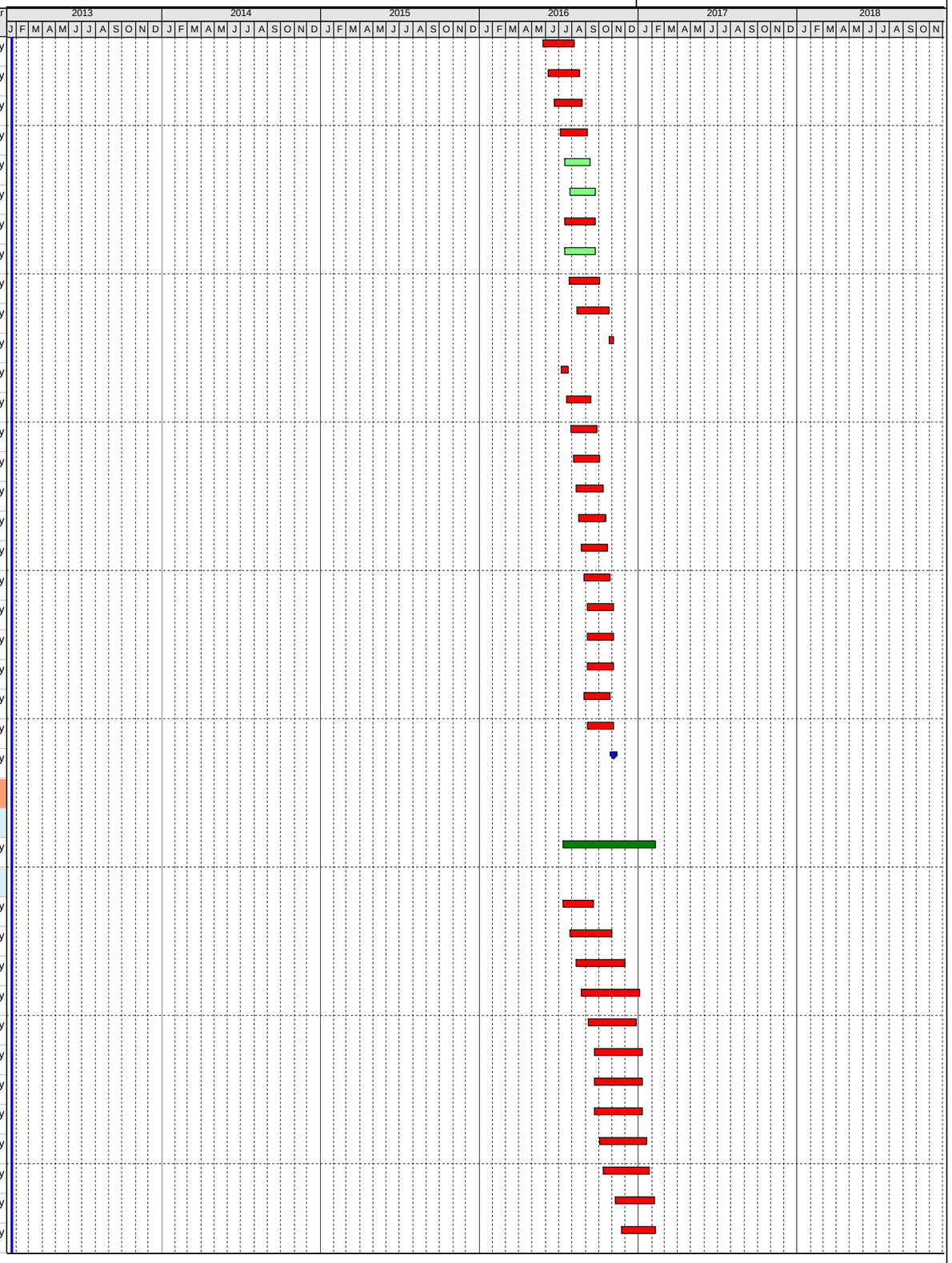
CHINA STATE - LEADER JOINT VENTURE

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

| Activity ID | Activity Name | user_text2 | Orig Dur | Early Start | Early Finish | Total Float | Calendar |
|---|---|---|---|---|---|---|---|
| SIIIA10280 | Sec III A - roadwork and utlities (Zone A1 bay 1,2) - storm water drain & sub-soil drain | 80m; @7d/20m+3d cycle [1WF] | 70 | 19-Oct-15 | 12-Jan-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10300 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - Fresh watermain & Irrigation Mains | 57m; @5d/20m +3d cycle; [1WF] | 70 | 06-Nov-15 | 29-Jan-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10320 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - Gas main | 17m; @6d/20m +4d cycle [1WF] | 70 | 18-Nov-15 | 16-Feb-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10340 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - HEC | 47m; @6d/20m +3d cycle [1WF] | 70 | 30-Nov-15 | 27-Feb-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10360 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - sub-base | 600m2; | 70 | 11-Dec-15 | 10-Mar-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10380 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - road kerb | 87m @5d/20m +4d cycle [2WF] | 70 | 31-Dec-15 | 28-Mar-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10400 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - flexible pavement | 480m2x3 =4,290m2; @50mx6m/d | 70 | 13-Jan-16 | 13-Apr-16 | 110 | C3 - 6D w/ holiday |
| SIIIA10420 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - construct u-channel | 15m @6d/20m + 5d cycle | 70 | 19-Jan-16 | 19-Apr-16 | 115 | C3 - 6D w/ holiday |
| SIIIA10440 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - pave footpath concrete | 117m2 @5mx2m =35 bay @3d/bay [3WF] | 70 | 05-Feb-16 | 07-May-16 | 100 | C3 - 6D w/ holiday |
| SIIIA10460 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - Road Lighting, TCSS Ducts &Traffic Signs | | 70 | 05-Feb-16 | 07-May-16 | 100 | C3 - 6D w/ holiday |
| SIIIA10480 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - lay footpath paving block | | 70 | 05-Feb-16 | 07-May-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10500 | Sec III A - roadwork and utilities (Zone A1 bay 1,2) - Road sign and road marking | | 60 | 12-Mar-16 | 27-May-16 | 94 | C3 - 6D w/ holiday |
| SIIIA10580 | Sec III A - roadwork and utilities (Zone A2) - Backfill to pavement founding level | | 60 | 29-Jan-16 | 18-Apr-16 | 10 | C3 - 6D w/ holiday |
| SIIIA10600 | Sec III A - roadwork and utlities (Zone A2) - storm water drain & sub-soil drain | 80m; @7d/20m+3d cycle [1WF] | 50 | 20-Feb-16 | 22-Apr-16 | 10 | C3 - 6D w/ holiday |
| SIIIA10620 | Sec III A - roadwork and utilities (Zone A2) - Fresh watermain & Irrigation Mains | 57m; @5d/20m +3d cycle; [1WF] | 50 | 03-Mar-16 | 05-May-16 | 11 | C3 - 6D w/ holiday |
| SIIIA10640 | Sec III A - roadwork and utilities (Zone A2) - Gas main | 17m; @6d/20m +4d cycle [1WF] | 50 | 15-Mar-16 | 18-May-16 | 16 | C3 - 6D w/ holiday |
| SIIIA10660 | Sec III A - roadwork and utilities (Zone A2) - HEC | 47m; @6d/20m +3d cycle [1WF] | 50 | 26-Mar-16 | 30-May-16 | 16 | C3 - 6D w/ holiday |
| SIIIA10680 | Sec III A - roadwork and utilities (Zone A2) - sub-base | 600m2; | 50 | 18-Apr-16 | 17-Jun-16 | 16 | C3 - 6D w/ holiday |
| SIIIA10700 | Sec III A - roadwork and utilities (Zone A2) - road kerb | 87m @5d/20m +4d cycle [2WF] | 50 | 06-May-16 | 06-Jul-16 | 16 | C3 - 6D w/ holiday |
| SIIIA10720 | Sec III A - roadwork and utilities (Zone A2) - flexible pavement | 480m2x3 =4,290m2; @50mx6m/d | 50 | 19-May-16 | 18-Jul-16 | 22 | C3 - 6D w/ holiday |
| SIIIA10740 | Sec III A - roadwork and utilities (Zone A2) - construct u-channel | 15m @6d/20m + 5d cycle | 50 | 06-Jun-16 | 04-Aug-16 | 17 | C3 - 6D w/ holiday |
| SIIIA10760 | Sec III A - roadwork and utilities (Zone A2) - pave footpath concrete | 117m2 @5mx2m =35 bay @3d/bay [3WF] | 50 | 06-Jun-16 | 04-Aug-16 | 17 | C3 - 6D w/ holiday |
| SIIIA10780 | Sec III A - roadwork and utilities (Zone A2) - Road Lighting, TCSS Ducts &Traffic Signs | | 60 | 06-Jun-16 | 16-Aug-16 | 17 | C3 - 6D w/ holiday |
| SIIIA10800 | Sec III A - roadwork and utilities (Zone A2) - lay footpath paving block | | 60 | 07-Jun-16 | 17-Aug-16 | 16 | C3 - 6D w/ holiday |
| SIIIA10820 | Sec III A - roadwork and utilities (Zone A2) - Road sign and road marking | | 40 | 02-Jul-16 | 17-Aug-16 | 16 | C3 - 6D w/ holiday |
| SIIIA10840 | Sec III A - roadwork and utilities (Zone B) - Backfill to pavement founding level | | 60 | 25-Mar-16 | 10-Jun-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10860 | Sec III A - roadwork and utlities (Zone B) - storm water drain & sub-soil drain | 80m; @7d/20m+3d cycle [1WF] | 50 | 13-Apr-16 | 13-Jun-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10880 | Sec III A - roadwork and utilities (Zone B) - Fresh watermain & Irrigation Mains | 57m; @5d/20m +3d cycle; [1WF] | 50 | 30-Apr-16 | 30-Jun-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10900 | Sec III A - roadwork and utilities (Zone B) - Gas main | 17m; @6d/20m +4d cycle [1WF] | 50 | 20-May-16 | 19-Jul-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10920 | Sec III A - roadwork and utilities (Zone B) - HEC | 47m; @6d/20m +3d cycle [1WF] | 50 | 01-Jun-16 | 30-Jul-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10940 | Sec III A - roadwork and utilities (Zone B) - sub-base | 600m2; | 50 | 20-Jun-16 | 17-Aug-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10960 | Sec III A - roadwork and utilities (Zone B) - road kerb | 87m @5d/20m +4d cycle [2WF] | 50 | 08-Jul-16 | 03-Sep-16 | 5 | C3 - 6D w/ holiday |
| SIIIA10980 | Sec III A - roadwork and utilities (Zone B) - flexible pavement | 480m2x3 =4,290m2; @50mx6m/d | 50 | 20-Jul-16 | 15-Sep-16 | 11 | C3 - 6D w/ holiday |
| SIIIA11000 | Sec III A - roadwork and utilities (Zone B) - construct u-channel | 15m @6d/20m + 5d cycle | 60 | 26-Jul-16 | 05-Oct-16 | 16 | C3 - 6D w/ holiday |
| SIIIA11020 | Sec III A - roadwork and utilities (Zone B) - pave footpath concrete | 117m2 @5mx2m =35 bay @3d/bay [3WF] | 60 | 26-Jul-16 | 05-Oct-16 | 16 | C3 - 6D w/ holiday |
| SIIIA11040 | Sec III A - roadwork and utilities (Zone B) - Road Lighting, TCSS Ducts &Traffic Signs | | 60 | 26-Jul-16 | 05-Oct-16 | 16 | C3 - 6D w/ holiday |
| SIIIA11060 | Sec III A - roadwork and utilities (Zone B) - lay footpath paving block | | 50 | 08-Aug-16 | 06-Oct-16 | 5 | C3 - 6D w/ holiday |
| SIIIA11080 | Sec III A - roadwork and utilities (Zone B) - Road sign and road marking | | 40 | 31-Aug-16 | 19-Oct-16 | 5 | C3 - 6D w/ holiday |
| SIIIA11090 | Sec III A - roadwork and utilities (Zone D) - Backfill to pavement founding level | | 60 | 20-Apr-16 | 02-Jul-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11100 | Sec III A - roadwork and utlities (Zone D) - storm water drain & sub-soil drain | 730m; @7d/20m+3d cycle [2WF] | 60 | 03-May-16 | 14-Jul-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11110 | Sec III A - roadwork and utilities (Zone D) - Fresh watermain & Irrigation Mains | 495m; @5d/20m +3d cycle; [2WF] | 60 | 16-May-16 | 26-Jul-16 | 0 | C3 - 6D w/ holiday |



| Activity ID | Activity Name | user_text2 | Orig Dur | Early Start | Early Finish | Total Float | Calendar |
|---|---|---|---|---|---|---|---|
| SIIIA11120 | Sec III A - roadwork and utilities (Zone D) - Gas main | 135m; @6d/20m +4d cycle [1WF] | 60 | 27-May-16 | 06-Aug-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11130 | Sec III A - roadwork and utilities (Zone D) - HEC | 410m; @6d/20m +3d cycle [2WF] | 60 | 08-Jun-16 | 18-Aug-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11140 | Sec III A - roadwork and utilities (Zone D) - sub-base | 5,390m2; | 55 | 22-Jun-16 | 25-Aug-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11150 | Sec III A - roadwork and utilities (Zone D) - road kerb | 780m @5d/20m +4d cycle [3WF] | 55 | 05-Jul-16 | 06-Sep-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11160 | Sec III A - roadwork and utilities (Zone D) - flexible pavement | 4,360m2x3 =13,070m2; @50mx6m/d | 50 | 16-Jul-16 | 12-Sep-16 | 4 | C3 - 6D w/ holiday |
| SIIIA11170 | Sec III A - roadwork and utilities (Zone D) - construct u-channel | 109m @6d/20m + 5d cycle | 50 | 28-Jul-16 | 24-Sep-16 | 24 | C3 - 6D w/ holiday |
| SIIIA11180 | Sec III A - roadwork and utilities (Zone D) - pave footpath concrete | 1,040m2 @5mx2m =103 bay @3d/bay [4WF] | 60 | 16-Jul-16 | 24-Sep-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11190 | Sec III A - roadwork and utilities (Zone D) - Road Lighting, TCSS Ducts &Traffic Signs | | 60 | 16-Jul-16 | 24-Sep-16 | 7 | C3 - 6D w/ holiday |
| SIIIA11200 | Sec III A - roadwork and utilities (Zone D) - lay footpath paving block | | 60 | 25-Jul-16 | 04-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA11210 | Sec III A - roadwork and utilities (Zone D) - road sign & road marking | | 60 | 13-Aug-16 | 25-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12090 | Sec III A - roadwork and utilities - 2nd Stage of Interim Traffic Arrangement | | 10 | 26-Oct-16 | 05-Nov-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12120 | Sec III A - roadwork and utilities (Zone A1 bay 3) - Backfill to pavement founding level | | 15 | 07-Jul-16 | 23-Jul-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12140 | Sec III A - roadwork and utlities (Zone A1 bay 3) - storm water drain & sub-soil drain | 80m; @7d/20m+3d cycle [1WF] | 50 | 19-Jul-16 | 14-Sep-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12160 | Sec III A - roadwork and utilities (Zone A1 bay 3) - Fresh watermain & Irrigation Mains | 57m; @5d/20m +3d cycle; [1WF] | 50 | 30-Jul-16 | 27-Sep-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12180 | Sec III A - roadwork and utilities (Zone A1 bay 3) - Gas main | 17m; @6d/20m +4d cycle [1WF] | 50 | 05-Aug-16 | 04-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12200 | Sec III A - roadwork and utilities (Zone A1 bay 3) - HEC | 47m; @6d/20m +3d cycle [1WF] | 50 | 11-Aug-16 | 11-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12220 | Sec III A - roadwork and utilities (Zone A1 bay 3) - sub-base | 600m2; | 50 | 17-Aug-16 | 17-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12240 | Sec III A - roadwork and utilities (Zone A1 bay 3) - road kerb | 87m @5d/20m +4d cycle [2WF] | 50 | 23-Aug-16 | 22-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12260 | Sec III A - roadwork and utilities (Zone A1 bay 3) - flexible pavement | 480m2x3 =4,290m2; @50mx6m/d | 50 | 29-Aug-16 | 28-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12280 | Sec III A - roadwork and utilities (Zone A1 bay 3) - construct u-channel | 15m @6d/20m + 5d cycle | 50 | 06-Sep-16 | 05-Nov-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12300 | Sec III A - roadwork and utilities (Zone A1 bay 3) - pave footpath concrete | 117m2 @5mx2m =35 bay @3d/bay [3WF] | 50 | 06-Sep-16 | 05-Nov-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12320 | Sec III A - roadwork and utilities (Zone A1 bay 3) - Road Lighting, TCSS Ducts &Traffic Signs | | 50 | 06-Sep-16 | 05-Nov-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12340 | Sec III A - roadwork and utilities (Zone A1 bay 3) - lay footpath paving block | | 50 | 29-Aug-16 | 28-Oct-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12360 | Sec III A - roadwork and utilities (Zone A1 bay 3) - Road sign and road marking | | 50 | 06-Sep-16 | 05-Nov-16 | 0 | C3 - 6D w/ holiday |
| SIIIA12370 | Achievement of Section IIIA of the Works | | 0 | | 05-Nov-16 | 0 | C3 - 7D w/o holiday |
| **Section IV - Slip Road 3** | | | | | | | |
| **Summary of Section IV - Slip Road 3** | | | | | | | |
| SIV10000 | Summary - Section IV - Slip Road 3 | | 172 | 11-Jul-16 | 08-Feb-17 | 0 | C3 - 6D w/ holiday |
| **Roadwork & Utilities** | | | | | | | |
| SIV10020 | Sec IV - Roadwork & Utilities - Backfill to road formation | | 60 | 11-Jul-16 | 19-Sep-16 | 0 | C3 - 6D w/ holiday |
| SIV10040 | Sec IV - Roadwork & Utilities - Sewerage Works | 70m; @6d/20m +4d cycle; | 80 | 28-Jul-16 | 01-Nov-16 | 0 | C3 - 6D w/ holiday |
| SIV10060 | Sec IV - Roadwork & Utilities - Stormwater Drainage Works and Subsoil drain | 430m; @6d/20m +4d cycle; | 95 | 10-Aug-16 | 01-Dec-16 | 0 | C3 - 6D w/ holiday |
| SIV10080 | Sec IV - Roadwork & Utilities - Fresh watermain & Irrigation Mains | 510m; @6d/20m +4d cycle; | 110 | 22-Aug-16 | 03-Jan-17 | 0 | C3 - 6D w/ holiday |
| SIV10100 | Sec IV - Roadwork & Utilities - Salt water main | 92m; @6d/20m +4d cycle; | 90 | 08-Sep-16 | 27-Dec-16 | 0 | C3 - 6D w/ holiday |
| SIV10120 | Sec IV - Roadwork & Utilities - Gas main | 185m; @6d/20m +3d cycle | 90 | 21-Sep-16 | 09-Jan-17 | 0 | C3 - 6D w/ holiday |
| SIV10140 | Sec IV - Roadwork & Utilities - HEC cable duct and drawpit | 150m; @6d/20m +3d cycle | 90 | 21-Sep-16 | 09-Jan-17 | 0 | C3 - 6D w/ holiday |
| SIV10160 | Sec IV - Roadwork & Utilities - Telcom cable duct and drawpit | 42m; @6d/20m +3d cycle | 90 | 21-Sep-16 | 09-Jan-17 | 0 | C3 - 6D w/ holiday |
| SIV10180 | Sec IV - Roadwork & Utilities - lay and compact sub-base | 4,535m2 | 90 | 04-Oct-16 | 20-Jan-17 | 0 | C3 - 6D w/ holiday |
| SIV10200 | Sec IV - Roadwork & Utilities - lay road kerb | 680m @@5d/20m +4d cycle [2 WF] | 90 | 11-Oct-16 | 26-Jan-17 | 0 | C3 - 6D w/ holiday |
| SIV10220 | Sec IV - Roadwork & Utilities - Pave flexible pavement | 4,535m2x3 =13,605m2; @50mx6m/d | 70 | 09-Nov-16 | 07-Feb-17 | 0 | C3 - 6D w/ holiday |
| SIV10240 | Sec IV - Roadwork & Utilities - Road Lighting, TCSS Ducts &Traffic Signs | | 60 | 22-Nov-16 | 08-Feb-17 | 0 | C3 - 6D w/ holiday |



| Activity ID | Activity Name | user_text2 | Orig Dur | Early Start | Early Finish | Total Float | Calendar |
|---|---|---|---|---|---|---|---|
| SIV10260 | Achievement of Section IV of the Works | | 0 | | 08-Feb-17 | 0 | C3 - 7D w/o holiday |
| **Section V - Remaining At-Grade Road; Remove 2nd Stage ITA** | | | | | | | |
| **Summary of Section V - Remaining At-Grade Road; Remove 2nd Stage ITA** | | | | | | | |
| SV10000 | Summary - Section V - Remaining At-Grade Road | | 327 | 25-Mar-16 | 09-May-17 | 0 | C3 - 6D w/ holiday |
| **Roadwork & Utilities** | | | | | | | |
| SV10020 | Sec V - Roadwork & Utilities - Backfilling to pavement formation | | 60 | 25-Mar-16 | 10-Jun-16 | 0 | C3 - 6D w/ holiday |
| SV10040 | Sec V - Roadwork & Utilities - Stormwater Drainage Works | 970m; @6d/20m +4d cycle; [3WF] | 160 | 22-Apr-16 | 02-Nov-16 | 0 | C3 - 6D w/ holiday |
| SV10060 | Sec V - Roadwork & Utilities - Sewerage Works | 54m; @6d/20m +4d cycle; | 130 | 30-May-16 | 02-Nov-16 | 0 | C3 - 6D w/ holiday |
| SV10080 | Sec V - Roadwork & Utilities - Watermain & Irrigation Mains | 772m; @6d/20m +4d cycle; [3WF] | 120 | 23-Jun-16 | 14-Nov-16 | 0 | C3 - 6D w/ holiday |
| SV10100 | Sec V - Roadwork & Utilities - Gas Main | 35m; @6d/20m +3d cycle; | 120 | 18-Jul-16 | 07-Dec-16 | 0 | C3 - 6D w/ holiday |
| SV10120 | Sec V - Roadwork & Utilities - HEC cable duct and drawpit | 50m; @6d/20m +3d cycle; | 120 | 04-Aug-16 | 27-Dec-16 | 0 | C3 - 6D w/ holiday |
| SV10140 | Sec V - Roadwork & Utilities - Telecom cable duct and drawpit | 70m; @6d/20m +3d cycle; | 120 | 19-Aug-16 | 12-Jan-17 | 0 | C3 - 6D w/ holiday |
| SV10160 | Sec V - Roadwork & Utilities - lay & compact sub-base | 5950m2 | 110 | 29-Sep-16 | 15-Feb-17 | 0 | C3 - 6D w/ holiday |
| SV10180 | Sec V - Roadwork & Utilities - construct road kerb | 1,850m; 5d/20m +4d cycle; [4WF] | 110 | 19-Oct-16 | 04-Mar-17 | 0 | C3 - 6D w/ holiday |
| SV10200 | Sec V - Roadwork & Utilities - flexible pavement | 4,415m2x3 = 13,245m2; @50mx6m/d | 110 | 11-Nov-16 | 28-Mar-17 | 0 | C3 - 6D w/ holiday |
| SV10220 | Sec V - Roadwork & Utilities - footpath paving block | 803m2 | 80 | 16-Dec-16 | 28-Mar-17 | 0 | C3 - 6D w/ holiday |
| SV10240 | Sec V - Roadwork & Utilities - concrete footpath | 732m2 @5mx2m/3d; [3WF] | 80 | 12-Jan-17 | 25-Apr-17 | 0 | C3 - 6D w/ holiday |
| SV10260 | Sec V - Roadwork & Utilities - construct surface channel | 200m2 @6d/20m+3d cycle | 90 | 12-Jan-17 | 09-May-17 | 0 | C3 - 6D w/ holiday |
| SV10280 | Sec V - Roadwork & Utilities - Road Lighting, TCSS Ducts &Traffic Signs | | 90 | 12-Jan-17 | 09-May-17 | 0 | C3 - 6D w/ holiday |
| SV10300 | Achievement of Section V of the Works | | 0 | | 09-May-17 | 0 | C3 - 7D w/o holiday |