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

Updated Environmental Monitoring and Audit Manual

For

- (i) Permanent and temporary reclamation works including associated dredging works in Wan Chai Development Phase II (WDII) area (referred to as "DP3" in the EIA report);
- (ii) Wan Chai East Sewage Outfall (referred to as "DP5" in the EIA Report); and
- (iii) Dredging for the Cross-harbour Water Mains from Wan Chai to Tsim Sha Tsui (referred to as "DP6" in the EIA Report)

under Environmental Permit No. EP-356/2009

(March 2011)

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Updated Environmental Monitoring and Audit Manual

For

- (iv) Permanent and temporary reclamation works including associated dredging works in Wan Chai Development Phase II (WDII) area (referred to as "DP3" in the EIA report);
- (v) Wan Chai East Sewage Outfall (referred to as "DP5" in the EIA Report); and
- (vi) Dredging for the Cross-harbour Water Mains from Wan Chai to Tsim Sha Tsui (referred to as "DP6" in the EIA Report)

under Environmental Permit No. EP-356/2009

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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 for the Designated Projects (DPs) covered by the Environmental Permit (EP) No. EP-356/2009 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 parts of the works under 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 for the project;
 - the basis for, and description of the broad approach underlying the EM&A programme;
 - requirements with respect to the construction programme (as stated in Volume 5, Appendix 2.5 of the EIA Report) schedule and the necessary environmental monitoring and audit programme to track the varying environmental impact;
 - details of the methodologies to be adopted, including all field laboratories and analytical procedures, and details on quality assurance and quality control programme;
 - the rationale on which the environmental monitoring data will be evaluated and interpreted;
 - definition 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 Description

Site Location

1.2.1 The DPs covered by the EP No. EP-356/2009 are located mainly in Wan Chai North, Causeway Bay and North Point, and is demarcated by Gloucester Road and Victoria Park Road to the south, Fenwick Pier Street to the west and Tong Shui Road Interchange to the east.

1.2.2 Three DPs are covered by the EP No. EP-356/2009, and for the purposes of this updated EM&A manual, the "Project" will include all these three DPs under the EP No. EP-356/2009. The description of these three DPs are given below:

DP3 - Reclamation works including associated dredging works

The project is driven by the need for the implementation of the Trunk Road (CWB), which will form an east-west strategic route through Central and Wan Chai to the existing Island Eastern Corridor (IEC). Construction of this Trunk Road will, though, require permanent reclamation in the areas to the west of Hong Kong Convention and Exhibition Centre (HKCEC), through the HKCEC water channel, along the Wan Chai shoreline and along the North Point shoreline. Permanent reclamation is not required in the ex-Public Cargo Working Area (PCWA) basin or in the CBTS.

During the Trunk Road construction, temporary reclamation will be required in the ex-PCWA basin and the CBTS to facilitate cut-and-cover tunnel construction of the Trunk Road. After construction of the Trunk Road, the temporary reclamation will be removed and the ex-PCWA basin and the CBTS will be reinstated.

The total volume of sediments to be dredged and disposed is estimated to be approximately 1.15 Mm³.

The minimum area of permanent reclamation required is summarised as follows:

(i) HKCEC West: 3.7 ha
(ii) HKCEC Water Channel: 1.6 ha
(iii) Wan Chai Shoreline: 4.1 ha
(iv) North Point Shoreline: 3.3 ha

The total reclamation area is 12.7 ha. Since the reclamation is more than 5 ha in size, it is classified as a DP under Schedule 2, Part I, C1.

For the mitigation of odour, dredging to remove the polluted sediments at the south-west corner of the CBTS will be carried out during the implementation of harbour-front enhancement and forms part of DP3.

Further, as dredging will be carried out less than 100m from a seawater intake, it would also be classified as a DP under Schedule 2, Part I, C.12.

The location of DP3 is shown in Figure 1.2c.

DP5 – Wan Chai East Sewage Outfall

The Wan Chai West Sewage Screening Plant will be decommissioned once flows have been diverted to the Wan Chai East Sewage Screening Plant. The Wan Chai East Sewage Screening Plant will have adequate capacity to handle these flows. However, in the longer term, the existing sewage outfall will need to be upgraded to handle the future design flows. A new sewage outfall will be constructed to replace and upgrade the existing Wan Chai East sewage outfall. The configuration of the new sewage outfall will comprise a landfall section of 2,250mm diameter pipe with approximate length of 180m, and a marine section of twin 1,600mm diameter submarine pipelines of about 550m length. As the twin submarine sewage pipelines comprise a total diameter more than 1,200mm and include submarine sewage outfall, it is classified as DP under Schedule 2 Part I, F.5 and F.6. The location of this DP5 is shown in **Figure 1.2e**.

DP6 – Dredging for the Cross-harbour Water Mains from Wan Chai to Tsim Sha Tsui

An existing cross harbour fresh water mains of about 1.1 km length and comprising twin 1,000 mm diameter steel submarine pipelines runs from Tsim Sha Tsui, along the west

of the MTR Tsuen Wan Line to a landfall at the seafrontage north of the Wan Chai West Sewage Screening Plant, near Lung King Street. The reclamation works could potentially damage the watermains and diversion of these mains will be necessary. The total dredged volume for the construction of the cross-harbour watermain is estimated to be approximately 0.06Mm^3 . As dredging for the installation of the new cross harbour watermains will be carried out less than 100m from a seawater intake, it is classified as DP under Schedule 2, Part I, C.12. The location of this DP6 is shown in **Figure 1.2f**.

Construction Programme

1.2.3 The construction works of the DPs have commenced in early 2010 and will be completed by 2017. The construction programmes in **Appendix N** refer.

1.3 Environmental Monitoring and Audit Requirements

1.3.1 The following sub-sections summarise the EM&A requirements recommended in the approved Wan Chai Development Phase II and Central – Wan Chai Bypass Environmental Impact Assessment Report (December 2007) (Register No. AEIAR-125/2008).

Air Quality Impact

Construction Phase

- 1.3.2 The construction work will inevitably lead to dust (Total Suspended Particulates, TSP) emissions, mainly from excavation, truck haulage and material handling. It is predicted that the dust generated will exceed the hourly and daily criteria of 500 μg m⁻³ and 260 μg m⁻³, respectively, at ASRs from Wan Chai to Causeway Bay.
- 1.3.3 Mitigation measures, including vehicle speed limit and a watering programme within the site, have been proposed and presented in the EIA Report. 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.

Operational Phase

1.3.4 As presented in Volume 1, Section 3.7 of the EIA Report, the predicted air quality due to traffic emission in the study area complies with the AQO. The DP3, DP5 and DP6 will not generate traffic in the operational phase and hence will not create air quality impact due to traffic emission. 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. However, odour nuisance associated with the Causeway Bay Typhoon Shelter is an existing environmental problem. In order to improve the environment, this Project will take the opportunities to mitigate the potential sources of odour nuisance within the Project area so as to alleviate this existing environmental problem as well as to provide an acceptable environment for the future land uses within the project area. Enhancement measures have been formulated to alleviate this existing odour problem. To ascertain the effectiveness of the Enhancement Package over time, and to monitor any on-going odour impacts at the ASRs, annual monitoring of odour impacts is proposed during the operational phase of the Project.

Noise Impact

Construction Phase

1.3.5 Construction noise impacts from this Project, in addition to the concurrent construction tasks of other projects such as CRIII, 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.

1.3.6 A real-time on-site monitoring system of the noise level around the works sites at North Point and Tin Hau areas shall be carried out during the construction phase. The methodology is also presented in Section 3 of this EM& A Manual.

Operational Phase

1.3.7 The DP3, DP5 and DP6 will not generate vehicular traffic in the operational phase and hence traffic noise monitoring is not required in this EM&A Manual..

Water Quality Impact

Construction Phase

- 1.3.8 A water quality monitoring and audit programme will be conducted during dredging and filling operations to verify whether or not impact predictions are representative, and to ensure that the dredging and filling operations do not result in unacceptable impacts. When monitoring shows unacceptable water quality impact, appropriate mitigation measures, such as changes in the operation of marine works, will be introduced.
- 1.3.9 Water quality monitoring should be carried out at selected potentially affected sensitive receivers, to assess whether or not impacts follow the predictions made in this EIA. Section 4 of this EM&A Manual includes site-specific monitoring and auditing protocols for baseline and all stages of the dredging operations. Such protocols include but are not limited to the locations of monitoring stations, parameters and frequencies for monitoring, monitoring equipment, data management procedures, and reporting of monitoring results.
- 1.3.10 In order to avoid aggravation of odour nuisance from seawater arising from temporary reclamation in the ex-Wan Chai Public Cargo Working Area and the Causeway Bay Typhoon Shelter, odour patrol shall be conducted by independent trained personnel / competent persons patrolling and sniffing along the ex-Wan Chai Public Cargo Working Area and the Causeway Bay Typhoon Shelter during the reclamation work. The odour patrol methodology is presented in Section 4 of this EM&A Manual.
- 1.3.11 Environmental audit specifications should be developed for all phases of the works, including procedures to ensure compliance with mitigation measures, environmental quality performance limits, and procedures for reviewing results and auditing compliance with specified performance limits

Operational Phase

1.3.12 As adverse water quality impact will not be generated from the operation of the Project, operational water quality monitoring and audit is not considered necessary.

Waste Management

1.3.13 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 EPD's good waste management practices, and regulations and requirements. The mitigation measures recommended include special procedures in handling contaminated sediment during disposal and transportation, good site management and reuse and recycling of construction and demolition material, should form the basis of the site Waste Management Plan to be developed

by the Contractor at the construction stage. These measures include special handling procedures in dredged marine sediment transportation and disposal, good site practices and waste reduction measures, reuse and recycling of construction and demolition materials.

1.3.14 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 EM&A Manual.

Land Contamination

Construction Phase

1.3.15 As there will be no adverse land contamination impact arising from the construction of the DP3, DP5 and DP6, construction phase land contamination monitoring and audit is considered not necessary and will not be covered in this updated EM&A Manual.

Operational Phase

1.3.16 As adverse land contamination impact is not anticipated from the operation of the Project, operational land contamination monitoring and audit is considered not necessary and will not be covered in this EM&A Manual.

Marine Ecology

- 1.3.17 Translocation of all 21 coral colonies found within the proposed reclamation area to other suitable locations such as Junk Bay is recommended. Detailed translocation plan (including the translocation methodology and monitoring of transplanted corals) should be drafted during the detailed design phase of the Project. The translocation works should be completed before the commencement of construction phase of the Project.
- 1.3.18 It is recommended to implement monitoring of the transplanted corals after translocation. The health status of each transplanted coral colony should be carefully recorded. For hard corals, this should include information on surface area with partial mortality and blanched / bleached area. For gorgonian coral, the percentage of branches affected by partial mortality should be recorded. The translocation methodology, monitoring proposal and the ecologist involved in this coral translocation exercise should be approved by the AFCD prior to the commencement of this exercise.

Landscape and Visual Impact

Construction Phase

- 1.3.19 Construction activities would give rise to landscape and visual impacts varying from slight to substantial significance.
- 1.3.20 The landscape and visual mitigation measures for the construction phase are described in Volume 1, Section 10 of the EIA Report. The measures are on-site management measures to be undertaken by the contractor. Monitoring of the Contractor to ensure that the measures are carried out properly should be undertaken by the resident site staff.

Operational Phase

1.3.21 The operation of the Project would give rise to landscape and visual impacts of varying from moderate negative to moderate beneficial. Overall, it is considered that the residual landscape and visual impacts of the proposed development and the associated designated projects are considered **acceptable with mitigation measures** during operation up to 10 years and **beneficial with mitigation** in the long run after 20 to 30 years.

1.3.22 The proposed landscape and visual mitigation measures are described in Volume 1, Section 10 of the EIA Report. The measures are design measures to be incorporated in the detailed planning and design of the reclamation, infrastructure and open space works.

1.4 Project Organisation

1.4.1 The construction of the Project will involve several construction contracts and hence multiple contractors may be employed at the work site. In view of this, an ET should be employed (or an Environmental Project Offices (ENPO) be established) by the Project Proponent to maintain impartially. The proposed project organisation and lines of communication with respect to environmental protection works are shown in Figure 1.3.

Environmental Project Proponents (or Permit Holders)

Contractor

Environmental Project Committee (ENPC)

Community Liaison Groups (CLG)

Environmental Checker

Figure 1.3 Project Organisation

The Contractor

1.4.2 The Contractor shall report to the Engineer. The duties and responsibilities of the Contractor are:

- 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 of this EM&A Manual.

Environmental Team

- 1.4.3 The ET Leader and the ET shall be employed to conduct the EM&A programme and ensure the Contractor's compliance with the project's environmental performance requirements during construction. The ET Leader shall be an independent party from the Contractor and have relevant professional qualifications, or have sufficient relevant EM&A experience subject to approval of the Environmental Protection Department (EPD). The ET shall be led and managed by the ET leader. The ET leader shall possess at least 7 years experience in EM&A. The ET team shall include a landscape auditor to audit the mitigation measures implemented by the Contractor on a regular basis to ensure compliance with the intended aims of the measures. The duties and responsibilities of the ET are:
 - monitor 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 mitigation 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 of this EM&A Manual.

Engineer or Engineer's Representative

- 1.4.4 The Engineer is responsible for overseeing the construction works and for ensuring that the works undertaken by the Contractor in accordance with the specification and contractual requirements. The duties and responsibilities of the Engineer with respect to EM&A may include:
 - 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; and
 - adhere to the procedures for carrying out complaint investigation in accordance with Section 9.3 of this EM&A Manual.

Independent Environmental Checker (IEC)

1.4.5 The IEC shall advise the Engineer's Representative on environmental issues related to the project. The IEC shall possess at least 7 years experience in EM&A. The duties and responsibilities of the IEC are:

- 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 (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 of this EM&A Manual.
- 1.4.6 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)

- 1.4.7 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 3.1 to 4.3 of the Environmental Permit No. EP-356/2009 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 K.

Community Liaison Group (CLG)

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.

1.4.8 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 No. EP-356/2009.

The proposed terms of reference and details for the CLG is presented in **Appendix K**.

1.5 Latest Project Information

1.5.1 The latest works programmes of the works contracts covered by EP-356/2009 are provided in **Appendix N**.

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2 AIR QUALITY

2.1 Introduction

2.1.1 In this section, the general requirements, methodology, equipment, monitoring locations, criteria and protocols for the monitoring and audit of air quality impacts during the construction phase of all WDII and CWB works, including entrustment works from HyD, are presented. As the construction dust is the prime concern, TSP levels shall be monitored to evaluate the dust impact during the construction phase.

- 2.1.2 The findings of the EIA also indicated that the existing odour sources at CBTS would have potential odour impact on the planned Air Sensitive Receivers (ASR) under WDII Project during operation phase of the Project. Odour monitoring would be required to determine the effectiveness of mitigation measures and monitor the residual odour impact on the planned ASR.
- 2.1.3 There will be no exceedance of AQOs at the sensitive receivers and hence air quality monitoring is considered not necessary during the operation phase of the Project.
- 2.1.4 During operational phase, this Project will not create any new odour source. However, odour nuisance associated with the Causeway Bay Typhoon Shelter (CBTS) is an existing environmental problem. In order to improve the environment, this Project will take the opportunities to mitigate the potential sources of odour nuisance within the Project area so as to alleviate this existing environmental problem as well as to provide an acceptable environment for the future land uses within the project area (including the proposed open space at the northern breakwater). Enhancement measures have been formulated to alleviate this existing odour problem. With the implementation of the enhancement measures, the predicted odour levels in the vicinity of CBTS would be reduced significantly. In other words, this Project will alleviate the existing odour problems in the vicinity of CBTS to a large extent by implementing the proposed enhancement measures. To ascertain the effectiveness of the Enhancement Package over time, and to monitor any on-going odour impacts at the ASRs, regular monitoring of odour impacts in the first five years upon commissioning of the Project is proposed during the operational phase.

2.2 Air Quality Parameters

Construction Phase

- 2.2.1 Monitoring and audit of the TSP levels shall be carried out by the ET to ensure that any 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.
- 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**.
- 2.2.4 The locations of air sensitive receivers (ASRs) within and adjacent to the Project work site are shown in **Figure 2.1.**

Operation Phase

2.2.5 Odour patrol should be conducted by independent trained personnel / competent persons patrolling and sniffing at the planned ASR to indicate the operational odour impacts.

2.3 Monitoring Equipment

Construction Phase

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 m³ 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 cm²;
- 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;
- I) easily changeable filter, and
- m) capable of operating continuously for a 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 concern parties such as IEC shall properly document the calibration data for future reference. All the data should be converted into standard temperature and pressure condition.
- 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 IEC 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 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 IEC. 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.
 - The wind data monitoring equipment should 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 IEC.

2.4 Laboratory Measurement / Analysis

Construction Phase

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 IEC. Any measurement performed by the laboratory shall be demonstrated to the satisfaction of the ER and IEC. IEC 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 the 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 findings of the EIA report, 5 representative locations which would be the worst affected locations in different area are designated for construction dust monitoring. As per the consent obtained from appropriate sensitive receiver for provision of location for monitoring, the latest status of dust monitoring stations for construction phase are presented in **Table 2.1** and shown in **Figure 2.2** proposed after seeking approval from ER and agreement from the IEC. The status and locations of dust sensitive receivers may change after issuing this manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from ER and IEC and agreement from EPD on the proposal. The odour monitoring route for construction and operation phases are shown in the **Sketch A** in **Appendix L** and in **Figure 2.3**.

Table 2.1 Locations of Dust Monitoring Locations

Identification	Location	Level
No.		(in terms of no. of floor)
CMA1b	North Point – Oil Street Community Liaison Centre	G/F
CMA2a	Causeway Bay – Causeway Bay Community Centre	4
CMA3a	Causeway Bay – CWB site office at Wanchai Waterfront Promenade	G/F
CMA4a	Wanchai – Society for the Prevention of Cruelty to Animals (SPCA)	6 (roof-top)
CMA5a	Wanchai – Children Playgrounds opposite to Pedestrian Plaza	G/F
CMA6a	Wanchai – WDII site office at Wanchai North	1/F

The status and locations of the air sensitive receivers may change after issuing this Manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from the ER and agreement from the IEC.

Commencement of Dust Monitoring Programme in Stages

- 2.5.2 As per the condition 2.5(d) under EP-356/2009, 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.
- 2.5.3 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 commenced/to be commenced in 2010

Contract No.	Associated DP(s)	Relevant Dust Monitoring Stations ¹	Commencement of monitoring w.r.t construction commencement
HY/2009/11	DP3	CMA1b, CMA2a	Site formation work within the reclaimed area ¹
HK/2009/01	DP3, DP6	CMA5a, CMA6a	Site formation work within the reclaimed area ¹
HK/2009/02	DP3, DP5	CMA4a	Site formation work within the reclaimed area ¹
HY/2009/15	DP3	CMA3a	Site formation work within the reclaimed area ¹

Note 1: Subject to actual commencement date to be confirmed.

2.6 Baseline Monitoring

Construction Phase

- 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 IEC 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 that can effectively represent the baseline conditions at the impact monitoring locations. The alternative baseline monitoring locations shall be approved by the ER and agreed with the IEC.

- 2.6.4 In exceptional cases, when insufficient baseline monitoring data or questionable results are obtained, the ET shall liaise with the IEC and EPD 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 and 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 should be agreed with the IEC and EPD.

Operation Phase

- 2.6.6 One year prior to the commissioning of the Project, a programme to monitor odour intensity / odour patrol along the monitoring route as shown in **Figure 2.3** shall be undertaken. The odour patrol will be carried out at low tide condition for capturing the potential worst odour level of that day.
- 2.6.7 The measured results at ASR will serve as the baseline data set prior to the commissioning of the Project. These will be compared with the results obtained during the impact monitoring stage.
- 2.6.8 In addition, the following information shall be obtained:
 - Meteorological conditions from the nearest Hong Kong Observatory's Weather Station (including temperature, wind speed, relative humidity) during the monitoring;
 - Whether any abnormal operations were being carried out at the CBTS during the monitoring.
- 2.6.9 The baseline monitoring events shall be carried out every three months at the same location within the year before the Project commissioned. The odour record during any of low tide, hot or dry condition will be included to capture the worst case situations.

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 IEC of the impact monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the impact monitoring results.
- 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 Impact Monitoring for Odour Patrol

2.8.1 Odour patrols along the shorelines of Causeway Bay Typhoon Shelter and ex-Wan Chai Public Cargo Working Area when there is temporary reclamation in Causeway Bay Typhoon Shelter and/or in the ex-Wan Chai Public Cargo Working Area, or when there is dredging of the odorous sediment and slime at the south-western corner of the Causeway Bay Typhoon Shelter. Odour patrols will be carried out at bi-weekly intervals during July, August and September by a qualified person of the ET who shall:

- be at least 16 years of age;
- be free from any respiratory illnesses; and
- not be allowed to smoke, eat, drink (except water) or use chewing gum or sweets 30 min before and during odour patrol;
- 2.8.2 Odour patrol shall be conducted by independent trained personnel / competent persons patrolling and sniffing around the shore as shown in **Sketch A** in **Appendix L** to detect any odour at the concerned hours (afternoon is preferred for higher daily temperature).
- 2.8.3 The qualified person will use the nose (olfactory sensor) to sniff odours at different locations. The main odour emission sources and the areas to be affected by the odour nuisance will be identified.
- 2.8.4 The perceived odour intensity is to be divided into 5 levels which are ranked in the descending order as follows:
 - 0 Not detected. No odour perceived or an odour so weak that it cannot be easily characterised or described;
 - 1 Slight Identifiable odour, and slight chance to have odour nuisance;
 - 2 Moderate Identifiable odour, and moderate chance to have odour nuisance;
 - 3 Strong Identifiable, likely to have odour nuisance;
 - 4 Extreme Severe odour, and unacceptable odour level.
- 2.8.5 The findings including odour intensity, odour nature and possible odour sources, and also the local wind speed and direction at each location will be recorded. In addition, some relevant meteorological and tidal data such as daily average temperature, and daily average humidity, on that surveyed day will be obtained from the Hong Kong Observatory Station for reference.
- 2.8.6 The Action and Limit levels for odour patrol are shown in **Table 2.3**.

Table 2.3 Action / Limit Levels for Odour Patrol

Parameters	Action	Limit
Odour Nuisance (from odour intensity analysis or odour patrol)	 When two documented complaint are received; or 	Five or more consecutive genuine documented complaints within a week; or
	 Odour Intensity of 2 is measured from odour intensity analysis. 	 Odour Intensity of 3 or above is measured from odour intensity analysis.

2.9 Impact Monitoring of Operation Air Quality Impact

2.9.1 Odour monitoring in the form of odour patrol shall be conducted by the CEDD¹ at the proposed monitoring route as shown in **Figure 2.3**.

- 2.9.2 The monitoring events shall be carried out during daytime and during the period of July to September on a monthly basis for two days in order to capture the likely worst case scenario of a year. The operational odour monitoring shall be carried out for a minimum of 3 years period.
- 2.9.3 The monitoring shall be carried out at low tide condition for capturing the potential worst odour level of that day and shall not be conducted on rainy days. Hourly meteorological conditions (temperature, wind speed & direction, humidity) shall be recorded throughout the monitoring period.

2.10 Environmental Quality Performance Limits

2.10.1 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 and odour criteria. **Table 2.4** shows the air quality criteria, namely Action and Limit levels to be used.

Table 2.4 Action / Limit Levels for Air Quality

Parameters	Action	Limit
24-hour TSP Level in µg m ⁻³	For baseline level ≤ 200 μg m ⁻³ , Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 200 μg m ⁻³ Action level = Limit level	260 μg m ⁻³
1-hour TSP Level in µg m ⁻³	For baseline level ≤ 384 μg m ⁻³ , Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 384 μg m ⁻³ , Action level = Limit level	500 μg m ⁻³
Odour Nuisance (from odour intensity analysis or odour patrol)	 When two documented complaint are received; or Odour Intensity of 2 is measured from odour intensity analysis. 	 Five or more consecutive genuine documented complaints within a week; or Odour Intensity of 3 or above is measured from odour intensity analysis.

2.11 Event and Action Plan

2.11.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in **Tables 2.5**, **2.6** and **2.7** shall be carried out.

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¹ CEDD will identify an implementation agent.

Table 2.5 Event / Action Plan for Construction Air Quality

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

Table 2.6 Event/Action Plan for Odour Patrol

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

Table 2.7 Event/Action Plan for Operation Air Quality Monitoring

EVENT	ACTION	
EVEINI	Person-in-charge of Odour Monitoring	CEDD ²
ACTION LEVEL	-	
Exceedance of action level	Identify source/reason of exceedance; Repeat odour patrol to confirm finding.	Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 2 week; Rectify any unacceptable practice; Implement more mitigation measures if necessary; Inform EPD or MD if exceedance is considered to be caused by expedient connections or floating debris.

 $^{^{2}\,\}mbox{CEDD}$ will identify an implementation agent.

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EVENT	ACTION	
EVENI	Person-in-charge of Odour Monitoring	CEDD ²
LIMIT LEVEL		
Exceedance of Limit level	 Identify source / reason of exceedance; Repeat odour patrol to confirm findings; Increase odour patrol frequency to bi-weekly; If exceedance stops, cease additional odour patrol. 	 Carry out investigation to identify the source/reason of exceedance. Investigation shall be completed within 2 week; Rectify any unacceptable practice; Formulate remedial actions; Ensure remedial actions properly implemented; If exceedance continues, consider what more/enhanced mitigation measures shall be implemented; Inform EPD or MD if exceedance is considered to be caused by expedient connections or floating debris.

2.12 Mitigation Measures

Construction Phase

- 2.12.1 As described in the EIA Report, the ASRs from Central to Causeway Bay would comply with AQO and EIAO-TM criteria during construction phase of each Designated Projects.
- 2.12.2 The findings of the EIA also indicated that potential odour impacts from contaminated sediment would be expected when the dredging activities carrying out in the vicinity of Police Officers' Club. For the dredging activities carrying out in the vicinity of Police Officers' Club, the dredging operation will be restricted to only 1 small close grab dredger to minimise the odour impact during the dredging activity. The dredging rate should be reduced as much as practicable for area in close proximity to the Police Officers' Club. Grab dredger has to be used for filling up the geosynthetic containers on barges. As there is no constraint on the programme for the removal of the sediments at the southwest corner of the typhoon shelter in the vicinity of Police Officers' Club, the dredging rate can be slowed down or restricted to specific non-popular hours in weekdays when it is necessary during construction.
- 2.12.3 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.

Operation Phase

- 2.12.4 Existing odour pollution sources would have potential odour impact on the planned ASR. The following mitigation measures are recommended to be implemented to reduce the odour impact in future.
 - Carry out dredging at the corner of CBTS to remove the contaminated sediment
 - Clean the slime attached on the shoreline seawall during the construction of the Project
 - Implementation of "Enhancement Package for Existing Odour Sources Identified at Causeway Bay Typhoon Shelter" including rectification of expedient connection to stormwater outfalls P and Q
- 2.12.5 The implementation schedule for the mitigation measures during construction phase and operation phase is presented in **Appendix A**.

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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.

- 3.1.2 Construction noise impacts arising from DP3 and DP5 are predicted at the identified NSRs. Noise mitigation measures would be required to reduce noise levels to the stipulated standard. A noise monitoring programme shall be undertaken to ensure such mitigation measures would be implemented properly.
- 3.1.3 The proposed cross harbour water mains will extend from Wan Chai near the HKCEC Extension to connect to the existing system near the Museum of Arts at the Tsim Sha Tsui promenade. The noise sensitive receivers located within 300m of construction sites at Wan Chai and Tsim Sha Tsui are basically the buildings equipped with central air-conditioning system. The first layer of NSRs near Tsim Sha Tsui site, which are centrally air-conditioned, would provide considerable acoustic shielding to those receivers at further distance behind. No adverse noise impact would be anticipated and therefore noise monitoring would not be required for DP6. However, weekly site inspection shall be carried out throughout the construction phase to ensure that appropriate noise control measures would be properly implemented with a view to minimizing the construction noise impact.

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 Supplementary information for data auditing, statistical results such as L₁₀ and L₉₀ shall also be obtained for reference. A sample data record sheet based on the one presented in the *EM&A Guidelines for Development Projects in Hong Kong* is shown in **Appendix B**. The ET Leader may modify the data record sheet for this EM&A programme, of which the format should be agreed by the ER and the IEC.
- 3.2.3 The locations of representative noise sensitive receivers within the Study Area of the Designated Projects are shown in **Figure 3.1**.

Operation Phase

3.2.4 The DP3, DP5 and DP6 will not generate vehicular traffic in the operation phase and hence traffic noise monitoring for the operation phase is not required in this EM&A Manual.

3.3 Monitoring Equipment

3.3.1 As referred to 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 shall not be made in fog, rain, 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 m s⁻¹.

3.3.3 The ET is responsible for the 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 Monitoring Locations

3.4.1 The locations of noise monitoring stations during construction phase of the Designated Projects are presented in **Table 3.1** and only the proposed locations are shown in **Figure 3.2**.

Table 3.1	Locations of Noise I	Monitoring Stations during	Construction Phase
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Noise Monitoring Station	Noise Monitoring Location	Level (in terms of no. of floor)
M1a	Harbour Road Sports Centre	3/F (roof-top)
M2b	Noon Gun Area	G/F
М3а	Tung Lo Wan Fire Station	3/F (roof-top)
M4b	Victoria Centre	2/F
M5b	Between Block 6 and 7, City Garden	G/F

The status and locations of the noise sensitive receivers may change after issuing this Manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from the ER and agreement from the IEC

Commencement of Noise Monitoring Programme in Stages

- 3.4.2 As per the condition 2.5(d) under EP-356/2009, 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.
- 3.4.3 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 commenced/to be commenced in 2010 and 2011

Contract No.	Associated DP(s)	Relevant Noise Monitoring Stations ¹	Commencement of monitoring w.r.t construction commencement
HY/2009/11	DP3	M4b, M5b	Mar 2010
HK/2009/01	DP3, DP6	M1a	Jul 2010

Contract No.	Associated DP(s)	Relevant Noise Monitoring Stations ¹	Commencement of monitoring w.r.t construction commencement
HK/2009/02	DP3, DP5	M1a	Jul 2010
HY/2009/15	DP3	M2b, M3a	Sep 2010
HK/2010/06	DP3	M1a	Apr 2011

3.5 Baseline Monitoring

Construction Phase

- 3.5.1 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. Before commencing the baseline monitoring, the ET shall develop and submit to the IEC the baseline monitoring programme such that the IEC can conduct on-site audit to ensure accuracy of the baseline monitoring results.
- 3.5.2 There shall not be any construction activities in the vicinity of the stations during the baseline monitoring.
- 3.5.3 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

3.5.4 No baseline operation noise monitoring is generally required.

3.6 Impact Monitoring

Construction Phase

- 3.6.1 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 weekly basis when noise generating activities are underway:
 - (a) one set of measurements between 0700 and 1900 hours on normal weekdays.
- 3.6.2 A real-time on-site monitoring system of the noise level around the works sites at North Point and Tin Hau areas should be carried out during the construction phase. The detailed monitoring system is presented as follows and **Appendix M**.

(a) Instrumentation

 Sound level meter 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.

 Capable of giving continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{eq}) and 10th and 90th percentile of sound level pressure level (L₁₀ & L₉₀).

(b) Methodology

- A weatherproof enclosure shall be installed to protect the sound level meter and the communications hardware from sunlight and rain. This enclosure shall be mounted against the handrail and bolted on the wall if necessary.
- Noise monitoring shall be automatically conducted for 24 hours a day. Data will be instantaneously transmitted to a central office though the use of communication hardware and software.
- Power supply shall be provided for the real-time noise monitoring system.

(c) Measurement Location

Table 3.2a Locations of Real-time Noise Monitoring Stations during Construction Phase

Real-time Noise Monitoring Station	Noise Monitoring Location (District)	Level (in terms of no. of floor)
RTN1	Tung Lo Wan Fireboat Station	3/F
	(Tin Hau)	(roof-top)
RTN2	Oil Street Community Liaison	1/F
	Centre (North Point)	(roof-top)

(d) Calibration of equipment

 The sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency before deployment to the site and during each site visit. Measurements may be accepted as valid only if the calibration level from before and after the noise measurement agree to within 1.0 dB.

(e) Data Reporting

- An electronic system shall be set-up to track, manage and data reporting, as well as automatic compliance assessment.
- The electronic system shall also report the instantaneous monitoring results on a dedicated website.
- The current practice on the noise screening is via adjustment by ET and IEC. This
 will be the additional measures to avoid erroneous noise data.
- 3.6.3 If construction works are extended to include works during the hours of 1900 0700 as well as public holidays and Sundays, additional weekly impact monitoring shall be carried out during respective restricted hours periods. Applicable permits under NCO shall be obtained by the Contractor.
- 3.6.4 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.

3.6.5 In case of non-compliance with the construction noise criteria, more frequent monitoring, as specified in the Action Plan in **Table 3.2**, shall be carried out. This additional monitoring shall be continued until the recorded noise levels are rectified or demonstrated to be unrelated to the construction activities.

Operation Phase

3.6.6 The DP3, DP5 and DP6 will not generate vehicular traffic in the operation phase and hence traffic noise monitoring for the operation phase is not required under this EM&A Manual.

3.7 Event and Action Plan

Construction Phase

3.7.1 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 Event and Action Plan in **Table 3.4** shall be implemented.

Table 3.3 Action and Limit Levels for Construction Noise

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

Notes: If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

*: 70 dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively.

Operation Phase

3.7.2 The DP3, DP5 and DP6 will not generate vehicular traffic in the operation phase and hence traffic noise monitoring for the operation phase is not required under this EM&A Manual.

3.8 Noise Mitigation Measures

Construction Phase

- 3.8.1 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**.
- 3.8.2 The Contractor is recommended to adopt quiet powered mechanical equipment (PME) for the following construction tasks of the Designated Projects DP3, DP5 and DP6:
 - Temporary seawall construction, filling behind seawall, for whole project construction
 - Temporary diversion of cooling water pipeline at CBTS 4
 - Demolition of structure
 - Drainage culverts construction

 Ferry pier reprovisioning, including construction of new ferry pier and demolition of existing structure

- WSD's salt water pumping station construction
- Construction of Wan Chai East sewage outfall
- Road works construction
- MTR Tunnel crossing
- Cross harbour watermains
- 3.8.3 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
- 3.8.4 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.
- 3.8.5 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.

Operation Phase

3.8.6 The DP3, DP5 and DP6 will not generate vehicular traffic in the operation phase and hence operation phase noise mitigation measures are not required under this EM&A Manual.

Table 3.4 Event/Action Plan for Construction Noise

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

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

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4 WATER QUALITY

4.1 Water Quality Parameters

4.1.1 As identified in the EIA Report, the key water quality impacts caused by the Project would be associated with the dredging works during the construction phase. The EIA report has identified that suspended sediment is the most critical water quality parameter caused by the dredging works. Marine water quality monitoring shall be carried out during the construction phase to ensure that any unacceptable increase in suspended solids / turbidity and decrease in dissolved oxygen due to dredging activities could be readily detected and timely action be taken to rectify the situation. As presented in the EIA Report, adverse impacts associated with the potential release of contaminants (such as heavy metal and nutrients) from the marine mud during dredging activities is not expected as demonstrated by the elutriate tests and mathematical modelling. Thus, monitoring for other parameters such as heavy metal and nutrients are not considered necessary.

4.1.2 Dissolved oxygen (DO), turbidity and suspended solids (SS) levels shall be monitored at designated marine water quality monitoring stations during the construction phase. DO and turbidity should be measured *in situ* whereas SS should be determined by laboratory.

4.2 Monitoring Equipment

Dissolved Oxygen and Temperature Measuring Equipment

- (i) The instrument should be a portable and weatherproof dissolved oxygen (DO) measuring instrument complete with cable and sensor, and use a DC power source. The equipment should be capable of measuring:
 - a DO level in the range of 0 20 mg L⁻¹ and 0 200% saturation; and
 - a temperature of 0 45 degree Celsius.
- (ii) It should have a membrane electrode with automatic temperature compensation complete with a cable.
- (iii) Should salinity compensation not be built-in to the DO equipment, *in-situ* salinity should be measured to calibrate the DO equipment prior to each DO measurement.

Turbidity Measurement Instrument

4.2.1 The instrument should be a portable and weatherproof turbidity measuring instrument using a DC power source. It should have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument).

Sampler

4.2.2 A water sampler is required. It should comprise a transparent PVC cylinder, with a capacity of not less than 2 litres, which can be effectively sealed with latex cups at both ends. The sampler should have a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is at the selected water depth (for example, Kahlsico Water Sampler or an approved similar instrument).

Water Depth Detector

4.2.3 A portable, battery-operated echo sounder should be used for the determination of water depth at each designated monitoring station. This unit can either be hand held or affixed to the bottom of the work boat, if the same vessel is to be used throughout the monitoring programme.

Salinity

4.2.4 A portable salinometer capable of measuring salinity in the range of 0 - 40 parts per thousand (ppt) should be provided for measuring salinity of the water at each monitoring location.

Sample Containers and Storage

4.2.5 Water samples for SS should be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples should be collected to achieve the detection limit stated in **Table 4.1**.

Monitoring Position Equipment

4.2.6 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication and Radio Technical Commission for maritime (RTCM) Type 16 error message 'screen pop-up' facilities (for real-time auto-display of error messages and DGPS corrections from the Hong Kong Hydrographic Office), or other equipment instrument of similar accuracy, should be provided and used during marine water monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Calibration of In-Situ Instruments

- 4.2.7 The pH meter, DO meter and turbidimeter shall be checked and calibrated before use. DO meter and turbidimeter shall be certified by a laboratory accredited under HOKLAS or any other international accreditation scheme, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring. Responses of sensors and electrodes should be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement at each monitoring location.
- 4.2.8 Sufficient stocks of spare parts shall be maintained for replacements when necessary. Backup monitoring equipment shall also be made available so that monitoring can proceed uninterrupted even when some equipment is under maintenance, calibration, etc.

4.3 Laboratory Measurement / Analysis

4.3.1 Duplicate samples from each independent sampling event are required by EPD for all parameters. Analysis of suspended solids shall be carried out in a HOKLAS or other international accredited laboratory. Sufficient water samples shall be collected at the monitoring stations for carrying out the laboratory SS determinations, with detection limit shown in Table 4.1. The SS determination work shall start within 24 hours after collection of the water samples. The analyses shall follow the standard methods according to Table 4.1 and as described in American Public Health Association (APHA) Standard Methods for the Examination of Water and Wastewater, 19th edition, unless otherwise specified.

Table 4.1 Analytical Methods to be applied to Marine Water Quality Samples

Determinant	Standard Method	Detection Limit
Suspended solids (mg L ⁻¹)	APHA 2540 D	0.1 mg L ⁻¹

- 4.3.2 If a site laboratory is set up or a non-HOKLAS and non-international accredited laboratory is hired for carrying out the laboratory analysis, the laboratory equipment, analytical procedures, and quality control shall be approved by EPD. All the analysis shall be witnessed by the ER. The ET Leader shall provide the ER with one copy of the relevant chapters of the "APHA Standard Methods for the Examination of Water and Wastewater" 19th edition and any other relevant document for his reference.
- 4.3.3 For the test methods of other parameters as recommended by EIA or required by DEP, detailed testing methods, pre-treatment procedures, instruments use, QA/QC details (such as blank, spike recovery, number of duplicate samples per batch, etc.), detection limit and accuracy shall be submitted to EPD for approval prior to the commencement of monitoring programme. The QA/QC shall be in accordance with the requirements of HOKLAS or international accredited scheme. The QA/QC results shall be reported. EPD may also request the laboratory to carry out analysis of known standards provided by EPD for quality assurance. Additional duplicate samples may be required by EPD for inter laboratory calibration. Remaining samples after analysis shall be kept by the laboratory for 3 months in case repeat analysis is required. If inhouse or non-standard methods are proposed, details of the method verification may also be required to submit to EPD. In any circumstance, the sample testing shall have comprehensive quality assurance and quality control programmes. The laboratory shall prepare to demonstrate the programme to DEP or his representatives when requested.

4.4 Monitoring Locations

4.4.1 The locations of water monitoring stations during construction phases of the Designated Projects are shown in **Figure 4.1a** and **Figure 4.1b**. The status and locations of the water sensitive receivers may change after issuing this Manual. If such cases exist, the ET Leader shall propose updated monitoring locations and seek approval from the ER and agreement from the IEC.

Commencement of Water Quality Monitoring Programme in Stages

- 4.4.2 As per the condition 2.5(d) under EP-356/2009, water quality 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.
- 4.4.3 In terms of division of work areas, the proposed division of water quality monitoring stations and its commencement in stages are summarized in **Table 4.1a**. The scope of work of each Contracts with the water monitoring stations are shown in **Figure 4.1c**

Table 4.1a Division of Water Monitoring Stations for contracts with construction work commenced/to be commenced in 2010 and 2011

Contract No.	Associated DP(s)	Relevant Water Monitoring Stations ¹	Commencement of WQM w.r.t construction commencement
HY/2009/11	DP3	WSD9, WSD10, WSD15, WSD17, C8, C9	Mar 2010
HK/2009/01	DP3, DP6	WSD7, WSD19, WSD20, C1, C2, C3, C4	Jul 2010 (DP3 only)
HK/2009/02	DP3, DP5	WSD21, C5	Jun 2010 (DP3 only)
HY/2009/15	DP3	C6, C7	Nov 2010
HK/2010/06	DP3	C2	Apr 2011

Note 1: The water monitoring stations for the dredging works under Contract No. HK/2009/01 should also include WSD9, WSD17, WSD21 and C5 if water quality monitoring at these locations have not been carried out by others. Similarly, the water monitoring stations for the dredging works under Contract No. HK/2009/02 should also include WSD7, WSD9, WSD17, WSD19, C1, C2, C3 and C4 if water quality monitoring at these locations have not been carried out by others.

4.4.4 Based on the review of the early stage of dredging commencement (i.e. prior to commencement of DP5 & DP6), it is anticipated that only coastal dredging activities (referred as DP3) will commence and localized impact is predicted rather than the worst case scenario as indicated in the EIA report. As such, commencement of water quality monitoring in phase with respect to individual contracts will be a reasonable approach for the early commencement of water quality monitoring according to paragraph 5.6.73 of the EIA Report.

4.5 Baseline Monitoring

- 4.5.1 Baseline conditions for marine water quality should be established and agreed with EPD prior to the commencement of marine works. The purpose of the baseline monitoring is to establish ambient conditions prior to the commencement of the dredging works and to demonstrate the suitability of the proposed monitoring stations.
- 4.5.2 The baseline conditions should be established by measuring dissolved oxygen, turbidity and suspended solids levels at the selected monitoring stations as shown in Figure 4.1a and Figure 4.1b respectively. The baseline monitoring schedule should be submitted to EPD at least 2 weeks before commencement of monitoring for agreement. EPD should also be notified immediately for any changes in schedule.
- 4.5.3 The measurements should be taken at all designated monitoring stations, 3 days per week, at mid-flood and mid-ebb tides, for at least 4 weeks prior to the commencement of dredging works. Any marine construction works should be avoided in the vicinity of the stations during the baseline monitoring. The interval between 2 sets of monitoring should not be less than 36 hours. Duplicate in-situ measurements and water sampling should be carried out in each sampling event. For selection of tides for in-situ measurement and water sampling, tidal range of individual flood and ebb tides should be not less than 0.5 m.

4.6 Impact Monitoring

4.6.1 During the period of marine construction works, monitoring should be undertaken three days per week, at mid-flood and mid-ebb tides, with sampling/measurement at the designated monitoring stations as shown in **Table 4.2**. The interval between two sets of monitoring should not be less than 36 hours except where there are exceedances of Action and/or Limit levels, in which case the monitoring frequency will be increased. **Table 4.2** shows the proposed monitoring frequency and water quality parameters. Duplicate in-situ measurements and water sampling should be carried out in each sampling event. For selection of tides for *in-situ* measurement and water sampling, tidal range of individual flood and ebb tides should be not less than 0.5 m.

Table 4.2 Proposed Marine Water Quality Monitoring Frequency and Parameters

Activities	Monitoring Frequency Note 1	Key Parameters Note 2
During the 4-week baseline	Three days per week, at mid-	Turbidity, Suspended Solids
monitoring period	flood and mid-ebb tides	(SS), Dissolved Oxygen
		(DO), pH, temperature,
		salinity
During marine construction	Three days per week, at mid-	Turbidity, Suspended Solids
works	flood and mid-ebb tides	(SS), Dissolved Oxygen
		(DO), pH, temperature,
		salinity
After completion of marine	Three days per week, at mid-	Turbidity, Suspended Solids
construction works	flood and mid-ebb tides	(SS), Dissolved Oxygen
		(DO), pH, temperature,
		salinity

Notes:

- 1. For selection of tides for in-situ measurement and water sampling, tidal range of individual flood and ebb tides should be not less than 0.5 m.
- Turbidity should be measured in situ whereas SS should be determined by laboratory.
- 4.6.2 The proposed water quality monitoring schedule should be passed to EPD at least 1 week before the first day of the monitoring. EPD should also be notified immediately for any changes in schedule. If the monitoring data collected at the flushing water intakes indicate that the Action or Limit levels as shown in **Table 4.4** are exceeded, appropriate actions should be taken to stop the dredging works and mitigation measures such as slowing down, or rescheduling of works should be implemented as necessary. A turbidity meter should be installed at the intake of Wan Chai Salt Water Pumping Station so that WSD can check the turbidity any time and take remedial measures if the limits as shown in **Table 4.4** are exceeded.

Enhanced water quality monitoring and audit programme

4.6.3 The enhanced water quality monitoring and audit programme to avoid aggravation of odour nuisance from seawater arising from temporary reclamation in the ex-Wan Chai Public Cargo Working Area and the Causeway Bay Typhoon Shelter will include the following (refer to **Sketch A** in **Appendix L** for locations of monitoring stations):

- (a) monitoring of the dissolved oxygen at the two seawater intakes C6 and C7 in Causeway Bay Typhoon Shelter when there is temporary reclamation in Causeway Bay Typhoon Shelter.
- (b) monitoring of the dissolved oxygen at the south-western and south-eastern corners of the ex-Wan Chai Public Cargo Working Area (station ref.: Ex-WPCWA-SW & Ex-WPCWA-SE) when there is temporary reclamation in the ex-Wan Chai Public Cargo Working Area.
- (c) monitoring of dissolved oxygen in (a) and (b) above are to be carried out 3 days per week, at mid-flood and mid-ebb tides for 3 water depths (1m below water surface, mid-depth and 1m above sea bed, except where the water depth less than 6m, the mid-depth may be omitted. If the water depth be less than 3m, only the mid-depth will be monitored).
- (d) Odour patrols along the shorelines of Causeway Bay Typhoon Shelter and ex-Wan Chai Public Cargo Working Area when there is temporary reclamation in Causeway Bay Typhoon Shelter and/or in the ex-Wan Chai Public Cargo Working Area, or when there is dredging of the odorous sediment and slime at the south-western corner of the Causeway Bay Typhoon Shelter (odour patrol routes as illustrated in the **Sketch A** in **Appendix L**). The details of requirments for the odour patrol can be referred to the Section 2.8.
- 4.6.4 The Action and Limit levels for dissolved oxygen are shown in **Table 4.3**.

Table 4.3 Action / Limit Levels for Dissolved Oxygen

Parameters	Action Level	Limit Level
Dissolved Oxygen (DO)	5 percentile of baseline data	1 percentage of baseline data or <
in mg/L	or $<$ 2.1 mg/L	2 mg/L

Remarks: The baseline data refer to the data obtained from the supplementary baseline DO monitoring conducted in May 2010 to June 2010. The Event/Action Plan for the monitoring of DO under the enhanced water quality monitoring and audit programme can be referred to Table 4.6.

Suspended Solids and Turbidity Monitoring during Dredging

4.6.5 During dredging of the sediment at the south-western corner of the Causeway Bay Typhoon Shelter, daily monitoring of suspended solids and 24 hour monitoring of turbidity at the cooling water intakes (C6 and C7) will be carried out (Sketch A in Appendix L for locations of C6 and C7). The 24 hours monitoring of turbidty at the cooling water intakes (C6 and C7) can be established by setting up a continuous water quality monitoring station in front of the intakes during the dredging activities. The monitoring system will include the turbidity sensor and data logger which is capable of data capturing at every 5 minutes. The data will be downloaded daily and compared with the Action and Limit level determined during the baseline water quality monitoring at the cooling water intake locations.

Regular Maintenance of Silt Screens

Silt screens are recommended to be deployed at selected WSD flushing water intakes during the 4.6.6 marine works period. The operation of the flushing water intakes would not be adversely affected by the silt screens provided that the silt screens are properly designed and maintained. Installation of silt screens at the selected flushing water intake points shall be implemented by the contractor for the marine works. The contractor shall demonstrate and ensure that the design of the silt screen will not affect the normal operation of flushing water intake. The contractor shall obtain consensus from all relevant parties, including WSD and Marine Department, on the design of the silt screen at each of the selected flushing water intake points before installation of the silt screen and commencement of the proposed marine works. The proposed water quality monitoring and audit shall be implemented by the contractor to ensure that the proposed works do not result in unacceptable impacts at the WSD flushing water intakes. As a mitigation measure to avoid the pollutant and refuse entrapment problems and to ensure that the impact monitoring results are representative, regular maintenance of the silt screens and refuse collection should be performed by the contractor at the silt screens at regular intervals on a daily basis. The Contractor should be responsible for keeping the water behind the silt screen free from floating rubbish and debris during the impact monitoring period. The contractor should be responsible for keeping the water behind the silt screen from floating rubbish and debris before the silt screens are removed.

4.7 Post-construction Monitoring

4.7.1 Upon completion of all marine-based construction activities, a post-project monitoring exercise on water quality shall be carried out for four weeks in the same manner as the impact monitoring as described in Section 4.6.

4.8 Field Log

- 4.8.1 Other relevant data should also be recorded, including monitoring location / position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby.
- 4.8.2 A sample data record sheet is shown in **Appendix B4** for reference.

4.9 Construction Site Audits

4.9.1 Implementation of regular site audits is to ensure that the recommended mitigation measures are to be properly undertaken during proposed marine construction works. It can also provide an effective control of any malpractices and therefore achieve continual improvement of environmental performance on site.

Site Inspection

- 4.9.2 Site inspections shall be carried out by the ET and shall be based on the mitigation measures for water pollution control recommended in the implementation schedule as attached in Appendix A. In the event that the recommended mitigation measures are not fully or properly implemented, deficiency shall be recorded and reported to the site management. Suitable actions are to be carried out to:
 - Record the problems and investigate the causes;
 - Issue action notes to the Contractor who is responsible for the works;
 - Implement remedial and corrective actions immediately;
 - Re-inspect the site conditions upon completion of the remedial and corrective actions;
 and
 - Record the event and discuss with the Contractor for preventive actions.

Compliance Audits

4.9.3 Compliance audits are to be undertaken to ensure that a valid discharge license has been issued by EPD prior to the discharge of effluent from the Project site. If monitoring of the treated effluent quality from the Works Areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD. The audit results reflect whether the effluent quality is in compliance with the discharge license requirements. In case of non-compliance, suitable actions by the relevant parties should be undertaken to:

- Notify the site management on the non-compliance;
- Identify the sources of pollution;
- Check the implementation status of the recommended mitigation measures;
- Investigate the operating conditions of the on-site treatment systems;
- Implement corrective and remedial actions to improve the effluent quality;
- Increase monitoring frequency until the effluent quality is in compliance with the discharge licence requirements; and
- Record the non-compliance and propose preventive measures.

4.10 Event and Action Plan for Construction Water Quality

- 4.10.1 The water quality assessment criteria, namely Action and Limit levels are shown in **Table 4.4**. When exceedances of water quality assessment criteria are detected at any designated monitoring stations, carry out the actions in accordance with the Action Plan in **Table 4.6** is recommended.
- 4.10.2 The ET Leader should assess the potential impacts caused by dredging or filling works on the seawater intakes based on the monitoring data. The performance of the environmental management system (i.e. of the overall EM&A programme) should be reviewed by the ET Leader on a quarterly basis. The findings of this review should be included in the quarterly EM&A summary reports, together with any recommendations to improve the performance of the EM&A programme.

Table 4.4 Action and Limit Levels for Marine Water Quality at Seawater Intakes

Parameters	Action	Limit			
WSD Salt Water Intake	WSD Salt Water Intake				
SS in mg L ⁻¹	95 percentile of baseline data or >9.5 mg/l	99 percentile of baseline data or >10 mg/l			
Turbidity in NTU	95 percentile of baseline data or >9.5 NTU	99 percentile of baseline data or >10 NTU			
DO in mg/L	5 percentile of baseline data or <2.1 mg/l	1 percentile of baseline data or <2 mg/l			
Cooling Water Intake					
SS in mg L ⁻¹	95 percentile of baseline data	99 percentile of baseline data			
Turbidity in NTU	95 percentile of baseline data	99 percentile of baseline data			
DO in mg/L	5 percentile of baseline data	1 percentile of baseline data			

Notes:

- It is recommended to conduct the monitoring behind the silt screens and at the appropriate vertical levels of the abstraction points of these intakes
- 2. For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- 3. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
- 4.10.3 If monitoring results indicate that the dredging or filling works have caused an adverse impact on water quality at the WSD saltwater intakes or cooling water intakes, it is recommended that the contractor should inform WSD and the owners of cooling water intakes. The contractor, the ET and the IEC should inform WSD immediately if an adverse impact on water quality has been caused or the monitoring results reach the action level at the WSD saltwater intakes. Additional mitigation measures should be recommended to rectify the non-compliance or the construction programme should be carefully reviewed to slow down the rate of dredging or filling. A turbidity meter should be installed at the intake of Wan Chai Salt Water Pumping Station so that WSD can check the turbidity any time and take remedial measures if the limits are exceeded.
- 4.10.4 Where necessary, EPD routine marine water quality monitoring data at the relevant station(s), dry and wet seasons inclusive, could be used to account for the variation of the data between dry season and wet season. The variation percentage between two seasons is then applied to the baseline monitoring data (Oct-Nov 2009) for dry season to derive the action and limit levels for impact monitoring in the wet season. To better represent the seasonal variation, it is suggested to establish Action and Limit levels for both dry and wet seasons for impact monitoring. The proposed Action and Limit Levels (Dry Seasons) and calculated Action and Limit Levels (Wet Seasons) for water quality monitoring are shown in **Table 4.5**. Details of establishing Action and Limit levels shall be referred to **Appendix D**.

Table 4.5 The Proposed Action and Limit Levels (Dry Seasons) and Calculated Action and Limit Levels (Wet Seasons) for water quality monitoring

Parameters -	Dry Season		Wet Season		
	Action	Limit	Action	Limit	
WSD Salt Water Intak	e				
SS in mg L ⁻¹	13.00	14.43	16.26	19.74	
Turbidity in NTU	8.04	9.49	10.01	11.54	
DO in mg/L	3.66	3.28	3.17	2.63	
Cooling Water Intake	Cooling Water Intake				
SS in mg L ⁻¹	15.00	22.13	18.42	27.54	
Turbidity in NTU	9.10	10.25	11.35	12.71	
DO in mg/L	3.36	2.73	3.02	2.44	

4.11 Mitigation of Adverse Environmental Impacts

- 4.11.1 Mitigation measures for water quality control have been recommended in the EIA Report. The Contractor should be responsible for the design and implementation of these measures.
- 4.11.2 Recommended mitigation measures to minimize the adverse impacts on water quality during the proposed dredging are listed in the implementation schedule given in **Appendix A**.

Table 4.6 Event and Action Plan for Marine Water Quality

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

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

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5 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. The contractor will be required to ensure that loss of dredged material does not take place during transportation of the material in barges to the designated marine disposal ground.

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 arising 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.

Dredged Marine Sediments

- 5.2.2 The basic requirements and procedures for dredged mud disposal are specified under the ETWB TCW No. 34/2002. The MFC is responsible for the provision and management of disposal capacity for dredged/excavated sediment, and DEP is responsible for the issue of permits for marine disposal under the provisions of the Dumping at Sea Ordinance (Cap. 466).
- 5.2.3 The dredged marine sediments would be loaded onto barges and transported to and disposed of at the designated disposal sites at South of Cheung Chau, Eat of Ninepin, East of Tung Lung Chau, South of Tsing Yi and East of Sha Chau to be allocated by the Marine Fill Committee depending on their level of contamination after consultation with the MFC and EPD. Based on the chemical screening results, the majority of the marine sediment to be dredged was classified as contaminated and would require Type 2 confined marine disposal. In accordance with the ETWB TCW No. 34/2002, the contaminated material must be dredged and transported with great care, and the mitigation measures recommended in the EIA Report should be strictly followed. Furthermore, the dredged contaminated sediment must be effectively isolated from the environment upon final disposal and the project proponent will consult the Marine Fill Committee about the disposal requirement. The final disposal site will be determined by the Marine Fill Committee and a dumping licence will be obtained from EPD prior to the commencement of the dredging works.

Based on the biological screening results, the Category H (>10xLCEL) sediment which failed the 5.2.4 biological testing would require Type 3 special disposal. The volume of Category H sediment from the Causeway Bay typhoon shelter which would require special disposal arrangements is estimated to be approximately 0.05 Mm³. It was agreed with EPD during the WDII Comprehensive Feasibility Study (CFS) that special disposal arrangements, rather than pre-treatment, would be appropriate provided there would be negligible loss of sediment to the marine environment during the dumping operations. (1) A detailed review of possible special disposal arrangements for the contaminated sediment was carried out in the WDII CFS with the objective of keeping the loss of sediment to the surrounding marine environment to a negligible extent. The method pursued as having the least potential for loss of contaminants to the marine environment is by containment of the sediments in geosynthetic containers. A feasible containment method is proposed whereby the dredged sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal. The technology is readily available for the manufacture of the geosynthetic containers to the project-specific requirements. Similar disposal methods have been used for projects in Europe. the USA and Japan (for example, geosynthetic fabric containers have been used to contain contaminated dredged sediment at Marina Del Rey in California and Yokohama Port in Japan) and the issues of fill retention by the geosynthetic fabrics, possible rupture of the containers and sediment loss due to impact of the container on the seabed have been addressed. (2) The recommended field trials were undertaken during the WDII Design and Construction (D&C) consultancy (Agreement No. CE54/2001 (CE)) using uncontaminated mud to demonstrate the feasibility of the proposed method.

- 5.2.5 The ACE Report⁽³⁾ [to be endorsed by ACE] on the field trials of geosynthetic containers concluded that disposal by sealing the dredged sediments in geosynthetic containers and dropping these containers into the contaminated mud pits at East Sha Chau has been shown to be a successful and viable disposal method. The use of a geosynthetic container system for special disposal was considered to be an effective system with negligible loss of contaminants to the marine environment during disposal. The container design and handling method were refined through the field trials for the determination of the optimal design and handling method.
- 5.2.6 It will be the responsibility of the Contractor to satisfy the appropriate authorities that the contamination levels of the marine sediment to be dredged have been analysed and recorded. According to the ETWB TCW No. 34/2002, this will involve the submission of a formal Sediment Quality Report to the DEP, at least 3 months prior to the dredging contract being tendered.

Agreement No. CE 74/98. Wan Chai Development Phase II Comprehensive Feasibility Study. EIA Report. July 2001.

⁽i) Young, H. M. et al. "The migration of contaminants through geosynthetic fabric containers utilized in dredging operation". Engineering Geology, 53 (1999), 167-176;

⁽ii) Fleischer, P., Bowles, F. A. "Turbidity currents generated by seafloor impact of geotextile fabric containers". Applied Ocean Research, 21 (1999) 215-217;

⁽iii) Valent, P. J. et al. "Engineering concepts for the placement of wastes on the abyssal seafloor". Journal of Marine Systems, 14 (1998) 273-288.

Agreement No. CE 54/2001 (CE). Wan Chai Development Phase II – Design & Construction. Field Trials of Geosynthetic Containers – ACE Report.

5.2.7 During transportation and disposal of the dredged marine sediments requiring Type 1 and Type 2 disposal, the following measures should be taken to minimise potential impacts on water quality:

- Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material.
- Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP.
- Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation.

Good Site Practices

- 5.2.8 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

- 5.2.9 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.

5.2.10 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

5.2.11 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

5.2.12 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

- 5.2.13 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 excavation for the tunnel construction 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. The quantities of C&D materials generated is estimated to be approximately 2.915Mm³ and around 1.17Mm³ will be reused on-site and the remaining surplus of around 1.745Mm³ will be disposed off-site.
- 5.2.14 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.
- 5.2.15 Bentonite slurries used in diaphragm wall and bore-pile construction should be reconditioned and reused wherever practicable. The disposal of residual used bentonite slurry should follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage" and listed as follows:
 - If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.
 - If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the *Technical Memorandum of Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters*.
 - If the used bentonite slurry is intended to be disposed to public fill reception facilities, it will be mixed with dry soil on site before disposal.

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7 MARINE ECOLOGY

7.1 Introduction

7.1.1 The marine ecological impact assessment conducted concluded that impacts from the proposed Project were mainly associated with the direct loss of marine habitats due to dredging and reclamation works in the Victoria Harbour. In terms of ecological importance, the assessment indicated that the affected habitats were generally of very low ecological value and no adverse ecological impacts on marine ecological resources are expected to occur.

- 7.1.2 Nevertheless, it is recommended to avoid direct loss or damage of any species of conservation interest within the proposed reclamation areas as far as possible. Translocation of all the existing coral colonies found at the coastlines within ex-PCWA Basin and along seawall at North Point is recommended in the marine ecological impact assessment.
- 7.1.3 Other indirect impacts on marine ecology arising from the Project are considered temporary and minimal in nature. With the implementation of appropriate mitigation measures (e.g. water quality and noise control measures, coral translocation and re-construction of new artificial seawalls), it was concluded that adverse impact on marine life and other species of conservation interest such as corals would not occur during the construction and operation of the Project. Nevertheless, post-translocation coral monitoring is proposed as an additional measure to verify the effectiveness of the coral translocation measure.

7.2 Mitigation measures for corals

- 7.2.1 The dive surveys conducted during the environmental impacts assessment stage in July 2007 or earlier revealed that coral within subtidal habitat that would be directly affected by the proposed reclamation works was low in species diversity (only two species, *Oulastrea crispata* and *Echinomuricea* sp.) and coverage (1 5%), with only small colonies and common species recorded. The subtidal habitat was therefore considered as low ecological value. Nevertheless, those 19 coral colonies identified in these previous dive surveys were attached to small movable boulders and are practically feasible for translocation. In addition, the recorded corals are not competitive and aggressive species which are not expected to have any negative pressure on the other existing corals in the coral translocation recipient site and are therefore considered suitable for translocation. Coral translocation exercise has been successfully carried out in other part of Hong Kong water in the past project (Black & Veatch, 2005, Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung.) and post-translocation monitoring showed that no adverse impacts on the transplanted coral were resulted from the translocation exercise.
- 7.2.2 In this Project, the assessment recommended to translocate all these potentially affected coral colonies found at coastlines within ex-PCWA Basin (Site 13) and along seawall at North Point (Site 27) (Figure 7.1 & 7.2) to the nearby suitable habitats. To maximize the successfulness of this translocation exercise, the coral recipient sites should be as near as possible to the existing coral site and with similar healthy coral communities of the same species as well as similar hydrographic condition. Three possible recipient sites are identified in the vicinity of the assessment area (Victoria Harbour, Junk Bay and Clearwater Bay) and Junk Bay is considered as the most suitable option and be suggested as marine waters of the Victoria Harbour might be subjected to potential impact from future development including some marine works in the Central and Kai Tak areas while Clearwater Bay is considered too far away from the Project site when compared with Junk Bay.

7.2.3 A 10 m x 10 m coastal area at Junk Bay is proposed as a practical and feasible recipient site (Figure 7.3). Coral translocation to this proposed recipient site should not engage any permitting application under the Dumping at Sea Ordinance (Cap. 466) nor the Foreshore and Seabed (Reclamation) Ordinance (Cap. 127). In addition, this proposed recipient site is unleased and unallocated government land with no specific marine use and are therefore considered practically suitable for coral translocation. The proposed area (100 m²) of coral recipient site will provide sufficient space for proper placement of translocated coral colonies in the field based on rough estimate of about 20 rocks / boulders with attached coral colonies (occupying the largest area of less than 0.25 m² each) would be translocated to this recipient site. The translocation exercise should be conducted before the commencement of construction phase of the Project.

- 7.2.4 General steps for the whole coral translocation exercise are suggested below and should be followed as far as practicable:
 - Locate a suitable recipient site for transplanted corals before commencement of coral translocation works;
 - Collect baseline information (e.g. total number of coral colonies to be translocated, health status, attached boulder size, etc.) of transplanted coral colonies in pre-translocation survey before commencement of coral translocation works;
 - Tag the transplanted coral colonies one by one in the pre-translocation survey;
 - Record the size, depth and orientation of each tagged coral colonies in the pretranslocation survey;
 - Move boulders with translocated coral colonies from sea bottom to ship/boat with lifting bag;
 - Submerge translocated coral colonies in large plastic bucket filled with seawater with aeration onboard:
 - Transport coral colonies to recipient site as guick as possible:
 - Place the transplanted coral colonies in the recipient site in similar depth and orientation as the existing coral site;
 - Record information (e.g. health status, translocated location of tagged coral, etc) of transplanted coral colonies upon the completion of translocation works; and
 - Carry out post-translocation monitoring on transplanted coral colonies every three months for a year after completion of coral translocation works.
- 7.2.5 A detailed transplantation plan (including identification of recipient site, translocation methodology, monitoring of transplanted corals, etc.) should be drafted during the detailed design stage of the Project. The translocation plan should be proposed by the ET in agreement with the IEC and should be approved by AFCD prior to the commencement of coral translocation exercise and monitoring programme. Both coral translocation and monitoring exercise should be carried by qualified marine specialist who has suitable coral knowledge and sound experience in identifying corals in field situation, and to be approved by AFCD as well.

7.3 Monitoring requirement

Baseline Survey

7.3.1 Prior to the commencement of coral translocation, baseline survey of corals should be conducted at the ex-PWCA Basin (Site 13) and along seawall at North Point (Site 27) (Figure 7.1 & 7.2). All the potentially affected coral colonies should be tagged. For each tagged coral, specific detailed information should be collected including location, size, depth, attached rock/boulder size and general condition of their immediate surroundings. Tagged coral colonies should also be identified to the highest taxonomic resolution as far as practicable. The condition of each tagged coral colony should also be recorded by taking a photograph from an angle that best represents the entire colony.

7.3.2 Information on health condition of the tagged corals should be recorded. For gorgonian coral, the percentage of branches affected by partial mortality and secretion of mucus should be recorded. For hard corals, health condition should include information on surface area with partial mortality and blanched / bleached area. Two categories of bleached area should be recorded:

- Blanched (i.e. paled)
- Bleached (i.e. bleached white)
- 7.3.3 Blanched coral tissue would appear pale due a loss of zooxanthallae or photosynthetic pigments. In contrast, bleached areas would appear white due to the white colouration of the skeleton visible through the transparent coral tissue. This bleaching would occur due to total loss of zooxanthellae. The coral tissue would still be present. It is possible that the lower portions of the coral tissue remain unbleached and would therefore help in differentiating bleached areas as opposed to partial mortality areas where the coral tissue would be absent.
- 7.3.4 For each tagged hard coral colony, sediment cover should be recorded including percentage cover, colouration, texture and approximate thickness of sediment on the colony itself and on adjacent hard substrate. Any contiguous patches of sediment cover >10% should be counted. To aid percentage cover estimates, a 50 cm x 50 cm quadrat equipped with 10cm spaced string grid should be used.

Coral monitoring after transplantation

- 7.3.5 After translocation, the transplanted coral colonies should be regularly checked by qualified marine ecologist(s) to be approved by AFCD quarterly for one year after transplantation. Detailed monitoring proposal should be drafted during the detailed design phase of the Project and be approved by AFCD prior to the commencement of coral translocation.
- 7.3.6 Dive surveys for post-translocation monitoring should collect the same information for tagged corals as the baseline survey. Information gathered during each post-translocation monitoring surveys should include observations on the presence, survival, and health conditions of the transplanted coral colonies. It should also include condition of the surrounding environment as well as weather, sea and tidal conditions. Each tagged coral should be photographed as far as possible maintaining the same aspect and orientation as photographs taken for the baseline survey.
- 7.3.7 All tags should be removed / retrieved after the monitoring programme is completed.

Reporting

- 7.3.8 A baseline survey report should be submitted to AFCD prior to the commencement of coral translocation exercise.
- 7.3.9 Post-translocation monitoring report should be submitted to AFCD within 2 weeks after the completion of coral translocation and each quarterly coral monitoring survey. The results of the post-translocation monitoring surveys should be reviewed with reference to the baseline survey results and findings of the condition of surrounding environment.

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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 realised 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 24-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 and a report recording the changes to each landscape resource, landscape character area and view condition of each visually sensitive receiver 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 and the report recording the changes shall be submitted to the Project proponent, ET, IEC and EPD for record.

8.4 Event/Action Plan for Landscape and Visual Works

8.4.1 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	ACTION				
LEVEL	ET	IEC	ER	CONTRACTOR	
Design Check	Check final design conforms to the requirements of EP and prepare report.	Check report. Recommend remedial design if necessary	Undertake remedial design if necessary		
Non-conformity on one occasion	Identify Source Inform IEC and ER Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed	Check report Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise ER on effectiveness of proposed remedial measures. Check implementation of remedial measures.	Notify Contractor Ensure remedial measures are properly implemented	Amend working methods Rectify damage and undertake any necessary replacement	
Repeated Non- conformity	Identify Source Inform IEC and ER Increase monitoring frequency Discuss remedial actions with IEC, ER and Contractor Monitor remedial actions until rectification has been completed If non-conformity stops, cease additional monitoring	Check monitoring report Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise ER on effectiveness of proposed remedial measures Supervise implementation of remedial measures.	Notify Contractor Ensure remedial measures are properly implemented	Amend working methods 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 Discuss remedial actions with Management Agency Monitor remedial actions until rectification has been completed	Check report Discuss with Maintenance Agency possible remedial measures 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

For the Whole Project

- 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).

For DP3 - Reclamation

- Control night-time lighting (CM5);
- Erection of decorative hoardings (CM6).

For DP5 – Wan Chai East Sewage Outfall (refer to EIA-058/2001, Table 10.13)

- Minimisation of works areas (CM2);
- Erection of decorative hoardings (CM3);
- Control night-time lighting (CM4);
- Minimisation of disruption to public by effective programming of the works (CM5).

<u>For DP6 – Cross-Harbour Water Mains from Wan Chai to Tsim Sha Tsui (refer to EIA-058/2001, Table 10.13)</u>

- Minimisation of works areas (CM2);
- Erection of decorative hoardings (CM3);
- Control night-time lighting (CM4);
- Minimisation of disruption to public by effective programming of the works (CM5).

Landscape and Visual Mitigation Measures during Operation Phase

- 8.5.2 The landscape and visual mitigation measures in the Operation Phase would be achieved principally through the realisation of a Master Landscape Plan encompassing the following principal objectives:
 - the establishment of a network of open spaces providing for a range of functions including pedestrian circulation and as a venue for community events;
 - the creation of major landscape spaces forming pedestrian arteries linking the waterfront with existing open spaces, proposed and existing adjacent developments and other areas of the city;
 - the establishment of an integrated, pedestrian oriented streetscape which will enhance pedestrian movement, integrate the proposed and existing developments within an overall landscape framework and generally improve the quality of the public environment;
 - the provision of green buffer areas to mitigate negative environmental conditions associated with transport corridors, especially for the proposed IECL;
 - the development of an integrated, fully co-ordinated design, incorporating all foreseeable functional requirements such as utilities, drainage reserves, and pumping stations;

• the creation of a high quality Waterfront Park which will reflect and integrate with that proposed for the Central District Reclamation development;

• the provision of open space linkage between the Central Reclamation and HKCEC in the west, the RHKYC, Victoria Park and stretching to North Point to the east.

For the Whole Project

- 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 design of proposed waterfront promenade (OM4);
- Aesthetic streetscape design (OM5);
- Aesthetic design of roadside amenity areas (OM6).

For DP3 - Reclamation

Aesthetic design of proposed waterfront promenade (OM4).

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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.

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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;

Table 4.5 The Proposed Action and Limit Levels (Dry Seasons) and Calculated Action and Limit Levels (Wet Seasons) for water quality monitoring

Parameters	Dry Season		Wet Season	
raiailleteis	Action	Limit	Action	Limit
WSD Salt Water Intake				
SS in mg L ⁻¹	13.00	14.43	16.26	19.74
Turbidity in NTU	8.04	9.49	10.01	11.54
DO in mg/L	3.66	3.28	3.17	2.63
Cooling Water Intake				
SS in mg L ⁻¹	15.00	22.13	18.42	27.54
Turbidity in NTU	9.10	10.25	11.35	12.71
DO in mg/L	3.36	2.73	3.02	2.44

4.11 Mitigation of Adverse Environmental Impacts

- 4.11.1 Mitigation measures for water quality control have been recommended in the EIA Report. The Contractor should be responsible for the design and implementation of these measures.
- 4.11.2 Recommended mitigation measures to minimize the adverse impacts on water quality during the proposed dredging are listed in the implementation schedule given in **Appendix A**.

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;
 - 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;
- 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 mitigatory action when necessary).

10.6 Reporting for Post-construction / Post-Translocation Monitoring of Coral

10.6.1 Prior to the commencement of construction phase of the Project and the coral translocation exercise, the ET shall prepare and submit a detailed transplantation plan and monitoring proposal of coral. The translocation plan and monitoring proposal shall be approved by AFCD. A baseline survey report shall be prepared and submitted to AFCD prior to the commencement of coral translocation exercise. Post-translocation monitoring report shall be prepared and submitted to AFCD within 2 weeks after the completion of coral translocation and each quarterly coral monitoring survey. The results of the post-translocation monitoring surveys should be reviewed with reference to the baseline survey results and findings of the condition of surrounding environment. The detailed reporting requirements of the post-translocation monitoring report shall be agreed with AFCD.

10.7 Operation Phase EM&A Reporting

10.7.1 For the operation phase EM&A, Odour Monitoring Report on results of the odour patrol, shall be prepared and submitted. The findings of the monitoring results including methodology, data presentation, discussion, conclusion and recommendations shall be provided in the monitoring reports. Details of the reports distribution and time frame for submission shall be agreed EPD prior to commencement of works.

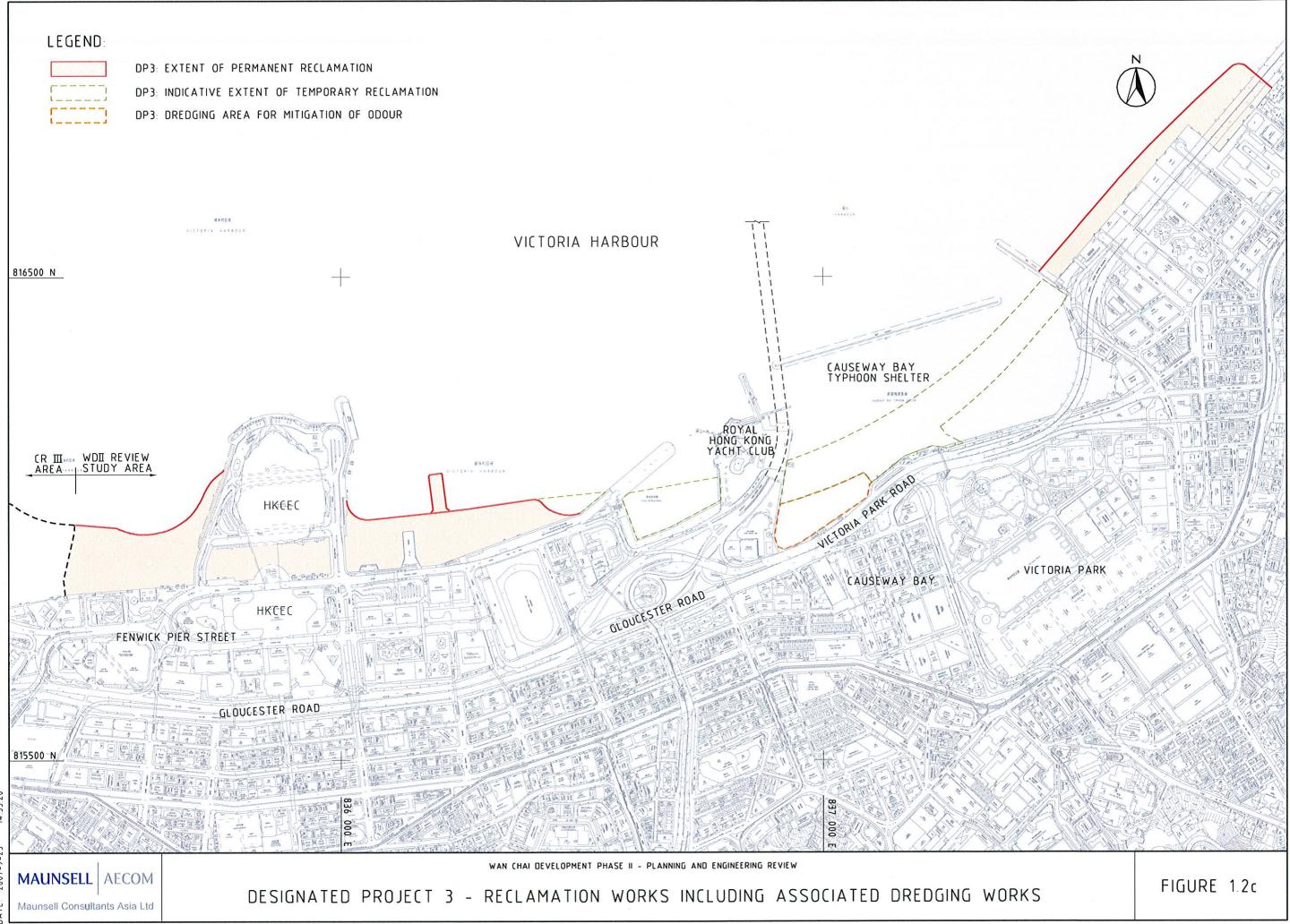
10.8 Data Keeping

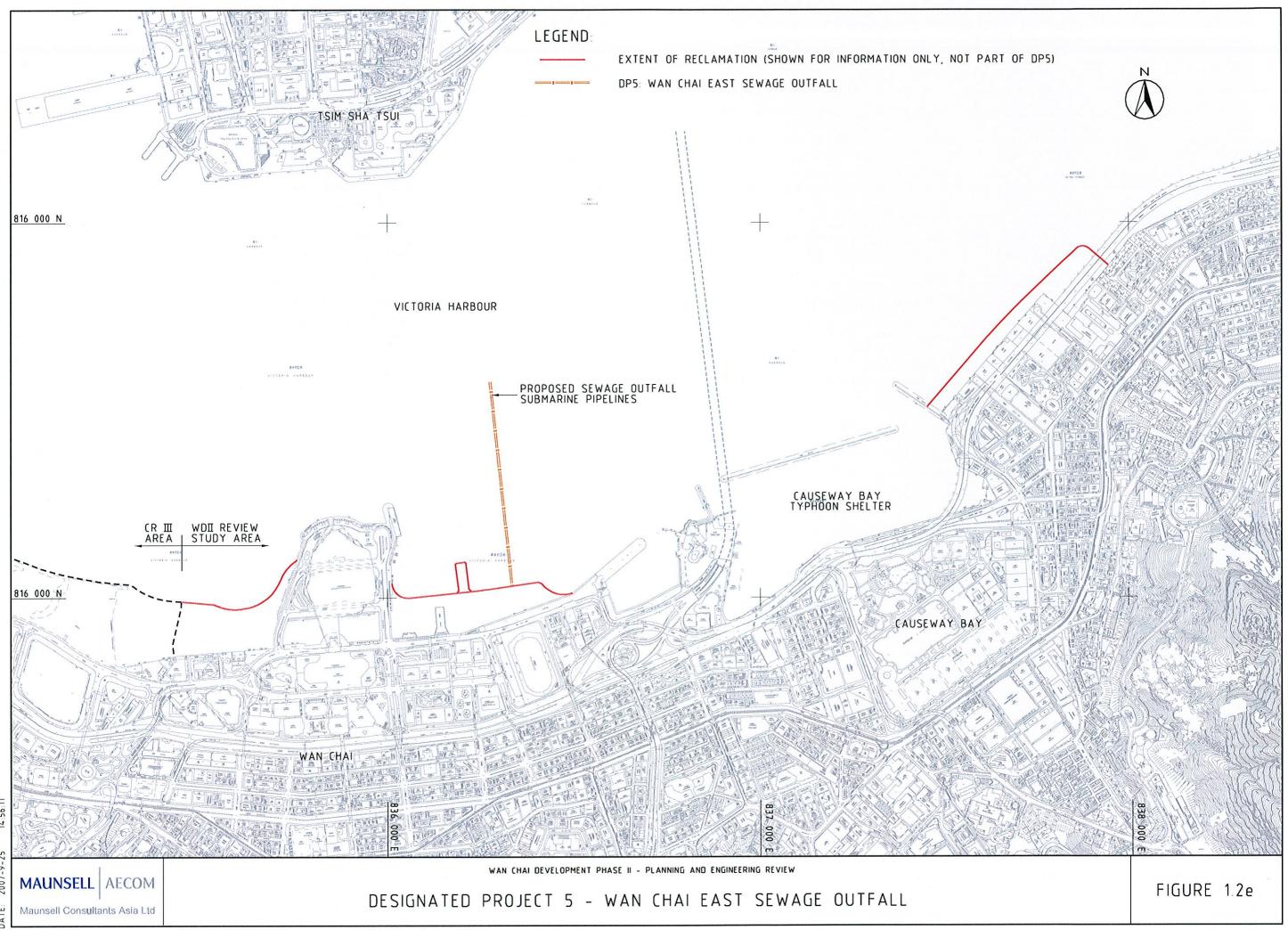
10.8.1 No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the monthly EM&A reports. However, any such document shall be well kept by the ET Leader and be ready for inspection upon request. All relevant information 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.

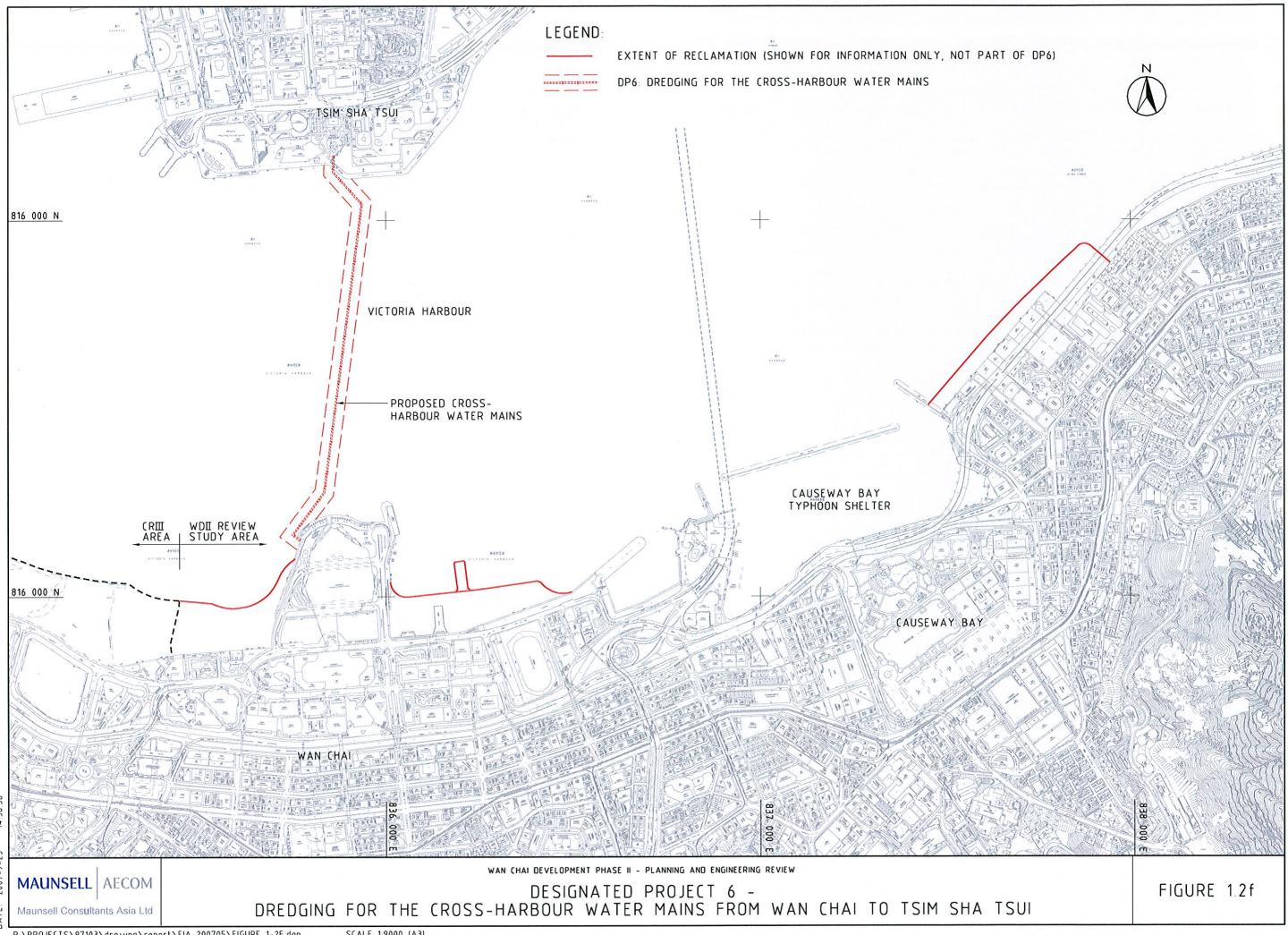
10.9 Interim Notifications of Environmental Quality Limit Exceedances

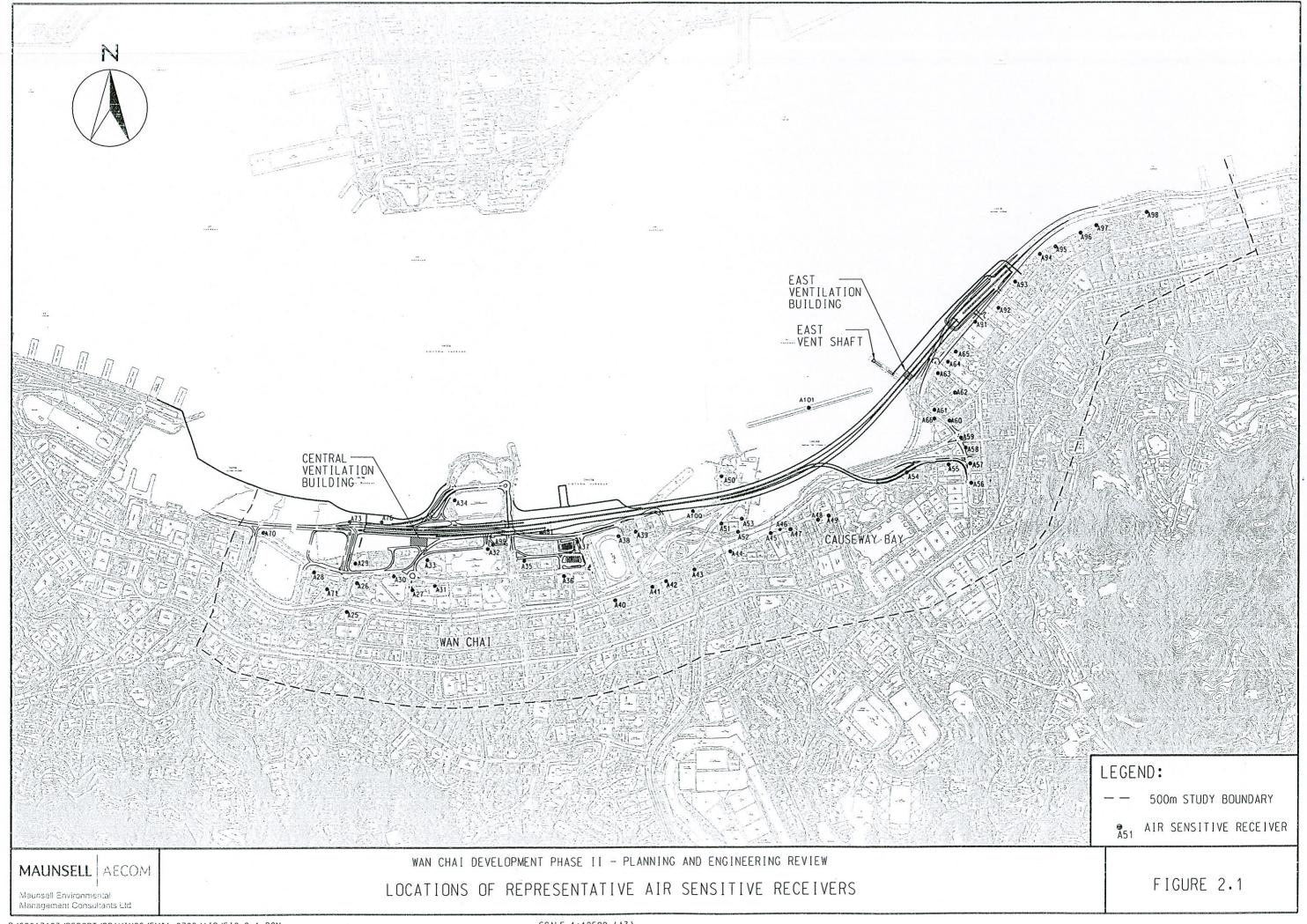
10.9.1 With reference to the Event and Action Plan, when the environmental quality performance limits are exceeded, the ET Leader shall immediately notify the IEC and EPD, as appropriate. The notification shall be followed up with advice to IEC and EPD on the results of the investigation, proposed actions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

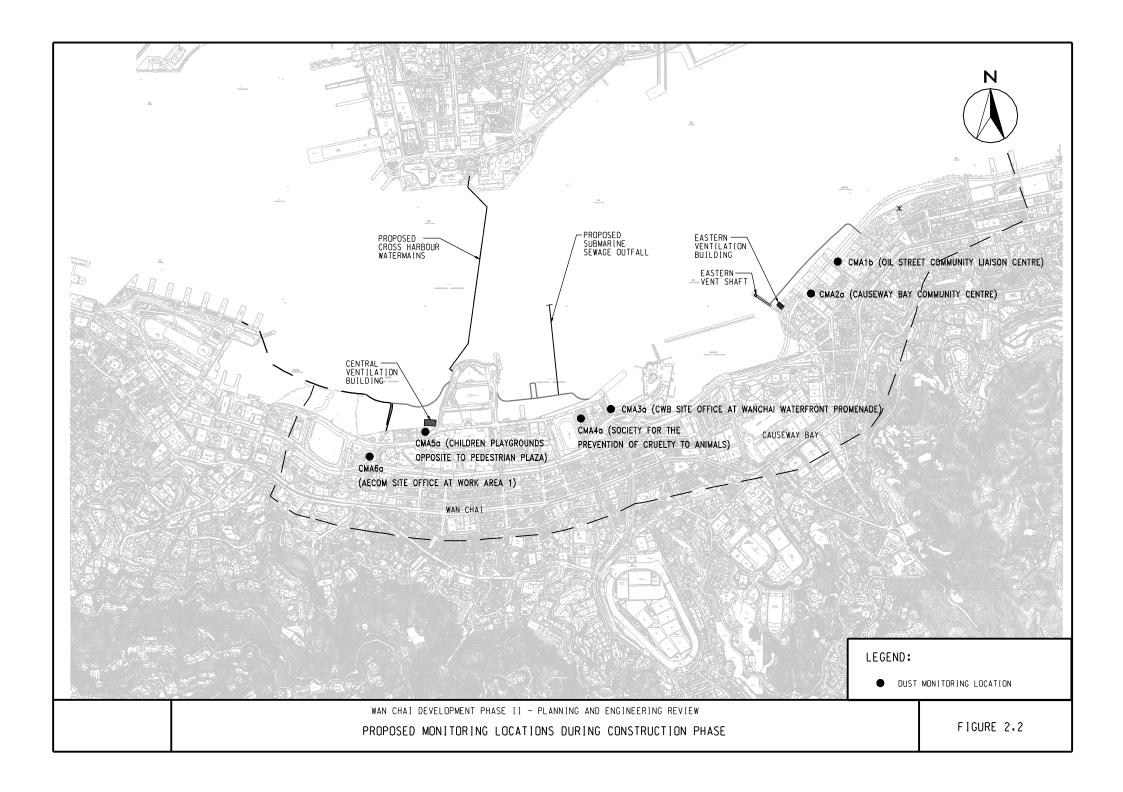
Figures

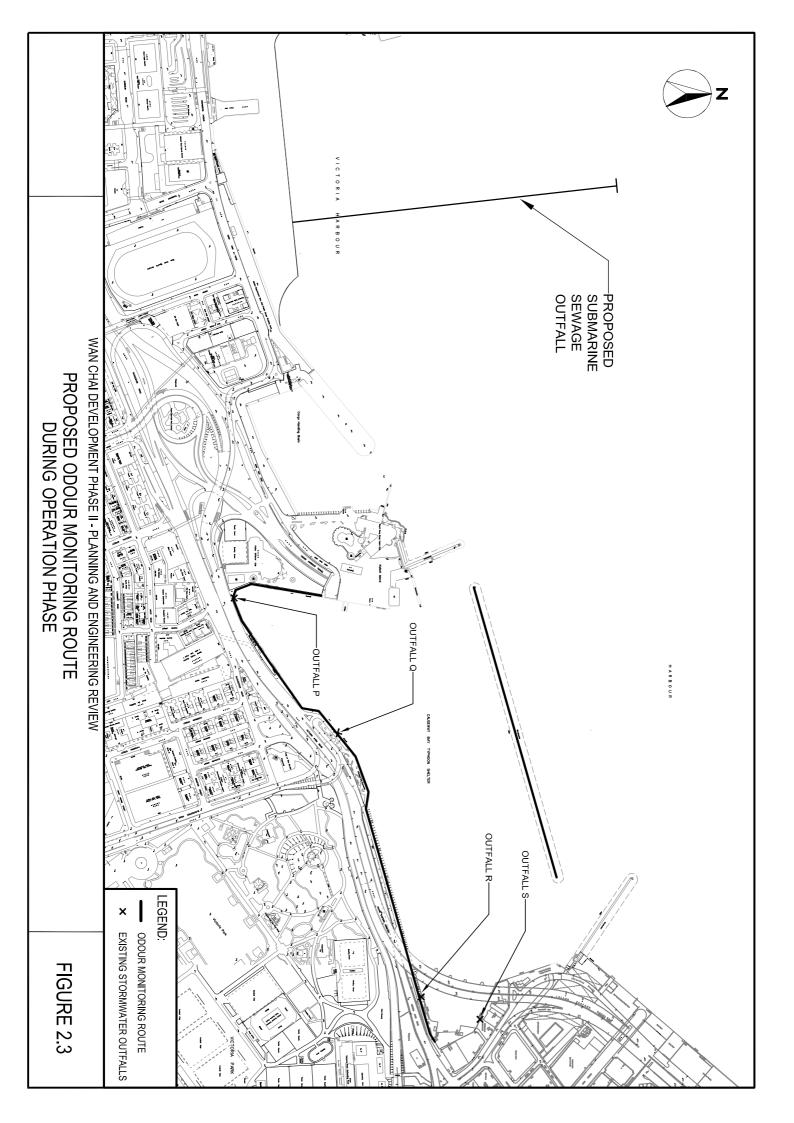


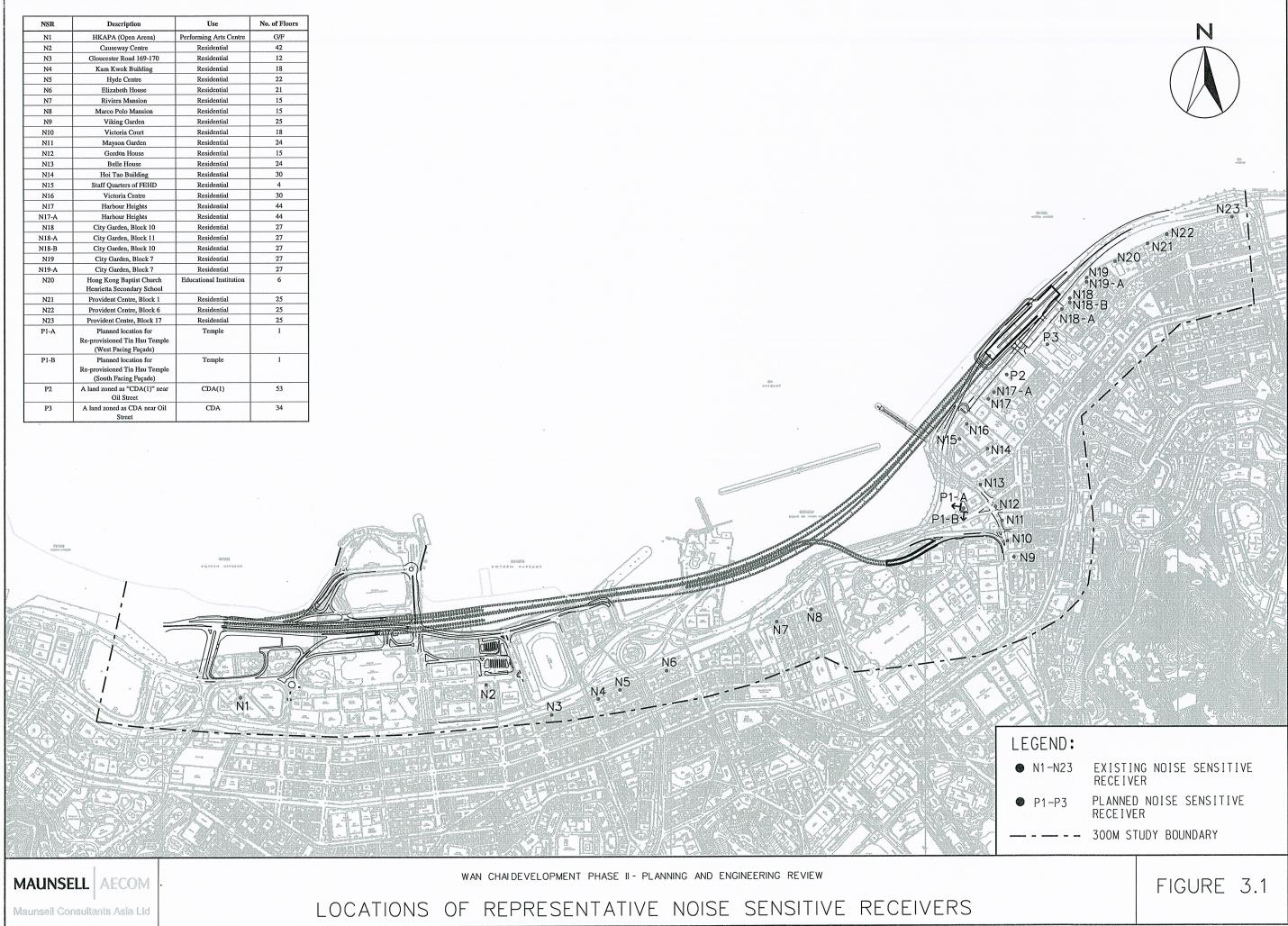


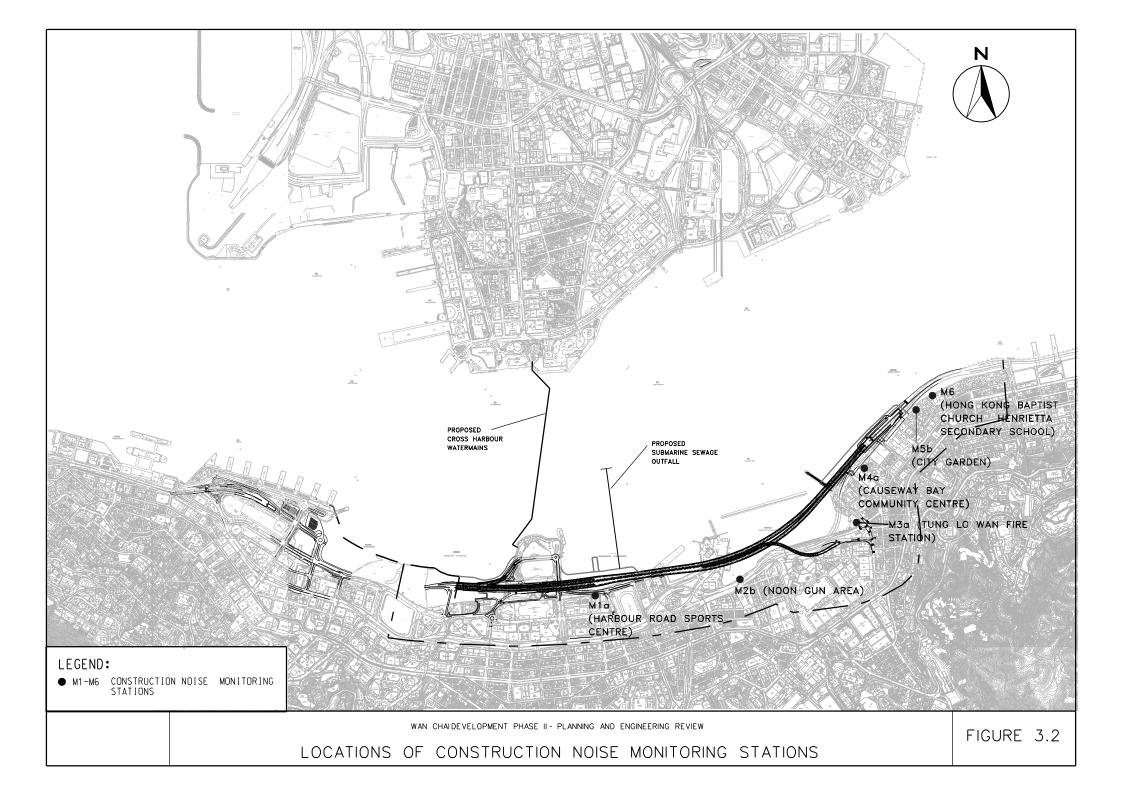


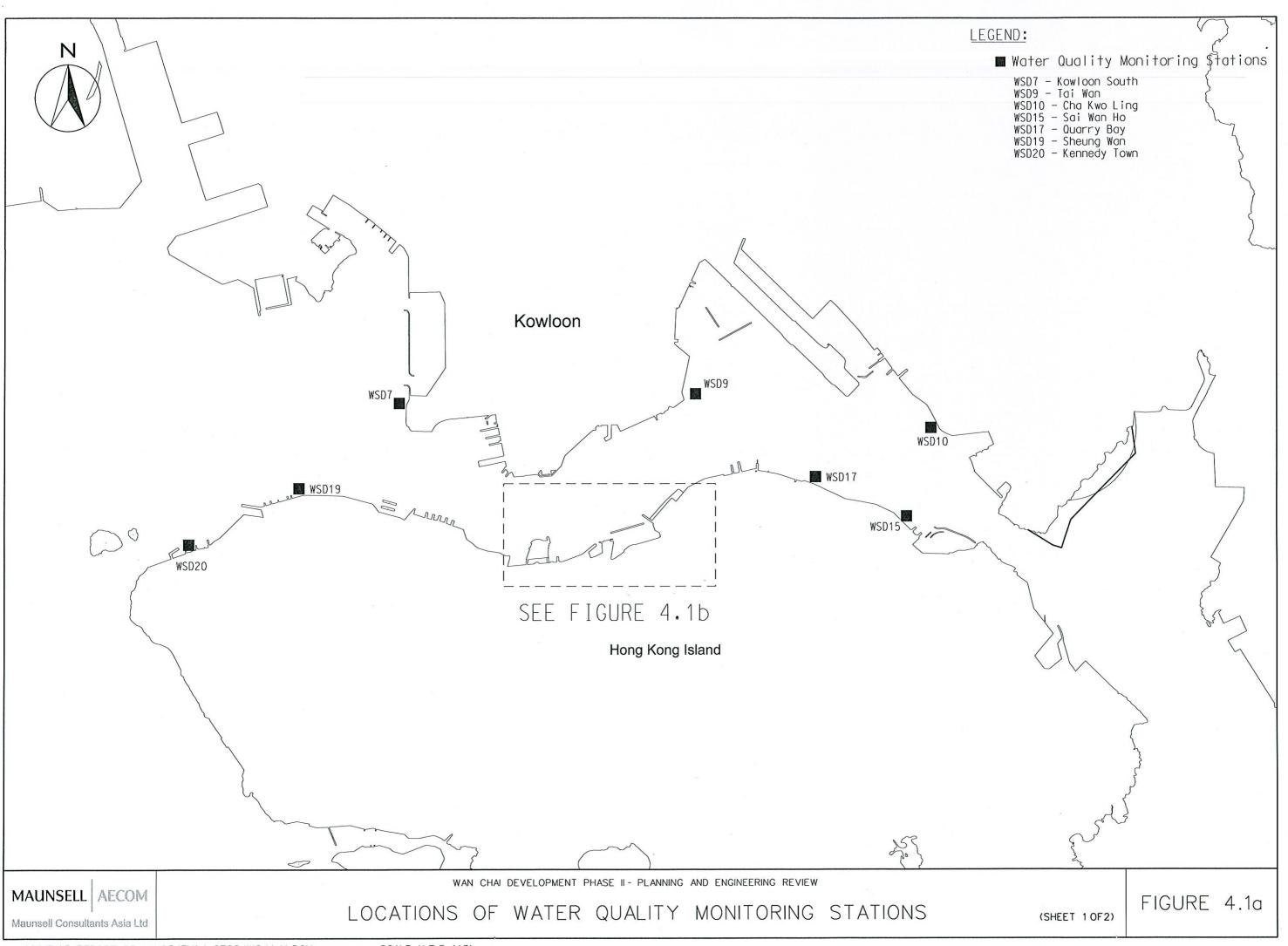


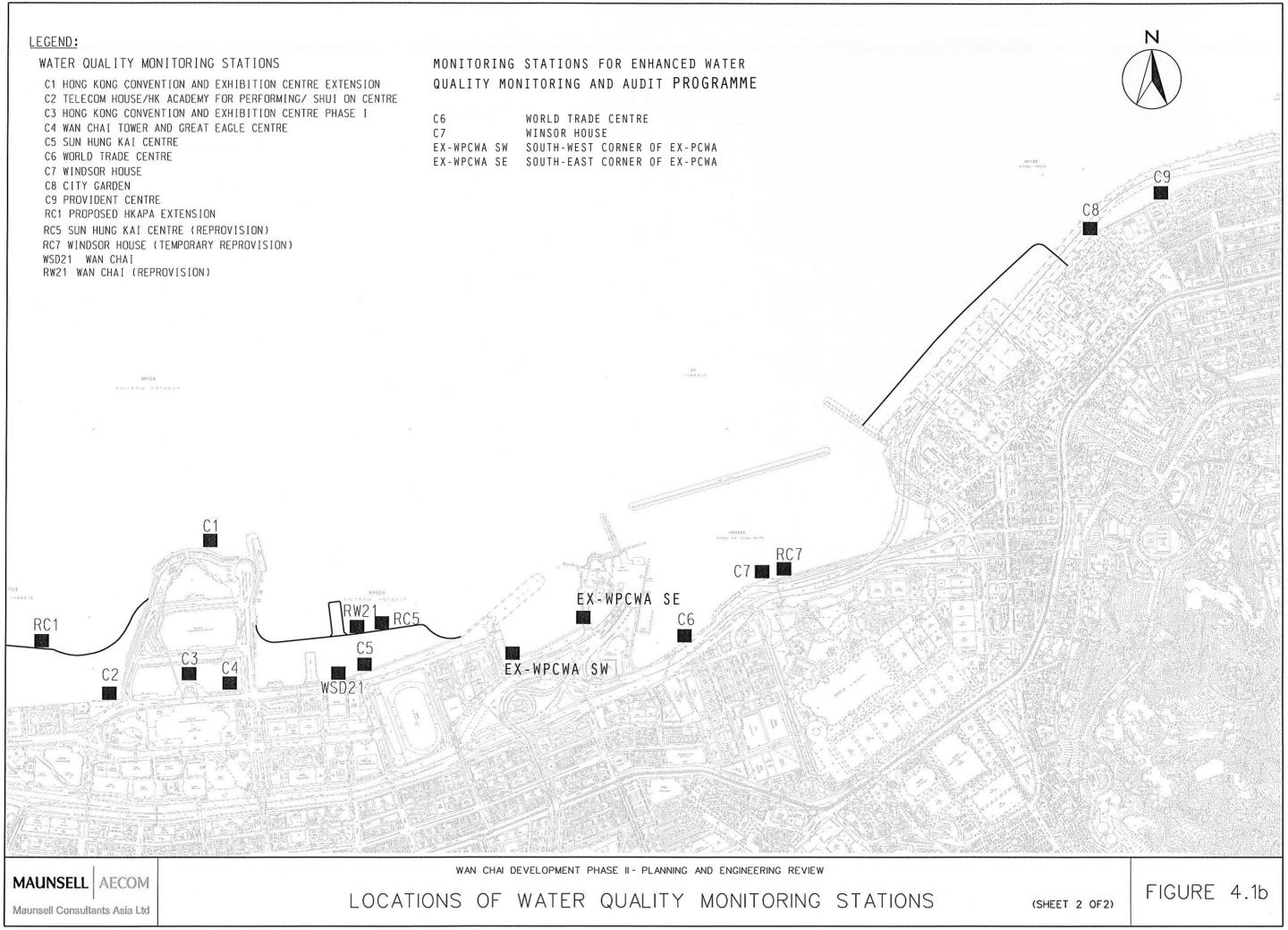


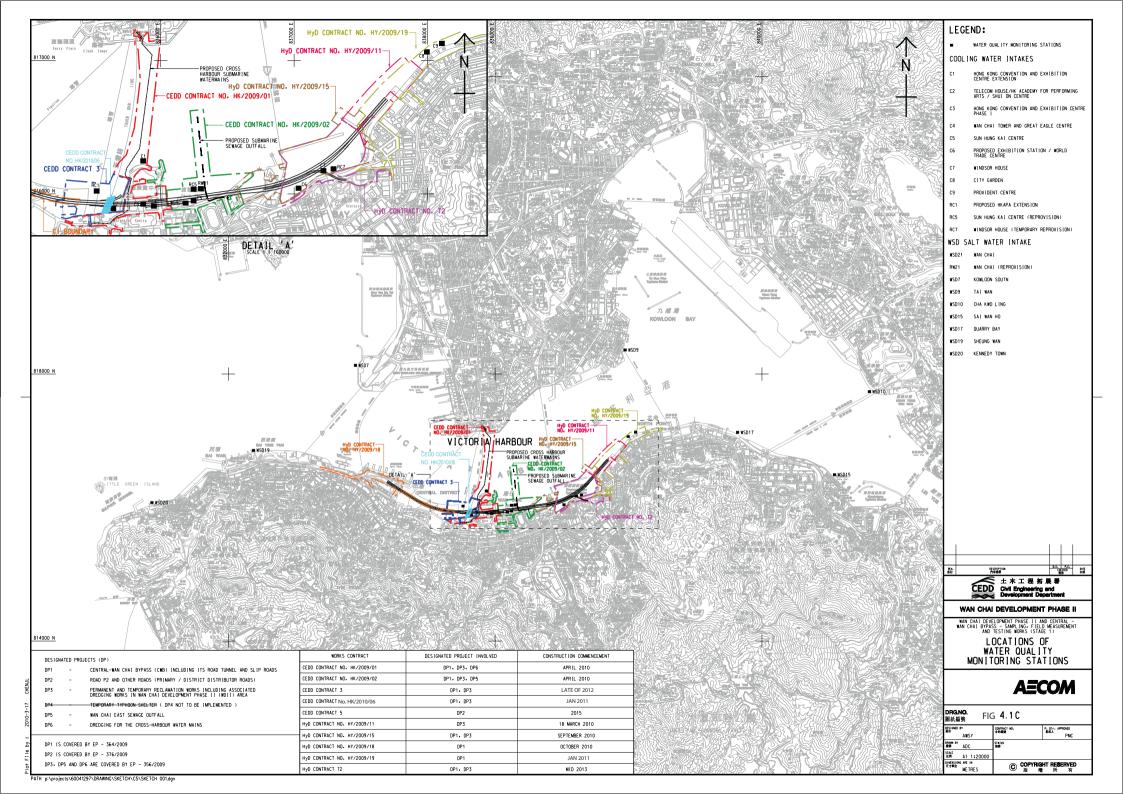




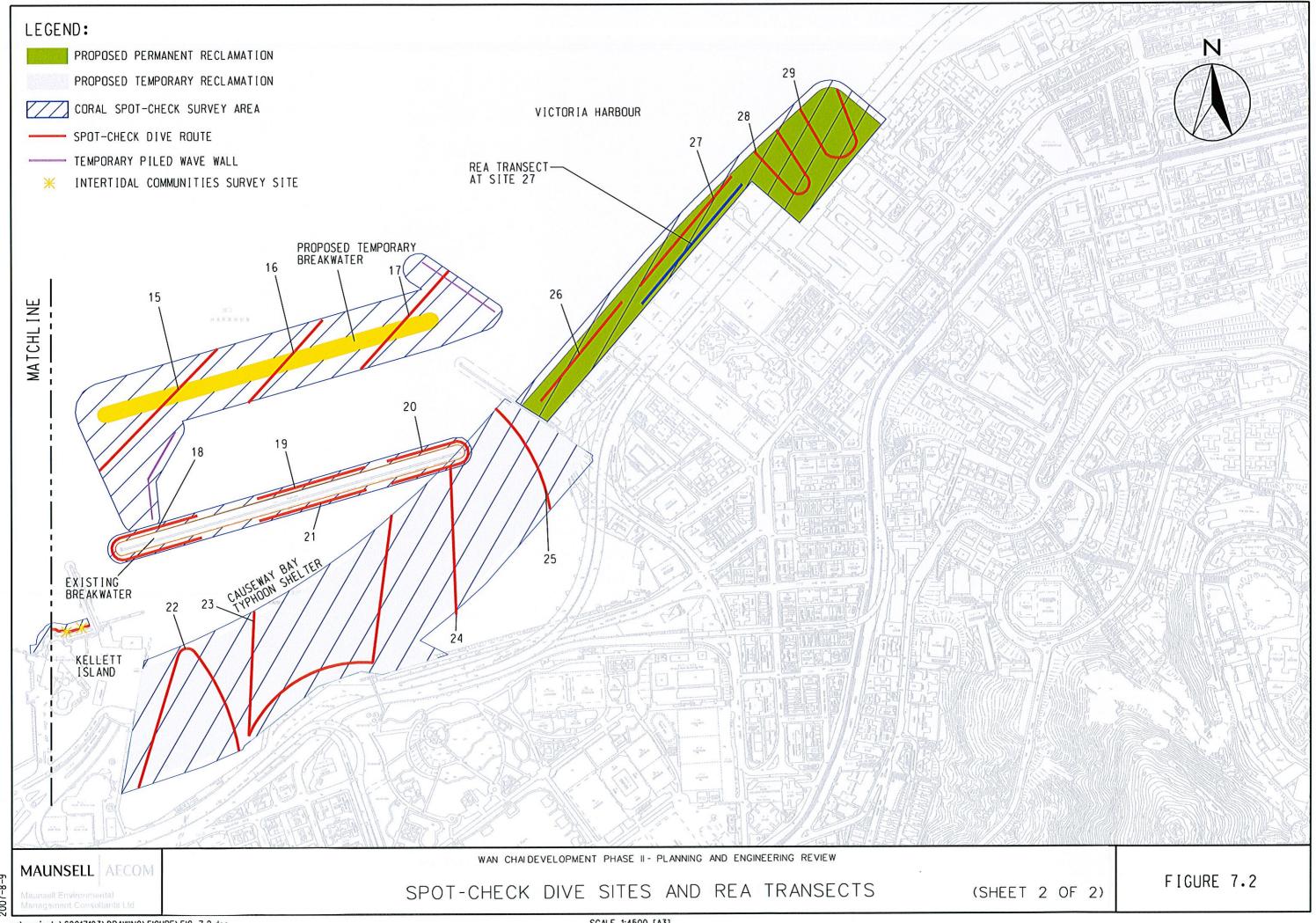


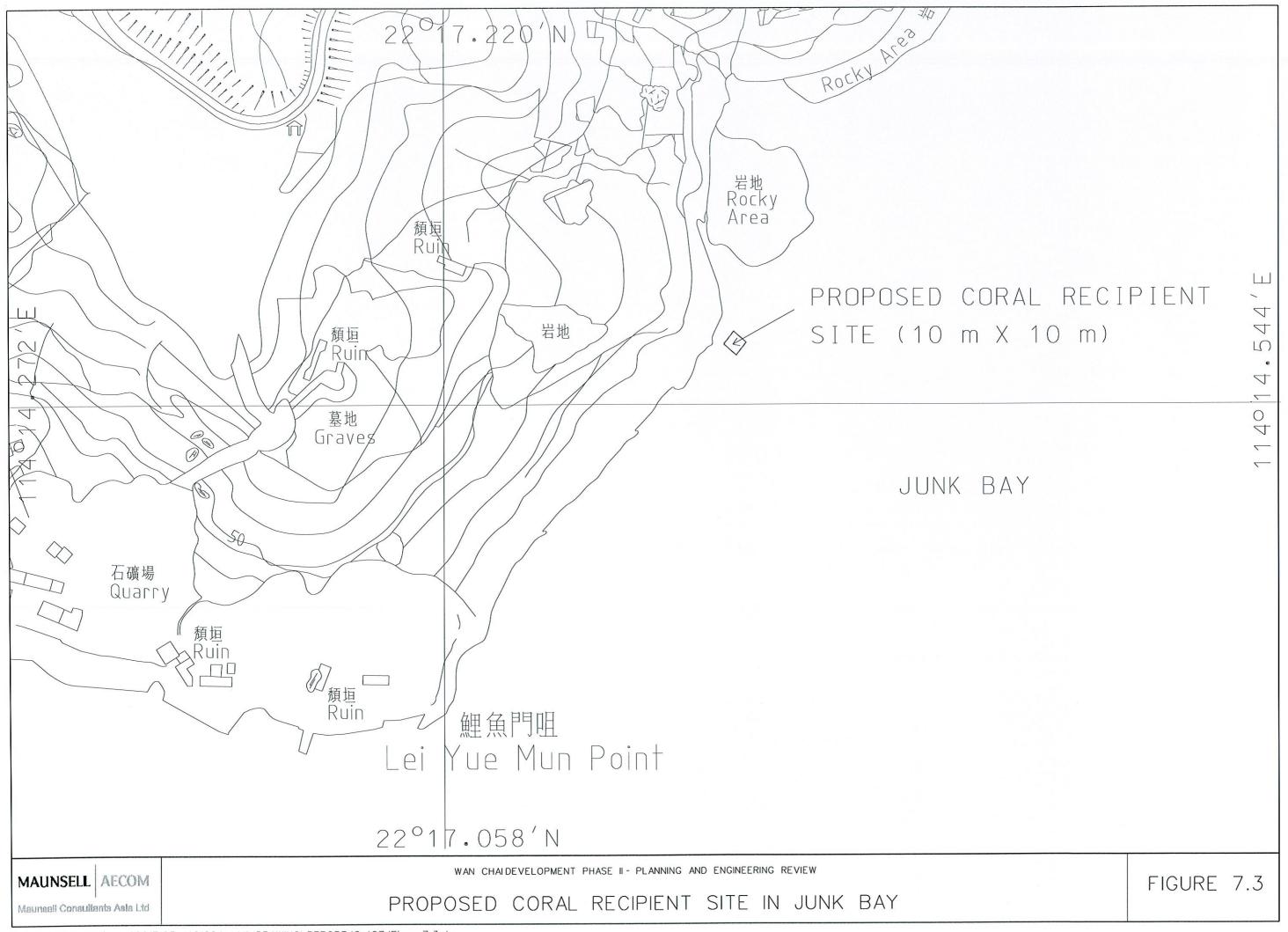


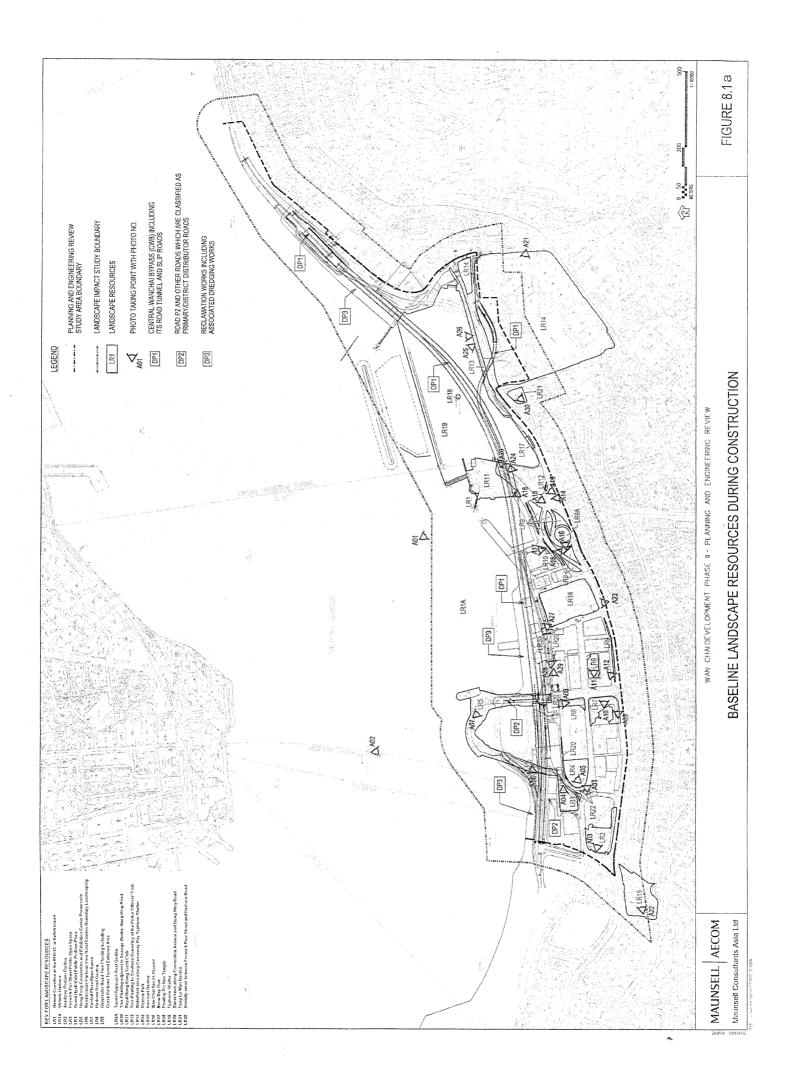


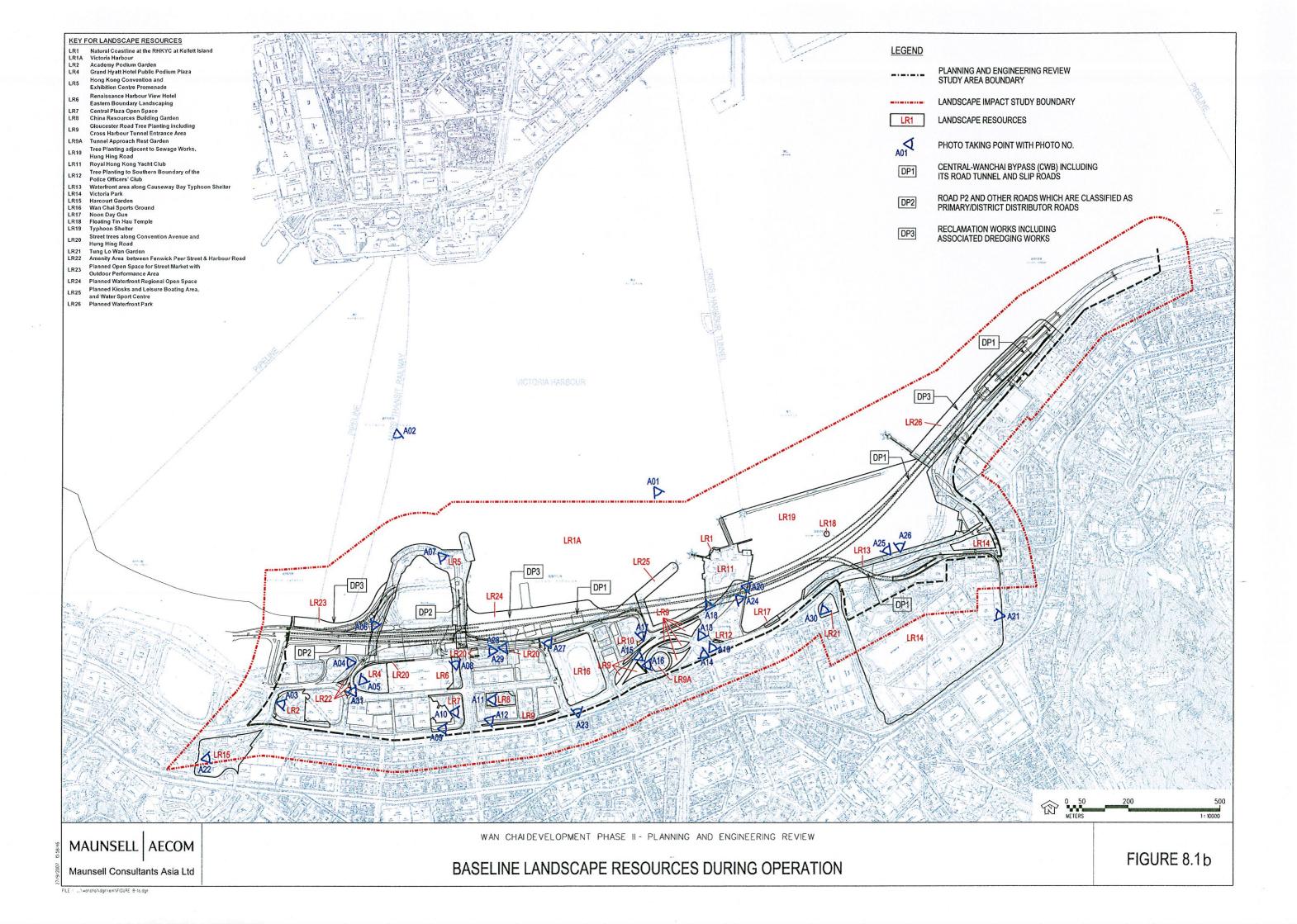


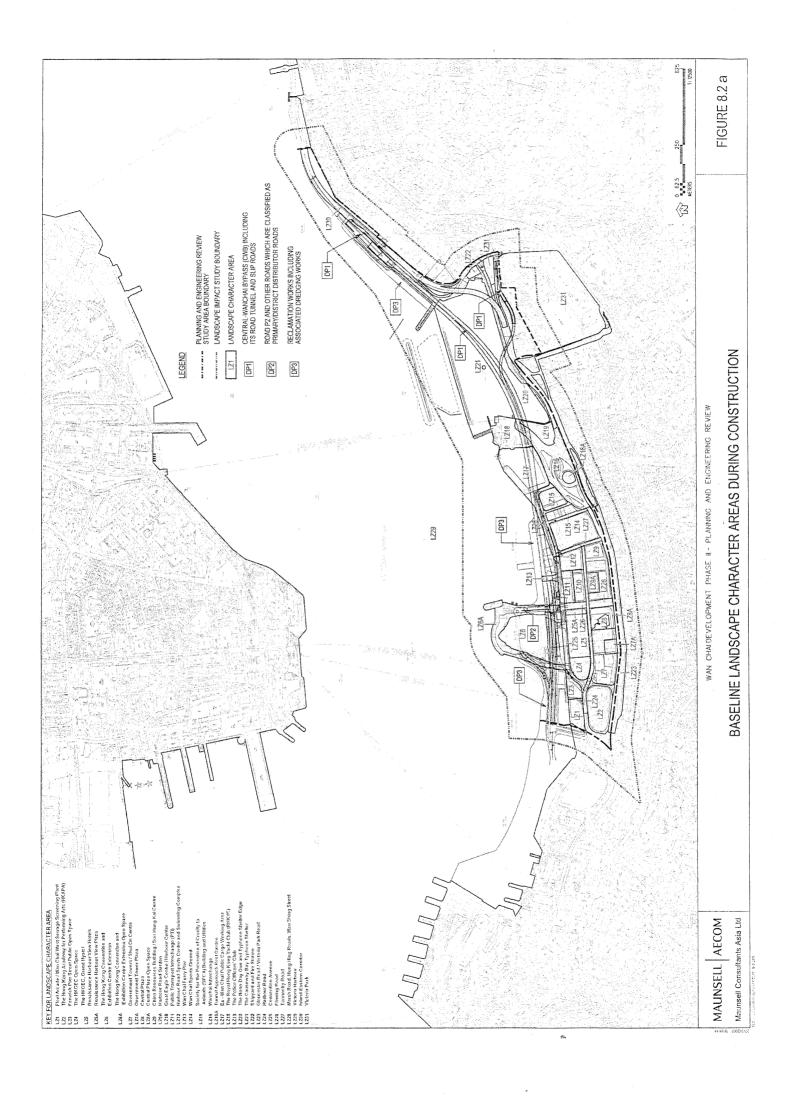


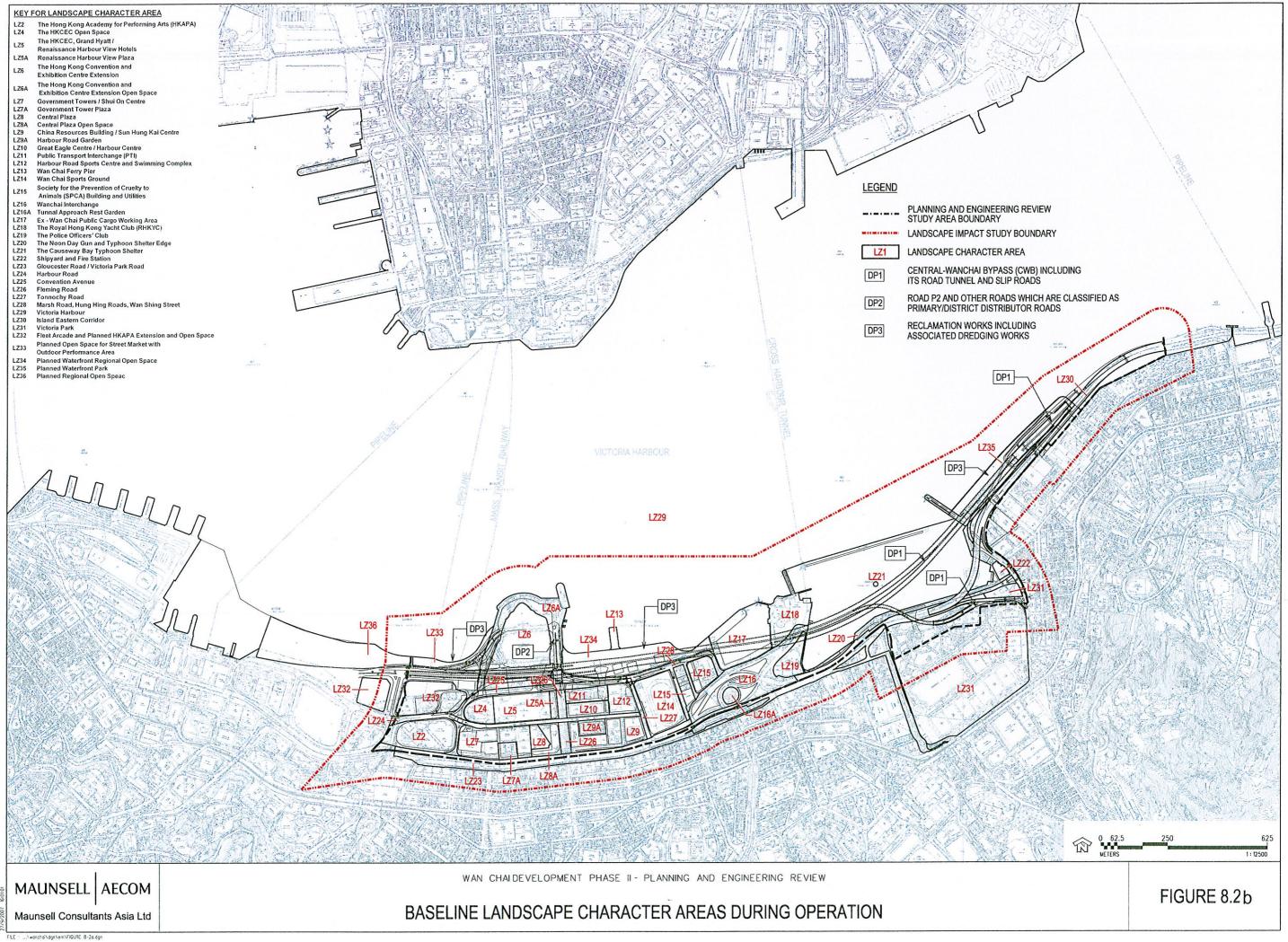


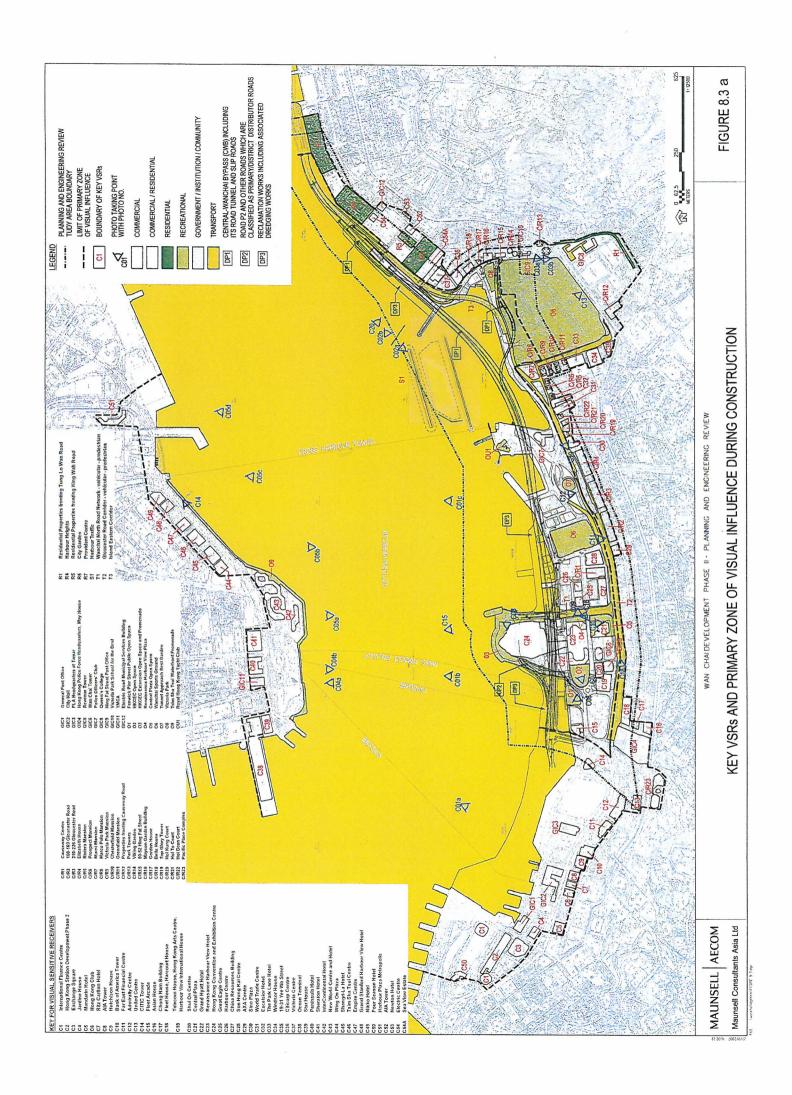


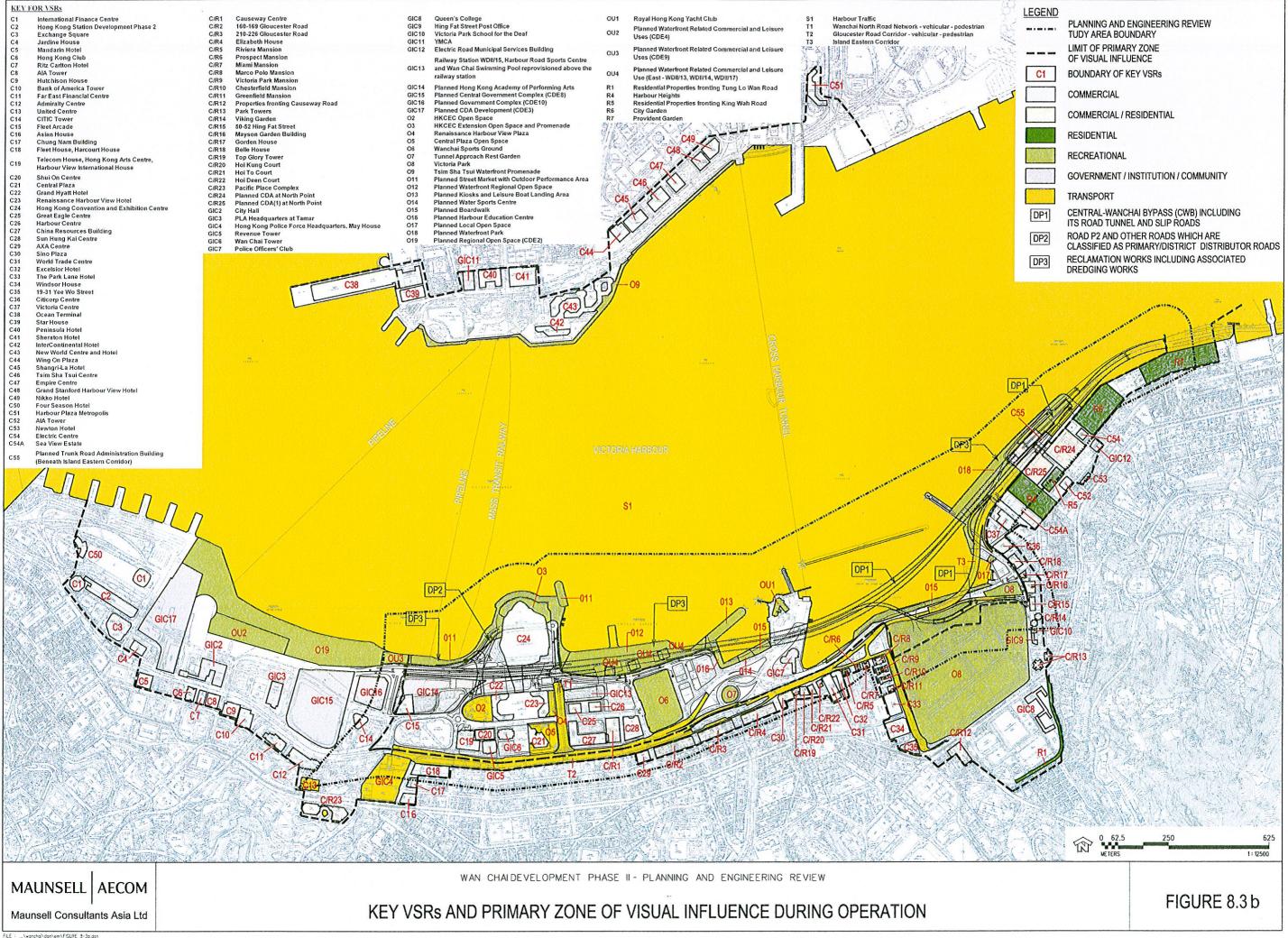


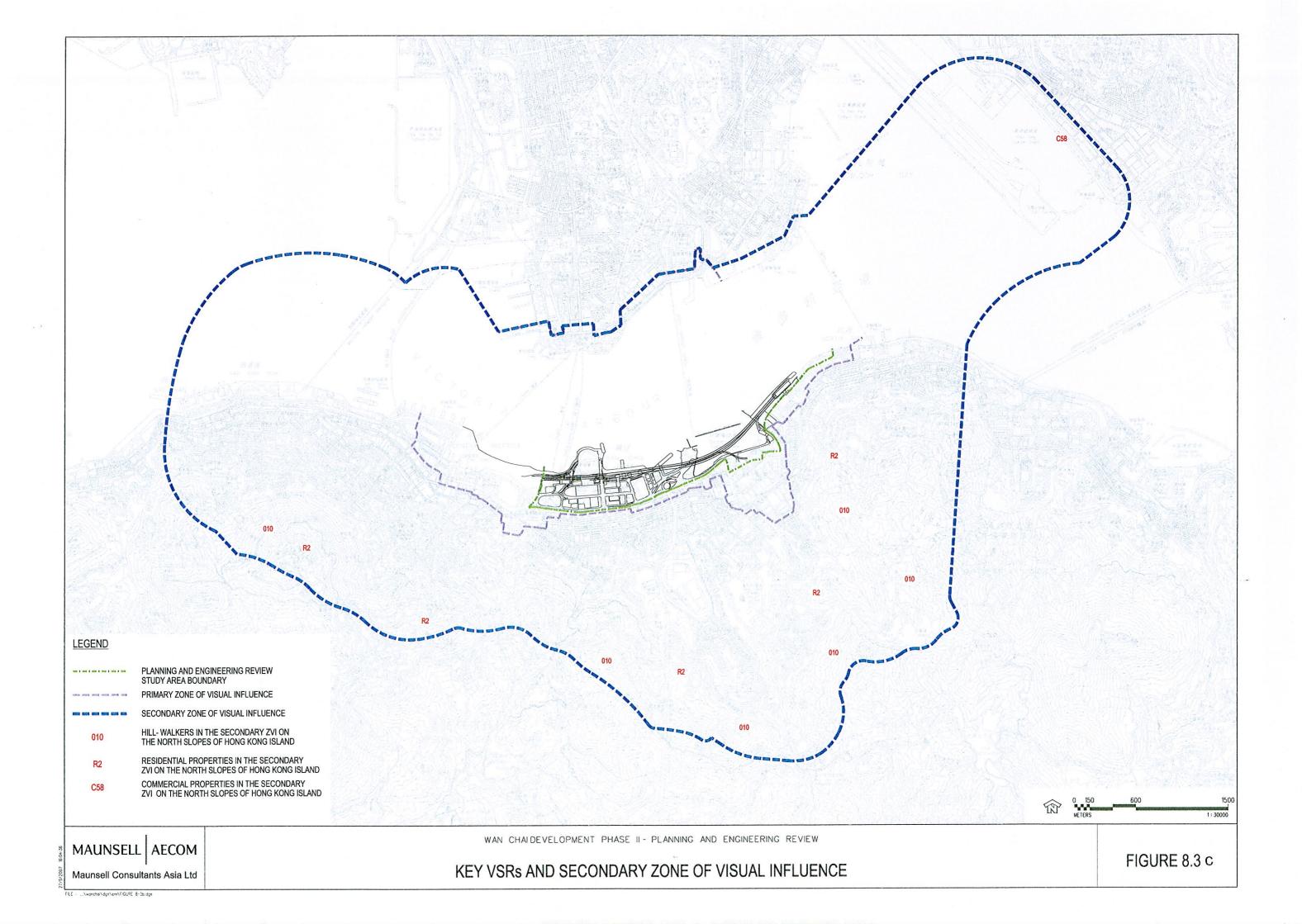












Appendix A Implementation Schedule

Appendix A

Table A13.1	Implementation Schedule for Air Quality Control
Table A13.2	Implementation Schedule for Noise Control
Table A13.3	Implementation Schedule for Water Quality Control
Table A13.4	Implementation Schedule for Waste Management
Table A13.6	Implementation Schedule for Marine Ecology
Table A13.7	Implementation Schedule for Landscape and Visual

Appendix A

 Table A13.1
 Implementation Schedule for Air Quality Control

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	Implementation Stages*			on	Relevant Legislation and Guidelines
			Agent	Des	C	O	Dec	and Guidelines
Constructio								
For the Who	y .							
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. Strictly limit the truck speed on site to below 10 km per hour and water spraying to keep the haul roads in wet condition; Watering during excavation and material handling; Provision of vehicle wheel and body washing facilities at the exit points of the site, combined with cleaning of public roads where necessary; and Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. 	construction	Contractor		V			

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	Implementation Stages*				Relevant Legislation
		s	Agent	Des	C	O	Dec	and Guidelines
S3.5.6	For the dredging activities carried out in the vicinity of Police Officers' Club, the dredging operation will be restricted to only 1 small close grab dredger to minimise the odour impact during the dredging activity. The dredging rate should be reduced as much as practicable for the area in close proximity to the Police Officers' Club. The sediments contain highly contaminated mud which may be disposed with the use of geosynthetic containers (details shall refer to Section 6), grab dredger has to be used for filling up the geosynthetic containers on barges. the dredging rate for the removal of the sediments at the south-west corner of the typhoon shelter shall be slowed down or restricted to specific non-popular hours in weekdays when it is necessary during construction. Carry out odour patrol during dredging in the construction phase.	Corner of CBTS/implementation of harbour-front enhancement	CEDD ¹		V			EIAO-TM
S3.8.8	Carry out dredging at the corner of CBTS to remove the sediment and clean the slime attached on the CBTS shoreline seawall. Carry out odour patrol during dredging in the construction phase.	Corner of CBTS & CBTS shoreline seawall/implementation of harbour-front enhancement	CEDD ²		V			EIAO-TM
Operation I				•	•	•	•	
For the Who	ole Project							

 $^{^{1}\,\}mbox{CEDD}$ will identify an implementation agent.

² CEDD will identify an implementation agent.

EIA Ref Environmental Protection Measures / Mitigation Measures		Location / Timing	Implementation	In	nplem Staș	entatio	on	Relevant Legislation and Guidelines
		8	Agent		C	0	Dec	
\$3.10.2	Monthly (from July to September) monitoring of odour impacts, for a period of 5 years, is proposed during the operational phase of the Project to ascertain the effectiveness of the Enhancement Package over time, and to monitor any ongoing odour impacts at the ASRs.	Breakwater)/First 5-year	CEDD ¹			V		EIAO-TM

[•] 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	In	nplem Sta	entati ges*	on	Relevant Legislation
	Zivir omnorum i roccessor rizeusures	Document Timing	Agent	Des	C	0	Dec	and Guidelines
Construction			•					
For the Wh								
S4.9.4	Good Site Practice:	Work Sites / During	Contractor					EIAO-TM, NCO
	Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.	Construction						
	Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program.							
	Mobile plant, if any, shall be sited as far away from NSRs as possible.							
	Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.							
	Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.							
	Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from onsite construction activities.							

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Sta	entati ges*	on	Relevant Legislation
22.1 2.01	220000000000000000000000000000000000000	200mion	Agent	Des	C	0	Dec	and Guidelines
For DP3 – I	Reclamation Works							
S4.8.3 – S4.8.4	Use of quiet powered mechanical equipment for the following task: • Filling behind seawall • Seawall construction	Work Sites / During Construction	Contractor		V			EIAO-TM, NCO
For DP5 -	Wan Chai East Sewage Outfall							
S4.8.3 – S4.8.4	Use of quiet powered mechanical equipment for the following tasks: • Submarine pipelines (marine section) Use of quiet powered mechanical equipment and movable noise barrier for the following tasks: • Installation of a new pipeline (land section)	Work Sites / During Construction	Contractor		√			EIAO-TM, NCO
For DP6 -	Cross-Harbour Water Mains from Wan Chai to Tsim Sha Tsui							
S4.8.3 – S4.8.4	Use of quiet powered mechanical equipment for the following tasks: • Submarine pipelines (marine section) •	Work Sites / During Construction	Contractor		V			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 /	Implementation	In	_	entati ges*	on	Relevant Legislation
Em Rei	Environmental Processor Wedsales / Wingation Wedsales	Timing Agent		Des	С	0	Dec	and Guidelines
Construction	on Phase							
For DP3 -	Reclamation Works, DP5 (Wan Chai East Sewage Outfall), DP6 (Cross-Harbo	our Water Mains	from Wan Chai to T	Tsim Sh	a Tsu	i)		
S5.8	A phased reclamation approach is planned for the WDII. Containment of fill within each of the reclamation phases by seawalls is proposed, with the seawall constructed first (above high water mark) with filling carried out behind the completed seawalls. Any gaps that may need to be provided for marine access will be shielded by silt curtains to control sediment plume dispersion away from the site. Filling for seawall construction should be carried out behind the silt curtain	Work site / During the construction period	Contractor		√ 			EIAO-TM, WPCO
S5.8	 Dredging shall be carried out by closed grab dredger for the following works: Seawall construction in all the reclamation areas; Construction of the CWB Tunnel Construction of the proposed WSD water mains; and Construction of the proposed Wan Chai East sewage outfall pipelines. 	Work site / During the construction period	Contractor		√			EIAO-TM, WPCO
S5.8, Figure 5.3	Dredging for the Wan Chai East sewage outfall pipelines shall not be carried out concurrently with the following activities: • Dredging along the proposed cross-harbour water mains; • Dredging along the seawall in the Wan Chai Reclamation (WCR) zone (area between HKCEC Extension and PCWA).	Work site / During the construction period	Contractor		V			EIAO-TM, WPCO
S5.8	The water body behind the temporary reclamations within the Causeway Bay typhoon shelter shall not be fully enclosed.	Work site / During the construction period	Contractor		V			EIAO-TM, WPCO

EIA Ref	Environmental Prote	ection Measures / N	Aitigatio (1940)	n Measures		Location /	Implementation	In		entati ges*	on	Relevant Legislation
						Timing	Agent	Des	C	О	Dec	and Guidelines
S5.8	As a mitigation measure, to avoid the accumulation of water borne pollutants within the temporary embayment between CRIII and HKCEC1, an impermeable barrier, suspended from a floating boom on the water surface and extending down to the seabed, will be erected by the contractor before the HKCEC1 commences. The barrier will channel the stormwater discharge flows from Culvert L to the outside of the embayment. The contractor will maintain this barrier until the reclamation works in HKCEC2W are carried out and the new Culvert L extension is constructed.				Work site / During the construction period	Contractor		V			EIAO-TM, WPCO	
S5.8, Figure 5.3	The total dredging rates in each of the marine works zones shall not be more than the maximum production rates stated in the table below. These are the production rates without considering the effect of silt curtain.			Work site / During the construction period	Contractor		√			EIAO-TM, WPCO		
			Maxim	ım Dredging Rate	Maximum Dredging	period						
	Reclamati	on Area	m³ per day	m ³ per hour (for 16 hrs per day)	Rate (m³ per week)							
	Dredging along seawall of	or breakwater										
	North Point Shoreline Zon	e (NPR)	6,000	375	42,000							
	Causeway Bay	TBW	1,500	94	10,500							
	Shoreline Zone	TCBR	6,000	375	42,000							
	PCWA Zone		5,000	313	35,000							
	Wan Chai Shoreline Zone		6,000	375	42,000							
	HKCEC Shoreline Zone	HKCEC Stage 1 & 3	1,500	94	10,500							
	(HKCEC)	HKCEC Stage 2	6,000	375	42,000							
	Cross Harbour Water Mai		1,500	94	10,500							
	Note: 1,500 m ³ per seawall of WCR1.	day shall be appli-										
S5.8, Figure 5.3	Dredging along the 1,500m³ per day for proximity of the WSD western seawall (about much as possible from	construction of the intake), followed by high water mark	western y partial) to prot	seawall (wh	ich is in close struction at the	Work site / During the construction period	Contractor		V			EIAO-TM, WPCO

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	Implementation	In		entati ges*	on	Relevant Legislation	
			Timing	Agent	Des	C	О	Dec	and Guidelines
S5.8, Figure 5.3	partially constructed to p dredging activities. For seawalls shall be constru seawater intakes at the inne	Causeway Bay typhoon shelter, seawall shall be rotect the nearby seawater intakes from further example, at TCBR1W, the southern and eastern cted first (above high water mark) so that the er water would be protected from the impacts from tivities along the northern boundary.	Work site / During the construction period	Contractor		V			EIAO-TM, WPCO
S5.8, Figure 5.3		ployed around the closed grab dredgers during wall trench filling in the areas of HKCEC, WCR,	Work site / During the construction period	Contractor		V			EIAO-TM, WPCO
S5.8, Figure 5.3	Silt screens shall be applied as stated below: Interim Construction Stage Scenario 2A in early 2009 with concurrent dredging activities at HKCEC, WCR, TPCWA, TBW, NP and Water Mains Zone Scenario 2B in late 2009/2010 with concurrent dredging activities at Sewage Pipelines Zone and TCBR. Scenario 2C in 2011 with concurrent dredging activities at HKCEC and TCBR.	Location of Applications WSD saltwater intakes at Sai Wan Ho, Quarry Bay, Sheung Wan, Wan Chai, Kowloon South Cooling water intakes for Hong Kong Convention and Exhibition Centre Extension, Hong Kong Convention and Exhibition Centre Phase I, Telecom House / HK Academy for Performing Arts / Shun On Centre, Wan Chai Tower / Revenue Tower / Immigration Tower and Sun Hung Kai Centre WSD saltwater intakes at Sheung Wan, Wan Chai Cooling water intakes for Queensway Government Offices, Excelsior Hotel, World Trade Centre and Windsor House. WSD saltwater intakes at Sheung Wan and Reprovisioned WSD Wan Chai saltwater intake. Cooling water intakes for MTR South, Excelsior Hotel & World Trade Centre and reprovisioned Windsor House.	Work site / During the construction period	Contractor		~			EIAO-TM, WPCO

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	Implementation	In	nplem Sta	entati ges*	on	Relevant Legislation
		Timing	Agent	Des	C	0	Dec	and Guidelines
S5.8	Other mitigation measures include: • mechanical grabs, if used, shall be designed and maintained to avoid spillage and sealed tightly while being lifted. For dredging of any contaminated mud, closed watertight grabs must be used;	Work site / During the construction period	Contractor		V			ProPECC PN 1/94; WPCO (TM-DSS)
	all vessels shall be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;							
	• all hopper barges and dredgers shall be fitted with tight fitting seals to their bottom openings to prevent leakage of material;							
	• construction activities shall not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site or dumping grounds;							
	loading of barges and hoppers shall be controlled to prevent splashing of dredged material into the surrounding water. Barges or hoppers shall not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation; and							
	before commencement of the reclamation works, the holder of Environmental Permit has to submit plans showing the phased construction of the reclamation, design and operation of the silt curtain.							
S5.8	Silt screens are recommended to be deployed at the seawater intakes during the reclamation works period. Installation of silt screens at the seawater intake points may cause a potential for accumulation and trapping of pollutants, floating debris and refuse behind the silt screens and may lead to potential water quality deterioration at the seawater intake points. Major sources of pollutants and floating refuse include the runoff and storm water discharges from the nearby coastal areas. As a mitigation measure to avoid the pollutant and refuse entrapment problems and to ensure that the impact monitoring results are representative, regular maintenance of the silt screens and refuse collection shall be performed at the monitoring stations at regular	Work site / During the construction period	Contractor		V			EIAO-TM, WPCO

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	Implementation	Implementation Stages*				Relevant Legislation
	Ü	Timing	Agent	Des	C	O	Dec	and Guidelines
	intervals on a daily basis. The Contractor shall be responsible for keeping							
	the water behind the silt screen free from floating rubbish and debris during the impact monitoring period.							

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	Implementation	In	ıplem Staş		on	Relevant Legislation
	9	Timing	Agent	Des	C	О	Dec	and Guidelines
S5.8	Dredging of contaminated mud is recommended as a mitigation measures for control of operational odour impact from the Causeway Bay typhoon shelter. In recognition of the potential impacts caused by dredging activities close to the seawater intakes, only 1 small close grab dredger shall be operated within the typhoon shelter (for the dredging to mitigate odour impact) at any time to minimize the potential impact. Double silt curtains shall be deployed to fully enclose the closed grab dredger during the dredging operation. In addition, an impermeable barrier, suspended from a floating boom on the water surface and extended down to the seabed, shall be erected to isolate the adjacent intakes as much as possible from dredging activities. For example, if dredging is to be carried out at the southwest corner of the typhoon shelter, physical barriers shall be erected to west of the cooling water intake for Excelsior Hotel so that the intake would be shielded from most of the SS generated from the dredging operation to the west of the intake. For area in close proximity of the cooling water intake point, the dredging rate shall be reduced as much as practicable. Site audit and water quality monitoring shall be carried out at the seawater intakes during the dredging operations. Daily monitoring of SS at the cooling water intake shall be carried out, and 24 hour monitoring of turbidity at the intakes shall be implemented during the dredging activities. If the monitoring results indicate that the dredging operation has caused significant changes in water quality conditions at the seawater intakes, appropriate actions shall be taken to stop the dredging and mitigation measures such as slowing down the dredging rate shall be implemented.	Causeway Bay typhoon shelter/Imple mentation of harbour-front enhancement.	CEDD ³		√			WPCO

³ CEDD will identify an implementation agent.

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	Implementation	In		entati ges*	on	Relevant Legislation	
		The commencer of the control of the	Timing	Agent	Des	C	0	Dec	and Guidelines
For the Wh	ole I	Project							
S5.8	•	Construction Runoff and Drainage use of sediment traps, wheel washing facilities for vehicles leaving the site, and adequate maintenance of drainage systems to prevent flooding and overflow;	• Work site / During the constructi on period	Contractor		$\sqrt{}$			ProPECC PN 1/94; WPCO (TM-DSS)
	•	Permanent drainage channels shall incorporate sediment basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94;							
	•	a sediment tank constructed from pre-formed individual cells of approximately 6 - 8 m3 capacity can be used for settling ground water prior to disposal;							
	•	oil interceptors shall be provided in the drainage system for the tunnels and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor shall have a bypass to prevent flushing during periods of heavy rain;							
	•	precautions and actions to be taken when a rainstorm is imminent or forecast, and during or after rainstorms. Particular attention shall be paid to the control of any silty surface runoff during storm events;							
	•	on-site drainage system shall be installed prior to the commencement of other construction activities. Sediment traps shall be installed in order to minimise the sediment loading of the effluent prior to discharge;							
	•	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge shall be adequately designed for the controlled release of storm flows. All sediment control measures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage shall be reinstated to its original condition when the construction work is finished or the temporary diversion is no longer required.							
	•	All fuel tanks and store areas shall be provided with locks and be sited							

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	Implementation	In	-	entati ges*	on	Relevant Legislation
		Timing	Agent	Des	C	0	Dec	and Guidelines
	on sealed areas, within bunds of a capacity equal to 110% of the storage capacity.							
	Minimum distances of 100 m shall be maintained between the storm water discharges and the existing or planned WSD flushing water intakes during construction phase.							
S5.8	Sewage from Construction Work Force Construction work force sewage discharges on site shall be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage shall be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets shall be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor shall also be responsible for waste disposal and maintenance practices.	Work site / During the construction period	Contractor		V			ProPECC PN 1/94; WPCO (TM-DSS)
S5.8	Floating Debris and Refuse 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		V			WPCO

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location /	-	In		entati ges*	on	Relevant Legislation and Guidelines
	8	Timing	Agent	Des	C	O	Dec	
S5.8	Storm Water Discharges 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	V	√ ·			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	In	nplem Sta	entati ges*	Relevant Legislation	
Ziri Kei	Environmental Protection Measures / Margarion Measures	Document, Timing	Agent	Des	С	О	Dec	and Guidelines
Construction	on Phase							
For DP3 -	Reclamation Works							
	Marine Sediments	Work site / During the construction period	Contractor		1			ETWB TCW No. 34/2002
S6.7.2	The dredged marine sediments would be loaded onto barges, transported to and disposed of at the designated disposal sites at South of Cheung Chau, East of Ninepin, East of Tung Lung Chau, South of Tsing Yi or East of Sha Chau to be allocated by the MFC depending on their level of contamination or at other disposal sites after consultation with the MFC and EPD. In accordance with the ETWB TCW No. 34/2002, the contaminated material must be dredged and transported with great care. The mitigation measures recommended in Section 5 of the EIA Report shall be incorporated. The dredged contaminated sediment must be effectively isolated from the environment upon final disposal and shall be disposed of at the Type 2 confined marine disposal contaminated mud pit.							

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Sta	entati ges*	on	Relevant Legislation
Lift Ref	Environmental Protection Weasures / Whiteguton Weasures	Docution / Timing	Agent	Des	С	0	Dec	and Guidelines
S6.7.3	Based on the biological screening results, the Category H (>10xLCEL) sediment which failed the biological testing would require Type 3 special disposal. The volume of Category H sediment from the Causeway Bay typhoon shelter which would require special disposal arrangements is estimated to be approximately 0.05 Mm³. A feasible containment method is proposed whereby the dredged sediments are sealed in geosynthetic containers and, at the disposal site, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping, thereby meeting the requirements for fully confined mud disposal.							
S6.7.5	It will be the responsibility of the Contractor to satisfy the appropriate authorities that the contamination levels of the marine sediment to be dredged have been analysed and recorded. According to the ETWB TCW No. 34/2002, this will involve the submission of a formal Sediment Quality Report to the DEP, at least 3 months prior to the dredging contract being tendered							
S6.7.6	During transportation and disposal of the dredged marine sediments requiring Type 1 and Type 2 disposal, the following measures shall be taken to minimise potential impacts on water quality: • Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material. Excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved.							

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Stag	entati ges*	on	Relevant Legislation and Guidelines
-		,	Agent	Des	C	O	Dec	
	 Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by the DEP. Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation. 							
S6.6.12	Floating Refuse During the construction phase, the project proponent's contractor will be responsible for the collection of any refuse within their works area. Floating booms will be provided on the water surface to confine the refuse from the working barges as well as to avoid the accumulation of pollutants within temporary embayment as mentioned in Table 13.3.	Work site / During the construction period	Contractor		√			
For the Who	ole Project		_	•				

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing Implementation		Implementation Stages*			on	Relevant Legislation
	220, 120, 120, 120, 120, 120, 120, 120,		Agent	Des	C	О	Dec	and Guidelines
S6.7.7	 Recommendations for good site practices during the construction activities include: nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; training of site personnel in proper waste management and chemical waste handling procedures; provision of sufficient waste disposal points and regular collection for disposal; appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and a recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites). 	Work site / During the construction period	Contractor		7			Waste Disposal Ordinance (Cap.354)

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Sta		on	Relevant Legislation
LIA KCI	Environmental Frotection Measures / Mitigation Measures	Location / Timing	Agent	Des	C	O	Dec	and Guidelines
S6.7.8	Waste Reduction Measures 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:	Work site / During planning and design stage, and construction stage	Contractor	٧	V			
	• 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;							
	to encourage collection of aluminium cans, PET bottles and paper, separate labelled bins shall be provided to segregate these wastes 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.							
	• prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;							
	• proper storage and site practices to minimise the potential for damage or contamination of construction materials; and							
	plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.							

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Stag		on	Relevant Legislation
	Environmental Protection Freusures / Witigation Freusures	Location, 1mmig	Agent	Des	С	0	Dec	and Guidelines
S6.7.10	General Refuse General refuse shall be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material. A collection area shall be provided where wastes can be stored and loaded prior to removal from site. An enclosed and covered area is recommended to reduce the occurrence of 'wind blow' light material.	Work site / During the construction period	Contractor		V			Public Health and Municipal Services Ordinance (Cap. 132)
S6.7.11	Chemical Wastes After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) shall be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals shall be collected by a licensed collector for disposal at the CWTF or other licensed facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Work site / During the construction period	Contractor		V			Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes
S6.7.12	C&D material shall be sorted on-site into inert C&D material (that is, public fill) and C&D waste. All the suitable inert C&D material shall be broken down to 250 mm in size for reuse as public fill in the WDII reclamation. C&D waste, such as wood, glass, plastic, steel and other metals shall be reused or recycled and, as a last resort, disposed of to landfill. A suitable area shall be designated to facilitate the sorting process and a temporary stockpiling area will be required for the separated materials.	Work site / During the construction period	Contractor		٧			ETWB TCW No. 33/2002, 31/2004, 19/2005

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Stag		on	Relevant Legislation
	DAVIORALIA PROCESSION NECESSION NECE	Bootion, 1mmig	Agent	Des	С	0	Dec	and Guidelines
S6.7.13	In order to monitor the disposal of public fill and C&D waste at public filling facilities and landfills, respectively, and to control fly tipping, a trip-ticket system shall be included as one of the contractual requirements and implemented by the Environmental Team undertaking the environmental monitoring and audit work. An Independent Environment Checker shall be responsible for auditing the results of the system.	Work site / During the construction period	Contractor and Independent Environmental Checker		V			ETWB TCW No. 31/2004
S6.7.14	Bentonite Slurry The disposal of residual used bentonite slurry shall follow the good practice guidelines stated in ProPECC PN 1/94 "Construction Site Drainage" and listed as follows: If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis.	Work site / During the construction period	Contractor		1			ProPECC PN 1/94
	• If the used bentonite slurry is intended to be disposed of through the public drainage system, it shall be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the Technical Memorandum of Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters.							
	If the used bentonite slurry is intended to be disposed to public fill reception facilities, it will be mixed with dry soil on site before disposal.							

^{*} Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

 Table A13.6
 Implementation Schedule for Marine Ecology

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation	In	nplem Sta	entati ges*	on	Relevant Legislation			
Ziri Kei	Environmental Protection Measures / Mitigation Measures	Location / Timing	Agent	Des	C	0	Dec	and Guidelines			
Construction	on Phase										
For the Who	For the Whole Project - Schedule 3 DP										
S.9.7.2	Alternative design of the Trunk Road constructed in tunnel shall be adopted to avoid permanent reclamation in CBTS and ex-PWCA Basin.	-	CEDD/HyD	√				EIAO TM Annex 16 (Section 8.4) & EIAO Guidance Note No. 3/2002.			
For DP3 – I	Reclamation Works										
S.9.7.3	Translocation of those potentially affected coral colonies to the nearby suitable habitats such as Junk Bay is recommended. A detailed translocation plan (including translocation methodology, monitoring of transplanted corals, etc.) should be drafted and approval by AFCD during the detailed design stage of the Project.	Ex-PCWA Basin and along seawall next to a public pier which is about 250 m away from the CBTS	CEDD/HyD	√				EIAO TM Annex 16 (Section 8.4) & EIAO Guidance Note No. 3/2002.			
S.9.7.4	During dredging and filling operations, a number of mitigation measures to control water quality shall be adopted to confine sediment plume within reclamation area and protect marine fauna in proximity to the reclamation. The mitigation measures include the following: • Installation of silt curtains during dredging activities • Use of tightly-closed grab dredger • Reduction of dredging rate • Control of grab descending speed • Construction of leading edges of seawall in the early stages of the reclamation works	Work site / during construction phase	Contractor		٨			EIAO TM Annex 16 (Section 8.4) & EIAO Guidance Note No. 3/2002.			
	Adoption of multiple-phase construction schedule										

EIA Ref	Environmental Protection Measures / Mitigation Measures	onmental Protection Measures / Mitigation Measures Location / Timing Implementation		In	nplem Sta	entati ges*	on	Relevant Legislation
		g	Agent	Des	C	O	Dec	and Guidelines
S.9.7.6	To minimize potential disturbance impacts on the foraging ardeid population in the CBTS, particularly in the area near the A King Shipyard, appropriate mitigation measures shall be adopted particularly during the construction phase. The following measures are recommended:	Work site / during construction phase	Contractor		V			EIAO TM Annex 16 (Section 8.4) & EIAO Guidance Note No. 3/2002.
	Use of Quiet Mechanical Plant during the construction phase shall be adopted wherever possible.							
	 Adoption of multiple-phase construction schedule. General measures to reduce noise generated during the construction phase (see noise impact assessment) shall be effectively implemented. 							
S.9.7.7	Seawalls shall be constructed in advance around the reclamation areas within the area of the CBTS to screen adjacent feeding ground from construction phase activities, reduce noise disturbance to the associated seabirds and also to restrict access to this habitat adjacent to works areas by ship traffic.	Work site / during construction phase	Contractor		V			EIAO TM Annex 16 (Section 8.4) & EIAO Guidance Note No. 3/2002.
S.9.7.8	Loss of artificial seawall habitats shall be reinstated by the construction of about 1 km vertical wave absorbing seawall along the coastlines of the new reclamation around the HKCEC and at North Point. The new seawalls are expected to provide large area of hard substrata for settlement and recruitment of intertidal fauna similar to those previously recorded from existing intertidal habitats.	Work site / during construction phase	Contractor		V			EIAO TM Annex 16 (Section 8.4) & EIAO Guidance Note No. 3/2002.

^{*}Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

 Table A13.7
 Implementation Schedule for Landscape and Visual

EIA Ref	Envir	onmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and Guidelines
				Des	С	О	Dec		
Construction P	hase		<u> </u>	1		I		1	
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	√	V			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	$\sqrt{}$	√			EIAO TM
Table 10.5	CM4	Compensatory tree planting shall be provided to compensate for felled trees.	Work site / During Construction Phase	Contractor	$\sqrt{}$	√			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 DP3 - Rec	lamatio	n Works							
Table 10.5	CM5	Control of night-time lighting.	Work site / During Construction Phase	Contractor		√			EIAO TM
Table 10.5		Erection of decorative screen hoarding compatible with the surrounding setting.	Work site / During Construction Phase	Contractor	√			EIAO TM	
For DP5 - War	ı Chai I	East Sewage Outfall							
Refer to EIA- 058/2001 Table 10.13	CM2	Minimisation of works areas.	Work site / During Construction Phase	Contractor		√			EIAO TM
Refer to EIA- 058/2001 Table 10.13	CM3	Erection of decorative hoardings.	Work site / During Construction Phase	Contractor		√			EIAO TM

EIA Ref	Environmental Protection Measures / Mitigation Measures	nvironmental Protection Measures / Mitigation Measures Location / Timing Implementatio Agent					on	Relevant Legislation and Guidelines
				Des	C	О	Dec	
Refer to EIA- 058/2001 Table 10.13	CM4 Control night-time lighting.	Work site / During Construction Phase	Contractor		√			EIAO TM
Refer to EIA- 058/2001 Table 10.13	CM5 Minimisation of disruption to public by effective programming of the works.	Work site / During Construction Phase	Contractor		1			EIAO TM
	s-Harbour Water Mains from Wan Chai to Tsim Sha Tsui	1						
Refer to EIA- 058/2001 Table 10.13	CM2 Minimisation of works areas.	Work site / During Construction Phase	Contractor		$\sqrt{}$			EIAO TM
Refer to EIA- 058/2001 Table 10.13	CM3 Erection of decorative hoardings.	Work site / During Construction Phase	Contractor		V			EIAO TM
Refer to EIA- 058/2001 Table 10.13	CM4 Control night-time lighting.	Work site / During Construction Phase	Contractor		V			EIAO TM
Refer to EIA- 058/2001 Table 10.13	CM5 Minimisation of disruption to public by effective programming of the works.	Work site / During Construction Phase	Contractor	V			EIAO TM	
Operation Phas	se							
For the Whole	Project - Schedule 3 DP				-			
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	$\sqrt{}$	$\sqrt{}$	V		ETWB TCW 2/2004
Table 10.6, Figure 10.5.1- 10.5.5	OM2 Shrub and Climbing Plants to soften proposed structures.	Work site / During Design Stage and Operation Phases	CEDD/HyD	V V V		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/	V	V	V		ETWB TCW 2/2004

EIA Ref	Enviro	nmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	-			Relevant Legislation and Guidelines		
					Des	C	О	Dec		
Table 10.6, Figure 10.5.1- 10.5.5	OM4	Aesthetic design of proposed waterfront promenade.	Work site / During Design Stage and Operation Phases	CEDD ⁴	V	√	V		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	V	1	√		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	
For DP3 - Recl	For DP3 – Reclamation Works									
Table 10.6, Figure 10.5.1- 10.5.5	OM4	Aesthetic design of proposed waterfront promenade.	Work site / During Design Stage and Operation Phases	CEDD ⁵	√	√	√		ETWB TCW 2/2004	

^{*}Des - Design, C - Construction, O - Operation, and Dec - Decommissioning

⁴ CEDD will identify an implementation agent

⁵ CEDD will identify an implementation agent

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	Start	(min.)	
Meter Reading	Stop	(min.)	
Total Sampling Time (mir	1.)		
Weather Conditions			Sunny / Fine / Cloudy / Rainy
Site Conditions			
Initial Flow	Pi	(mmHg)	
Rate, Qsi	Ti	(°C)	
	Hi	(in.)	
	Qsi	(Std. m ³)	
Final Flow	Pf	(mmHg)	
Rate, Qsf	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	(9	1)	
Final Wt. of Filter Paper (g)			
Measured TSP Level (μg/m³)			
Other Dust Emission Source(s) Observed			
Remarks /Other Observa	tions		
			-

	Name & Designation	<u>Signature</u>	<u>Date</u>
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 Leng	th (min.)		
Noise Meter Model/Identi	fication		
Calibrator Model/Identific	ation		
	L ₉₀ (dB(A))		
Measurement Results	L ₁₀ (dB(A))		
	L _{eq} (dB(A))		
Major Construction Noise	Source(s) During Monitor	ing	
Other Noise Source(s) D	uring Monitoring		
Remarks / Other Observa	ations		
Name	e & Designation	<u>Signature</u>	<u>Date</u>
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 (°C)	
Wind Speed (ms ⁻¹)	

Equipment

Instrument.	Туре	Serial No.	Setting
Sound Level Meter			
Calibration			

Calibration

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

Raw Data

	Traffic data*				N	loise Lev	Average Speed		
Time	Near Side		Far Side		e dB(A)			kph	
	LV	HV	LV	HV	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 B4 Water Quality Monitoring Data Record Sheet

Monitoring Station							
Date							
Weather Condition		Sunny / Fine / Cloudy / Rainy					
Sea Condition		Calm / Modera	ate / Rough				
Tide Mode		High Tide /	Low Tide				
Start Time	(hh:mm)						
Water Depth which sa	mple is collected (m)						
рН							
Temperature	(°C)						
Salinity (ppt)							
Turbidity	(NTU)						
Sample Identification							
Suspended Solids	(mg/l)						
DO	(mg/l)						
DO Saturation (%)							
Remarks / Other Obse	ervations						
	Name & Designation	<u>Signature</u>	<u>Date</u>				
Recorded by:							
Checked by:							
Laboratory Staff:							

Notes:

- 1 The Suspended Solids results are to be entered once they are available from the laboratory.
- 2 *In-situ* measurements shall be deployed at the designated location twice. The difference between the two consecutive measurements shall be within the range of 25%. If the difference is larger than 25%, the measurement shall be carried out again until the two consecutive readings agree to within 25%.

APPENDIX B5 Odour Patrol Record Sheet

	General Information
Patrol Location	
Date	
Weather	
Temperature	
Humidity	
Tidal Condition	

ID	Location	Time	Odo	ur Inte	nsity	Odour Characteristics	Wind Direction	Wind Speed	Remarks
			OI-1	OI-2	OI-3	& Potential Odour Sources	2	Opecu	

Note:

Odour intensity is to be divided into 5 levels which are ranked in the descending order as follows:

- 0 Not detected. No odour perceived or an odour so weak that it cannot be easily characterised or described;
- 1 Slight Identifiable odour, and slight chance to have odour nuisance;
- 2 Moderate Identifiable odour, and moderate chance to have odour nuisance;
- 3 Strong Identifiable, likely to have odour nuisance;
- 4 Extreme Severe odour, and unacceptable odour level.

OI-1, OI-2 & OI-3: Odour intensity detected by panel member 1, 2 & 3

	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 Establishment of Seasonal Action and Limit Levels

Appendix D Establishment of Seasonal Action and Limit Levels – Calculation using the Marine Water Quality Data Obtained at the Closest EPD Routine Monitoring Stations

 According to the location of the EPD routine monitoring stations in the diagram below, the closet monitoring station will be used for comparison purpose.

- Overlaying with Fig. 3.1, the correlation of the baseline monitoring stations and the EPD monitoring stations will be:
 - WSD15 co-relates with VM1;
 - WSD10, WSD 17 co-relates with VM2;
 - WSD9, C8, C9 co-relates with VM4
 - WSD21, C1- C7 co-relates with VM5
 - WSD19 co-relates with VM6;
 - WSD7 co-relates with VM7;
 - WSD20 co-relates with VM8
- The monthly DO, Turbidity and SS patterns derived from the EPD monitoring data for 2006 to 2008 are used to compare the baseline monitoring data collected at the intake points to take account the seasonal fluctuation in the background level. The background conditions are presented in the wet season (Apr-Sep) and dry season (Oct-Mar).
- For the baseline data taken during the dry season, the derivation of the wet season shall be adjusted with dry season Action and Limit Levels multiplied with mean variation percentage of 2006 - 2008 to account for the seasonal fluctuation.

Victoria Harbour VM1 31/2006 1 Middle Water 7.6 3.8 2.4	Water Central Zone	Ctation	Dotoo	Comple No	Donth	Dissolved Ovygon (mg/L)	Turbidity (NITLI)	Supponded Solide (mg/L)
Victoria Harbour VM1 20/2006 1 Mode Water 7.1 8.5 2.7	Water Control Zone	Station	Dates	Sample No	Depth Middle Water	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Suspended Solids (mg/L)
Victoria Hambour VM1 15/2006 1 Mode Water 7.6 9.3 3.3								
Victoria Harbour								
Victoria Finitionar								
Victoria Harbour VM1 16/2006 1 Mode Water 5.3 6.8 5.6 17.6 4.4 10.6 3.5 Victoria Harbour VM1 48/2006 1 Mode Water 5.6 17.6 4.4 Victoria Harbour VM1 48/2006 1 Mode Water 5.6 17.6 4.4 Victoria Harbour VM1 48/2006 1 Mode Water 2.7 17.9 6.3 Victoria Harbour VM1 51/2006 1 Mode Water 2.7 17.9 6.3 Victoria Harbour VM1 51/2006 1 Mode Water 2.7 17.9 6.3 Victoria Harbour VM1 51/2006 1 Mode Water 6.6 13.4 6.8 Victoria Harbour VM2 31/2006 1 Mode Water 6.6 13.4 6.8 Victoria Harbour VM2 31/2006 1 Mode Water 7.2 9.8 3.6 Victoria Harbour VM2 31/2006 1 Mode Water 6.5 12.5 4.4 Victoria Harbour VM2 31/2006 1 Mode Water 6.6 8.8 8.9 3.5 Victoria Harbour VM2 31/2006 1 Mode Water 6.6 8.8 8.9 3.5 Victoria Harbour VM2 31/2006 1 Mode Water 6.0 8.6 13.3 4 Victoria Harbour VM2 31/2006 1 Mode Water 6.0 8.6 13.3 4 Victoria Harbour VM2 31/2006 1 Mode Water 6.0 8.6 13.3 12 Victoria Harbour VM2 48/2006 1 Mode Water 6.5 10.3 3 2 Victoria Harbour VM2 48/2006 1 Mode Water 4.5 4.2 3.3 3 2 Victoria Harbour VM2 48/2006 1 Mode Water 4.5 4.2 3.3 3 2 Victoria Harbour VM2 48/2006 1 Mode Water 4.5 5.8 14.9 5.6 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 2 2 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 2 2 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 2 2 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 2 2 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 2 2 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 2 2 2 Victoria Harbour VM2 48/2006 1 Mode Water 3.6 12.2 3 3 Victoria Harbour VM4 48/2006 1 Mode Water 3.6 12.2 3 3 Victoria Harbour VM4 48/2006 1								
Victoria Flantour								
Victoria Harbour VM1 48/2008 1 Middle Water 2.7 17.9 6.9								
Vectora Harbour VM1 48/2008 1 Mode Water 4.9 13.6 3.6 Vectoria Harbour VM1 2/11/2006 1 Mode Water 4.9 13.6 3.6 Vectoria Harbour VM1 2/11/2006 1 Mode Water 6.6 13.9 4.1 Vectoria Harbour VM1 4/12/2006 1 Mode Water 6.6 13.9 4.1 Vectoria Harbour VM2 3/12/2006 1 Mode Water 6.6 13.9 4.1 Vectoria Harbour VM2 3/12/2006 1 Mode Water 6.6 13.9 4.1 Vectoria Harbour VM2 3/12/2006 1 Mode Water 6.8 6.8 6.8 6.8 3.6 Vectoria Harbour VM2 3/12/2006 1 Mode Water 6.8 6.8 6.9 3.5 Vectoria Harbour VM2 2/12/2006 1 Mode Water 6.8 6.8 6.9 3.5 Vectoria Harbour VM2 3/12/2006 1 Mode Water 6.9 6.8 6.8 6.9 3.5 Vectoria Harbour VM2 1/8/2006 1 Mode Water 6.9 6.8 6.8 6.9 6.8 6.9 6.8 6.9 6.	Victoria Harbour	VM1	4/8/2006	1	Middle Water	5.6	17.6	4.4
Vectoria Harbour VM1 2/11/2006 1 Model Water 6.6 6.8 13.9 4.1		VM1	4/9/2006	1	Middle Water	2.7	17.9	6.9
Vectoria Harbour VM1 2/11/2006 1 Model Water 6.6 6.8 13.9 4.1		VM1	5/10/2006	1	Middle Water	4.9	13.6	3.6
Victoria Harbour VMZ 3/12/006 1 Middle Water 7.2 9.8 3.6 Victoria Harbour VMZ 2/27/006 1 Middle Water 6.8 8.9 3.5 Victoria Harbour VMZ 13/32/006 1 Middle Water 6.9 8.6 8.9 3.5 Victoria Harbour VMZ 20/47/006 1 Middle Water 6.9 8.6 1.8 Victoria Harbour VMZ 18/52/006 1 Middle Water 6.9 8.6 1.8 Victoria Harbour VMZ 18/52/006 1 Middle Water 6.9 8.6 1.8 Victoria Harbour VMZ 18/52/006 1 Middle Water 4.9 4.2 3.9 Victoria Harbour VMZ 3/72/006 1 Middle Water 4.9 4.2 3.5 Victoria Harbour VMZ 3/72/006 1 Middle Water 4.9 4.2 3.5 Victoria Harbour VMZ 4/92/006 1 Middle Water 4.3 4.2 3.5 Victoria Harbour VMZ 4/92/006 1 Middle Water 4.3 4.2 3.5 Victoria Harbour VMZ 4/92/006 1 Middle Water 4.3 4.2 3.5 Victoria Harbour VMZ 4/12/2006 1 Middle Water 4.3 4.2 3.5 Victoria Harbour VMZ 4/12/2006 1 Middle Water 6.5 1.1 4.8 4.7 Victoria Harbour VMZ 4/12/2006 1 Middle Water 6.5 1.1 4.8 4.7 Victoria Harbour VMZ 4/12/2006 1 Middle Water 6.8 1.2 2.5 Victoria Harbour VMZ 4/12/2006 1 Middle Water 6.8 6.8 6.4 2.9 Victoria Harbour VMM 2/12/2006 1 Middle Water 6.7 1.2 6 4.4 Victoria Harbour VMM 2/12/2006 1 Middle Water 6.8 6.8 6.4 2.9 Victoria Harbour VMM 2/12/2006 1 Middle Water 6.8 6.8 6.4 2.9 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.8 6.8 6.4 2.9 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.8 6.8 6.4 2.9 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.8 6.8 6.4 2.9 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.7 1.2 6 4.4 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.7 6.5 1.7 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.7 6.5 1.7 0.3 Victoria Harbour VMM 3/12/2006 1 Middle Water 6.7		VM1		1		6.6	13.9	4.1
Vectora Harbour VMZ 2/2/2006 1 Model Water 6.5 12.5 6.4 4 Vectora Harbour VMZ 20/4/2006 1 Model Water 6.8 8.9 3.5 Vectora Harbour VMZ 20/4/2006 1 Model Water 6.9 8.6 1.8 Vectora Harbour VMZ 20/4/2006 1 Model Water 6.5 5.5 10.3 12 Vectora Harbour VMZ 1/6/2006 1 Model Water 6.5 6.5 10.3 12 Vectora Harbour VMZ 1/6/2006 1 Model Water 6.9 4.2 3.9 Vectora Harbour VMZ 4/6/2006 1 Model Water 6.2 8.5 0.8 Vectora Harbour VMZ 4/6/2006 1 Model Water 5.8 14.4 9 8.6 0.8 Vectora Harbour VMZ 4/6/2006 1 Model Water 5.8 14.4 9 8.6 0.8 Vectora Harbour VMZ 4/6/2006 1 Model Water 5.8 14.4 9 8.6 Vectora Harbour VMZ 4/6/2006 1 Model Water 5.8 14.4 9 8.6 Vectora Harbour VMZ 4/7/2006 1 Model Water 6.1 14.8 4.7 Vectora Harbour VMZ 4/7/2006 1 Model Water 6.1 14.8 4.7 Vectora Harbour VMZ 2/1/2006 1 Model Water 6.1 14.8 4.7 Vectora Harbour VMZ 2/1/2006 1 Model Water 6.1 14.8 4.7 Vectora Harbour VMZ 2/2/2006 1 Model Water 6.8 0.8 0.1 Vectora Harbour VMZ 2/2/2006 1 Model Water 6.8 8.4 2.9 Vectora Harbour VMA 3/1/2006 1 Model Water 6.8 8.4 2.9 Vectora Harbour VMA 3/1/2006 1 Model Water 6.8 8.4 2.9 Vectora Harbour VMA 3/1/2006 1 Model Water 6.8 8.4 2.9 Vectora Harbour VMA 3/1/2006 1 Model Water 6.8 8.4 2.9 Vectora Harbour VMA 3/1/2006 1 Model Water 6.8 8.4 2.9 Vectora Harbour VMA 4/1/2006 1 Model Water 6.9 4/1 4	Victoria Harbour	VM1	4/12/2006	1	Middle Water	6.6	13.4	6.8
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Victoria Harbour VM6 13/3/2006 1 Middle Water 6.4 9.6 3.2 Victoria Harbour VM6 20/4/2006 1 Middle Water 5.9 10.1 3.5 Victoria Harbour VM6 18/5/2006 1 Middle Water 4.8 7.7 9.7 Victoria Harbour VM6 1/6/2006 1 Middle Water 5.1 5 4.1 Victoria Harbour VM6 3/7/2006 1 Middle Water 6.2 8.9 1.6 Victoria Harbour VM6 4/8/2006 1 Middle Water 5.5 13.2 4.4 Victoria Harbour VM6 4/9/2006 1 Middle Water 4.6 12.6 2 Victoria Harbour VM6 5/10/2006 1 Middle Water 5.7 13.1 3.2 Victoria Harbour VM6 4/9/2006 1 Middle Water 5.5 13.1 4.4 Victoria Harbour VM6 4/1/2006 1 Middle Wat	Victoria Harbour	VM6	3/1/2006	1	Middle Water	6.8	10.5	4.3
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Victoria Harbour VM7 6/12/2006 1 Middle Water 5.6 12.3 4 Victoria Harbour VM8 11/1/2006 1 Middle Water 7.5 9.6 3.2 Victoria Harbour VM8 16/2/2006 1 Middle Water 7.7 11.2 17								
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Victoria Harbour VM8 16/2/2006 1 Middle Water 7.7 11.2 17								
I VICLOHA MARDOUR VINIX TIO/3/2006 TILINIAGIE WATER 6.9 I 9.8 I 4.6	Victoria Harbour	VM8	16/3/2006	1	Middle Water	6.9	9.8	4.6
Victoria Harbour VM8 21/4/2006 1 Middle Water 7.5 10.6 4.8								

Water Central Zone	Ctation	Dotoo	Comple No	Donth	Dissolved Ovugen (mg/L)	Turbidity (NTII)	Supponded Solide (mg/L)
Water Control Zone Victoria Harbour	Station VM8	Dates 26/5/2006	Sample No	Depth Middle Water	Dissolved Oxygen (mg/L) 5.3	Turbidity (NTU) 5.2	Suspended Solids (mg/L) 18
Victoria Harbour	VM8	12/6/2006	1	Middle Water	4.9	6.2	1.3
Victoria Harbour	VM8	6/7/2006	1	Middle Water	7.4	8.8	2
Victoria Harbour	VM8	11/8/2006	1	Middle Water	5	12	2
Victoria Harbour	VM8	6/9/2006	1	Middle Water	4.4	11.8	2.1
Victoria Harbour	VM8	12/10/2006	1	Middle Water	5.3	18.8	7.5
Victoria Harbour	VM8	3/11/2006	1	Middle Water	5.5	14.5	5.3
Victoria Harbour	VM8	6/12/2006	1	Middle Water	6.2	17.5	9.2
Victoria Harbour	VM1	15/1/2007	1	Middle Water	7.7	10.5	3.3
Victoria Harbour	VM1	1/2/2007	1	Middle Water	7.6	8.4	2
Victoria Harbour	VM1	7/3/2007	1	Middle Water	6.6	10.3	2
Victoria Harbour	VM1	12/4/2007	1	Middle Water	6	9.5	3.4
Victoria Harbour	VM1	3/5/2007	1	Middle Water	5.1	9.5	4.1
	VM1				4.2	12.9	5.6
Victoria Harbour		22/6/2007	1	Middle Water			
Victoria Harbour	VM1	23/7/2007	1	Middle Water	3.7	35	4.4
Victoria Harbour	VM1	23/8/2007	1	Middle Water	2.9	12.1	5.4
Victoria Harbour	VM1	17/9/2007	1	Middle Water	4.5	14.8	8.5
Victoria Harbour	VM1	10/10/2007	1	Middle Water	4.9	10.8	4
Victoria Harbour	VM1	8/11/2007	1	Middle Water	6	4.2	5.8
Victoria Harbour	VM1	4/12/2007	1	Middle Water	6	7.5	1.6
Victoria Harbour	VM1	3/1/2008	1	Middle Water	6.9	6.6	1.6
Victoria Harbour	VM1	1/2/2008	1	Middle Water	7.2	6.7	1.1
Victoria Harbour	VM1	28/3/2008	1	Middle Water	6.6	10.5	5.7
Victoria Harbour	VM1	23/4/2008	1	Middle Water	6.3	14.4	12
Victoria Harbour	VM1	19/5/2008	1	Middle Water	5.5	7.9	6.6
Victoria Harbour	VM1	11/6/2008	1	Middle Water	4.5	9.1	4.9
Victoria Harbour	VM1	2/7/2008	1	Middle Water	3.7	12.9	3.8
Victoria Harbour	VM1	4/8/2008	1	Middle Water	4.8	9.3	5.4
Victoria Harbour	VM1	19/9/2008	1	Middle Water	2.8	12.3	9.2
Victoria Harbour	VM1	8/10/2008	1	Middle Water	4.5	3.8	6.5
Victoria Harbour	VM1	5/11/2008	1	Middle Water	5.4	3.7	5
Victoria Harbour	VM1	10/12/2008	1	Middle Water	6.1	2.1	3.6
Victoria Harbour	VM2	15/1/2007	1	Middle Water	7.6	10.4	2.6
Victoria Harbour	VM2	1/2/2007	1	Middle Water	7.7	8.4	2
Victoria Harbour	VM2	7/3/2007	1	Middle Water	6.3	11.3	3.3
Victoria Harbour	VM2	12/4/2007	1	Middle Water	5.9	9.1	2.8
Victoria Harbour	VM2	3/5/2007	1	Middle Water	4.7	9.5	3.7
Victoria Harbour	VM2	22/6/2007	1	Middle Water	6.5	11.8	3
Victoria Harbour	VM2	23/7/2007	1	Middle Water	8	24.9	5.2
Victoria Harbour	VM2	23/8/2007	1	Middle Water	3.7	9.4	2.9
Victoria Harbour	VM2	17/9/2007	1	Middle Water	4.5	14.6	5.8
Victoria Harbour	VM2	10/10/2007	1	Middle Water	4.1	10.3	4
Victoria Harbour	VM2	8/11/2007	1	Middle Water	5.7	4.3	4.4
Victoria Harbour	VM2	4/12/2007	1	Middle Water	5.8	7.2	1.8
Victoria Harbour	VM2	3/1/2008	1	Middle Water	6.6	6.5	1.6
Victoria Harbour	VM2	1/2/2008	1	Middle Water	7.1	7	1.6
Victoria Harbour	VM2	28/3/2008	1	Middle Water	6.1	8.9	2.9
Victoria Harbour	VM2	23/4/2008	1	Middle Water	6.1	10.4	4.8
Victoria Harbour	VM2	19/5/2008	1	Middle Water	4.9	6.5	3.8
Victoria Harbour	VM2	11/6/2008	1	Middle Water	5.6	7.6	3.8
Victoria Harbour	VM2	2/7/2008	1	Middle Water	3	11.2	3.6
Victoria Harbour	VM2	4/8/2008	1	Middle Water	6.9	8.1	4.2
Victoria Harbour	VM2	19/9/2008	1	Middle Water	4	8.2	4
Victoria Harbour	VM2	8/10/2008	1	Middle Water	4.3	4.8	4.8
Victoria Harbour	VM2	5/11/2008	1	Middle Water	4.9	4.8	9.2
Victoria Harbour	VM2	10/12/2008	1	Middle Water	5.6	2.5	2.6
Victoria Harbour	VM4	15/1/2007	1	Middle Water	7.3	10.8	2.8
Victoria Harbour	VM4	1/2/2007	1	Middle Water	6.9	9.2	2.3
Victoria Harbour	VM4	7/3/2007	1	Middle Water	5.7	11.2	3.5
Victoria Harbour	VM4	12/4/2007	1	Middle Water	5.6	9.4	2.8
Victoria Harbour	VM4	3/5/2007	1	Middle Water	4.5	9.3	4.6
Victoria Harbour	VM4	22/6/2007	1	Middle Water	5.3	11.8	3.5
Victoria Harbour	VM4	23/7/2007	1	Middle Water	8	21	5.6
Victoria Harbour	VM4	23/8/2007	1	Middle Water	4.6	9.6	2.7
Victoria Harbour	VM4	17/9/2007	1	Middle Water	4.3	14.2	5.9
Victoria Harbour	VM4	10/10/2007	1	Middle Water	4.1	10.6	4.8
Victoria Harbour	VM4	8/11/2007	1	Middle Water	5.6	4.1	3.8
Victoria Harbour	VM4	4/12/2007	1	Middle Water	5.4	7.1	1.7
Victoria Harbour	VM4	3/1/2008	1	Middle Water	6.1	7.4	2.8
Victoria Harbour	VM4	1/2/2008	1	Middle Water	7.1	7.5	2.7
Victoria Harbour	VM4	28/3/2008	1	Middle Water	5.9	9.7	3.4
Victoria Harbour	VM4	23/4/2008	1	Middle Water	5.8	11.9	7.8
Victoria Harbour	VM4	19/5/2008	1	Middle Water	4.7	8.4	11
Victoria Harbour	VM4	11/6/2008	1	Middle Water	5.9	8.2	3.1
Victoria Harbour	VM4	2/7/2008	1	Middle Water	4.2	11	3.5
Victoria Harbour	VM4	4/8/2008	1	Middle Water	7	8.4	4.6
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Water Oanted 7	I 04-4:	Datas	OI- N-	Danath	Discolused Occurrent (see all)	Touch table (AITLI)	Overs and ad Oalida (as all)
Water Control Zone	Station	Dates	Sample No	Depth	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Suspended Solids (mg/L)
Victoria Harbour	VM4	19/9/2008	1	Middle Water	2.8	9.4	5.3
Victoria Harbour	VM4	8/10/2008	1	Middle Water	4.4	4.2	4.7
Victoria Harbour	VM4	5/11/2008	1	Middle Water	4.7	5.9	7.7
Victoria Harbour	VM4	10/12/2008	1	Middle Water	5.3	2.5	2.9
Victoria Harbour	VM5	15/1/2007	1	Middle Water	6.6	10.3	1.7
Victoria Harbour	VM5	1/2/2007	1	Middle Water	6.9	8.9 10.2	3.2
Victoria Harbour	VM5	7/3/2007	1	Middle Water	5.6		2.8
Victoria Harbour	VM5	12/4/2007	1	Middle Water	5	9.3	3.1
Victoria Harbour	VM5	3/5/2007	1	Middle Water	4.1	10.1	5.3
Victoria Harbour	VM5	22/6/2007	1	Middle Water	5.1	12	3.9
Victoria Harbour	VM5	23/7/2007	1	Middle Water	6.1	24.6	6.2
Victoria Harbour	VM5	23/8/2007	11	Middle Water	4.9	9.5	2.8
Victoria Harbour	VM5	17/9/2007	1	Middle Water	3.9	12.1	3.1
Victoria Harbour	VM5	10/10/2007	1	Middle Water	3.9	13.1	8
Victoria Harbour	VM5	8/11/2007	1	Middle Water	5.3	4.1	4.2
Victoria Harbour	VM5	4/12/2007	1	Middle Water	4.2	8	1.7
Victoria Harbour	VM5	3/1/2008	1	Middle Water	5.7	6.8	2.8
Victoria Harbour	VM5	1/2/2008	1	Middle Water	6.8	7.2	2.4
Victoria Harbour	VM5	28/3/2008	1	Middle Water	5.2	9.2	2.7
Victoria Harbour	VM5	23/4/2008	1	Middle Water	5.2	10.4	5
Victoria Harbour	VM5	19/5/2008	1	Middle Water	5.1	7.9	5.8
Victoria Harbour	VM5	11/6/2008	1	Middle Water	5.2	8.2	4.9
Victoria Harbour	VM5	2/7/2008	1	Middle Water	5.1	10	2.4
Victoria Harbour	VM5	4/8/2008	1	Middle Water	6	8.4	5.3
Victoria Harbour	VM5	19/9/2008	1	Middle Water	3.1	12.1	10
Victoria Harbour	VM5	8/10/2008	1	Middle Water	4.4	3.8	4.7
Victoria Harbour	VM5	5/11/2008	1	Middle Water	4.7	5.2	6.6
Victoria Harbour	VM5	10/12/2008	1	Middle Water	5.6	3	4
Victoria Harbour	VM6	15/1/2007	1	Middle Water	7.3	10.3	2.1
Victoria Harbour	VM6	1/2/2007	1	Middle Water	6.8	9.8	4.4
Victoria Harbour	VM6	7/3/2007	1	Middle Water	5.2	10.1	2.4
Victoria Harbour	VM6	12/4/2007	1	Middle Water	5	9.5	3.8
Victoria Harbour	VM6	3/5/2007	1	Middle Water	4.3	10.1	4.2
Victoria Harbour	VM6	22/6/2007	1	Middle Water	5.6	12.6	2.5
Victoria Harbour	VM6	23/7/2007	1	Middle Water	3.2	18.4	3.9
	VM6						3.9 4
Victoria Harbour		23/8/2007	1	Middle Water	3.9	11.4	4
Victoria Harbour	VM6	17/9/2007	1	Middle Water	3.7	12.4	
Victoria Harbour	VM6	10/10/2007	1	Middle Water	4.4	13.4	9.5
Victoria Harbour	VM6	8/11/2007	1	Middle Water	5	4.1	4.8
Victoria Harbour	VM6	4/12/2007	1	Middle Water	4.7	7.5	2.5
Victoria Harbour	VM6	3/1/2008	1	Middle Water	5.6	7	2
Victoria Harbour	VM6	1/2/2008	11	Middle Water	6.6	7.4	3.1
Victoria Harbour	VM6	28/3/2008	1	Middle Water	5.3	9.2	2.4
Victoria Harbour	VM6	23/4/2008	11	Middle Water	5.3	11.4	7
Victoria Harbour	VM6	19/5/2008	1	Middle Water	5.1	7.1	6
Victoria Harbour	VM6	11/6/2008	11	Middle Water	5	9.7	3.5
Victoria Harbour	VM6	2/7/2008	1	Middle Water	4.6	9.9	4.4
Victoria Harbour	VM6	4/8/2008	1	Middle Water	7.4	7.7	4.2
Victoria Harbour	VM6	19/9/2008	1	Middle Water	2.8	10.1	7.4
Victoria Harbour	VM6	8/10/2008	1	Middle Water	4.7	4	14
Victoria Harbour	VM6	5/11/2008	1	Middle Water	4.7	4.6	6.4
Victoria Harbour	VM6	10/12/2008	1	Middle Water	5.6	3.4	5.3
Victoria Harbour	VM7	3/1/2007	1	Middle Water	5.7	12.2	2.4
Victoria Harbour	VM7	6/2/2007	1	Middle Water	7	10.7	5.3
Victoria Harbour	VM7	9/3/2007	1	Middle Water	5.2	10.2	3.2
Victoria Harbour	VM7	13/4/2007	1	Middle Water	4.9	9.3	3.6
Victoria Harbour	VM7	7/5/2007	1	Middle Water	4.9	8.8	1.3
Victoria Harbour	VM7	25/6/2007	1	Middle Water	5.5	9.2	1.3
Victoria Harbour	VM7	18/7/2007	1	Middle Water	5.3	11.4	3
Victoria Harbour	VM7	20/8/2007	1	Middle Water	4.7	12.5	4
Victoria Harbour	VM7	24/9/2007	1	Middle Water	4.7	15.5	10
Victoria Harbour	VM7	11/10/2007	1	Middle Water	3.9	11.2	6
Victoria Harbour	VM7	15/11/2007	1	Middle Water	5.1	4.2	4.6
Victoria Harbour	VM7	11/12/2007	1	Middle Water	5.1	8.6	3.4
Victoria Harbour	VM7	4/1/2008	1	Middle Water	5.6	8.1	4.2
Victoria Harbour	VM7	11/2/2008	1	Middle Water	6.3	8.7	4.6
Victoria Harbour	VM7	5/3/2008	1	Middle Water	7.8	8	2.2
Victoria Harbour	VM7	2/4/2008	1	Middle Water	6.1	10.3	5
Victoria Harbour	VM7	14/5/2008	1	Middle Water	5.5	8	5.9
Victoria Harbour	VM7	2/6/2008	1	Middle Water	4.4	8.1	3.4
Victoria Harbour	VM7	7/7/2008	1	Middle Water	5.1	11.6	2.6
Victoria Harbour	VM7	25/8/2008	1	Middle Water	5.2	7.3	2.9
Victoria Harbour	VM7	22/9/2008	1	Middle Water	3.1	7.7	4.1
Victoria Harbour	VM7	9/10/2008	1	Middle Water	5.3	4.3	5.6
Victoria Harbour	VM7	20/11/2008	1	Middle Water	5.3	4.7	6.5
Victoria Harbour	VM7	6/12/2008	1	Middle Water	6.1	9.8	4.3
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EPD Marine Water Monitoring Data at Victoria Harbour (2006-2008)

Water Control Zone	Station	Dates	Sample No	Depth	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Suspended Solids (mg/L)
Victoria Harbour	VM8	3/1/2007	1	Middle Water	5.6	13.5	5
Victoria Harbour	VM8	6/2/2007	1	Middle Water	8.6	11.8	7
Victoria Harbour	VM8	9/3/2007	1	Middle Water	6.4	13.1	7.8
Victoria Harbour	VM8	13/4/2007	1	Middle Water	5.5	9.9	4.5
Victoria Harbour	VM8	7/5/2007	1	Middle Water	5.8	9.8	3.6
Victoria Harbour	VM8	25/6/2007	1	Middle Water	5.2	9.5	2.2
Victoria Harbour	VM8	18/7/2007	1	Middle Water	5	33.9	3.4
Victoria Harbour	VM8	20/8/2007	1	Middle Water	4.4	13	4
Victoria Harbour	VM8	24/9/2007	1	Middle Water	5	14.5	6.6
Victoria Harbour	VM8	11/10/2007	1	Middle Water	4.5	12	6.5
Victoria Harbour	VM8	15/11/2007	1	Middle Water	5.6	4.1	7.6
Victoria Harbour	VM8	11/12/2007	1	Middle Water	5.1	8.7	3.7
Victoria Harbour	VM8	4/1/2008	1	Middle Water	6.2	8.1	3.4
Victoria Harbour	VM8	11/2/2008	1	Middle Water	7.4	12.1	6.6
Victoria Harbour	VM8	5/3/2008	1	Middle Water	7.6	8.8	3
Victoria Harbour	VM8	2/4/2008	1	Middle Water	6.6	13.3	7.4
Victoria Harbour	VM8	14/5/2008	1	Middle Water	5.5	8.4	6.3
Victoria Harbour	VM8	2/6/2008	1	Middle Water	5.1	7.3	3
Victoria Harbour	VM8	7/7/2008	1	Middle Water	5.1	12.2	2.4
Victoria Harbour	VM8	25/8/2008	1	Middle Water	5.1	7.2	3.2
Victoria Harbour	VM8	22/9/2008	1	Middle Water	4	7.3	3.1
Victoria Harbour	VM8	9/10/2008	1	Middle Water	5.3	3.9	4.3
Victoria Harbour	VM8	20/11/2008	1	Middle Water	5.8	4.5	5.4
Victoria Harbour	VM8	6/12/2008	1	Middle Water	6.4	10.3	6.3

EPD Marine Water Monitoring Data (2006-2008) - DO Variation Between Dry and Wet Seasons

Station	DO (mg/L)	Dry season 2006	Wet season 2006	Variation in	Dry season	Wet season 2007	Variation in	Dry season 2008	Wet season 2008	Varia-tion in	Mean
Station				avg. DO	2007		avg. DO			avg. DO	Variation %
	Avg.	6.60	5.17	-21.7%	6.47	4.40	-32.0%	6.12	4.60	-24.8%	-26.2%
VM1 (WSD15)	Min.	4.90	2.70	-	4.90	2.90	-	4.50	2.80	-	-
	Max.	7.60	7.60	-	7.70	6.00	-	7.20	6.30	-	-
	Avg.	6.25	5.32	-14.9%	6.20	5.55	-10.5%	5.77	5.08	-11.8%	-12.4%
VM2 (WSD10, WSD17)	Min.	4.30	3.60	-	4.10	3.70	-	4.30	3.00	-	-
	Max.	7.20	6.90	=	7.70	8.00	•	7.10	6.90	-	Ī
	Avg.	6.15	5.47	-11.1%	5.83	5.38	-7.7%	5.58	5.07	-9.3%	-9.4%
VM4 (WSD9, C8, C9)	Min.	4.10	4.60	=	4.10	4.30	-	4.40	2.80	-	-
	Max.	7.30	6.80	-	7.30	8.00	-	7.10	7.00	-	-
	Avg.	5.92	5.15	-13.0%	5.42	4.85	-10.5%	5.40	4.95	-8.3%	-10.6%
VM5 (WSD21, C1-C7)	Min.	4.30	4.80	-	3.90	3.90	-	4.40	3.10	-	-
	Max.	7.00	5.60	-	6.90	6.10	-	6.80	6.00	-	-
	Avg.	5.90	5.35	-9.3%	5.57	4.28	-23.1%	5.42	5.03	-7.1%	-13.2%
VM6 (WSD19)	Min.	4.40	4.60	_	4.40	3.20	_	4.70	2.80	_	_
	Max.	6.80	6.20	-	7.30	5.60	-	6.60	7.40	-	-
	Avg.	5.82	5.73	-1.4%	5.33	5.00	-6.2%	6.07	4.90	-19.2%	-9.0%
VM7 (WSD7)	Min.	4.10	4.40	_	3.90	4.70	_	5.30	3.10	_	_
	Max.	6.90	7.70	_	7.00	5.50	_	7.80	6.10	_	_
	Avg.	6.52	5.75	-11.8%	5.97	5.15	-13.7%	6.45	5.23	-18.9%	-14.8%
VM8 (WSD20)	Min.	5.30	4.40	-11.070	4.50	4.40	-13.7 /0	5.30	4.00		-14.070
- (110 (110)										-	
	Max.	7.70	7.50	-	8.60	5.80	-	7.60	6.60	-	-

EPD Marine Water Monitoring Data (2006-2008) - Turbidity Variation Between Dry and Wet Seasons

Station	Turb (NTU)	Dry season 2006	Wet season 2006	Varia-tion in avg. Tur	Dry season 2007	Wet season 2007	Varia-tion in avg. Tur	Dry season 2008	Wet season 2008	Varia-tion in avg. Tur	Mean Variation %
	Avg.	12.02	12.55	4.4%	8.62	15.63	81.4%	5.57	10.98	97.3%	61.1%
VM1 (WSD15)	Min.	8.50	6.80	-	4.20	9.50	-	2.10	7.90	-	-
	Max.	13.90	17.90	-	10.80	35.00	-	10.50	14.40	-	-
	Avg.	11.88	9.78	-17.7%	8.65	13.22	52.8%	5.75	8.67	50.7%	28.6%
VM2 (WSD10, WSD17)	Min.	8.90	4.20	-	4.30	9.10	-	2.50	6.50	-	-
	Max.	14.80	14.90	-	11.30	24.90	-	8.90	11.20	-	-
	Avg.	12.73	9.67	-24.1%	8.83	12.55	42.1%	6.20	9.55	54.0%	24.0%
VM4 (WSD9, C8, C9)	Min.	8.40	4.80	-	4.10	9.30	-	2.50	8.20	-	-
	Max.	18.10	12.60	-	11.20	21.00	-	9.70	11.90	-	-
	Avg.	12.98	9.85	-24.1%	9.10	12.93	42.1%	5.87	9.50	61.9%	26.6%
VM5 (WSD21, C1-C7)	Min.	9.30	4.90	-	4.10	9.30	-	3.00	7.90	-	-
	Max.	17.50	13.40	-	13.10	24.60	-	9.20	12.10	-	-
	Avg.	12.38	9.58	-22.6%	9.20	12.40	34.8%	5.93	9.32	57.0%	23.1%
VM6 (WSD19)	Min.	9.60	5.00	-	4.10	9.50	-	3.40	7.10	-	-
	Max.	14.10	13.20	-	13.40	18.40	-	9.20	11.40	-	-
	Avg.	13.10	9.23	-29.5%	9.52	11.12	16.8%	7.27	8.83	21.6%	3.0%
VM7 (WSD7)	Min.	9.60	5.20	-	4.20	8.80		4.30	7.30	-	-
	Max.	20.40	12.70	-	12.20	15.50	-	9.80	11.60	-	-
	Avg.	13.57	9.10	-32.9%	10.53	15.10	43.4%	7.95	9.28	16.8%	9.1%
VM8 (WSD20)	Min.	9.60	5.20	-	4.10	9.50	-	3.90	7.20	-	-
	Max.	18.80	12.00	-	13.50	33.90	-	12.10	13.30	-	1

EPD Marine Water Monitoring Data (2006-2008) - SS Variation Between Dry and Wet Seasons

0	SS (mg/L)	Dry scason	Wet season	Varia-tion in	Dry season	Wet season	Varia-tion in	,	Wet season	Varia-tion in	Mean
Station		2006	2006	avg. SS	2007	2007	avg. SS	2008	2008	avg. SS	Variation %
	Avg.	3.63	7.12	95.9%	3.12	5.23	67.9%	3.92	6.98	78.3%	80.7%
VM1 (WSD15)	Min.	2.20	3.30	-	1.60	3.40	-	1.10	3.80	-	-
	Max.	6.80	19.00	-	5.80	8.50	-	6.50	12.00	-	-
	Avg.	3.70	4.35	17.6%	3.02	3.90	29.3%	3.78	4.03	6.6%	17.8%
VM2 (WSD10, WSD17)	Min.	2.50	0.80	-	1.80	2.80	-	1.60	3.60	-	-
	Max.	4.70	12.00	-	4.40	5.80	-	9.20	4.80	-	-
	Avg.	4.63	4.38	-5.4%	3.15	4.18	32.8%	4.03	5.88	45.9%	24.4%
VM4 (WSD9, C8, C9)	Min.	2.90	1.70	-	1.70	2.70	-	2.70	3.10	-	-
	Max.	7.40	12.00	-	4.80	5.90	-	7.70	11.00	-	-
	Avg.	4.10	4.57	11.4%	3.60	4.07	13.0%	3.87	5.57	44.0%	22.8%
VM5 (WSD21, C1-C7)	Min.	2.70	3.00	-	1.70	2.80	-	2.40	2.40	-	-
	Max.	5.60	9.60	_	8.00	6.20	-	6.60	10.00	-	-
	Avg.	4.52	4.22	-6.6%	4.28	3.73	-12.8%	5.53	5.42	-2.1%	-7.2%
VM6 (WSD19)	Min.	3.20	1.60	-	2.10	2.50	-	2.00	3.50	-	-
	Max.	7.00	9.70	-	9.50	4.20	-	14.00	7.40	-	-
	Avg.	4.80	5.53	15.3%	4.15	3.87	-6.8%	4.57	3.98	-12.8%	-1.4%
VM7 (WSD7)	Min.	2.50	1.40	_	2.40	1.30	-	2.20	2.60	_	-
	Max.	6.80	20.00	-	6.00	10.00	_	6.50	5.90	-	-
	Avg.	7.80	5.03	-35.5%	6.27	4.05	-35.4%	4.83	4.23	-12.4%	-27.8%
VM8 (WSD20)	Min.	3.20	1.30	-	3.70	2.20	-	3.00	2.40	-	-
	Max.	17.00	18.00	_	7.80	6.60	_	6.60	7.40	_	

Mid-flood	WSD7			WSD9			WSD10			WSD15			WSD17		
Date	Value	Value	Average												
21-Oct-09	10.2	9.3	9.75	4.6	4.6	4.60	5.0	4.3	4.65	5.7	5.2	5.45	6.2	6.4	6.30
23-Oct-09	4.9	5.8	5.35	3.4	4.1	3.75	3.1	3.2	3.15	6.3	6.4	6.35	5.0	5.5	5.25
27-Oct-09	7.6	7.4	7.50	4.0	4.2	4.10	3.3	3.2	3.25	6.3	5.7	6.00	6.6	6.7	6.65
29-Oct-09	8.0	8.0	8.00	3.8	3.8	3.80	5.0	5.0	5.00	3.0	3.0	3.00	3.6	3.6	3.60
31-Oct-09	6.3	5.4	5.85	2.2	2.0	2.10	4.9	6.1	5.50	5.6	4.2	4.90	5.9	5.9	5.90
2-Nov-09	5.8	5.0	5.40	3.7	3.8	3.75	3.3	2.9	3.10	5.0	4.8	4.90	4.9	4.8	4.85
4-Nov-09	7.1	6.8	6.95	3.8	3.7	3.75	4.7	4.5	4.60	5.1	5.5	5.30	4.8	4.6	4.70
6-Nov-09	8.4	8.1	8.25	3.7	3.6	3.65	3.0	3.0	3.00	3.5	3.4	3.45	4.1	4.5	4.30
10-Nov-09	6.3	6.0	6.15	3.7	3.4	3.55	3.6	3.9	3.75	2.9	2.6	2.75	5.8	6.2	6.00
12-Nov-09	9.8	9.2	9.50	4.4	4.3	4.35	7.1	6.5	6.80	5.6	5.5	5.55	6.0	6.2	6.10
14-Nov-09	1.9	1.8	1.85	2.1	2.4	2.25	4.9	5.1	5.00	2.3	2.2	2.25	6.6	6.1	6.35
16-Nov-09	1.9	1.8	1.85	2.3	2.3	2.30	2.6	2.7	2.65	2.4	2.3	2.35	2.4	2.4	2.40

Mid-ebb	WSD7			WSD9			WSD10			WSD15			WSD17		
Date	Value	Value	Average												
21-Oct-09	5.5	5.5	5.50	6.3	6.9	6.60	5.2	4.8	5.00	7.3	7.5	7.40	7.8	7.5	7.65
23-Oct-09	6.2	5.7	5.95	4.3	4.8	4.55	4.3	3.9	4.10	3.1	3.0	3.05	5.4	4.4	4.90
27-Oct-09	6.7	6.2	6.45	2.3	2.5	2.40	3.7	3.5	3.60	3.2	3.4	3.30	3.4	3.5	3.45
29-Oct-09	4.3	4.2	4.25	3.3	3.5	3.40	4.9	4.9	4.90	3.3	3.5	3.40	4.6	4.6	4.60
31-Oct-09	3.7	4.1	3.90	3.4	3.7	3.55	6.1	6.4	6.25	3.8	1.9	2.85	3.9	3.5	3.70
2-Nov-09	6.3	5.9	6.10	3.6	3.7	3.65	3.6	3.7	3.65	3.6	3.7	3.65	4.6	3.7	4.15
4-Nov-09	3.2	3.3	3.25	2.9	2.7	2.80	2.7	2.8	2.75	6.1	5.8	5.95	3.5	3.4	3.45
6-Nov-09	3.8	3.7	3.75	3.1	2.9	3.00	3.3	3.1	3.20	5.7	5.6	5.65	4.6	4.4	4.50
10-Nov-09	3.8	3.7	3.75	5.2	5.3	5.25	2.7	2.8	2.75	2.4	2.3	2.35	4.1	4.3	4.20
12-Nov-09	5.1	5.1	5.10	4.4	4.5	4.45	6.1	6.1	6.10	5.5	5.7	5.60	7.3	7.6	7.45
14-Nov-09	2.2	2.0	2.10	2.4	2.4	2.40	4.4	4.0	4.20	1.6	1.4	1.50	2.9	3.1	3.00
16-Nov-09	2.1	2.1	2.10	2.4	2.3	2.35	2.8	2.7	2.75	2.9	2.7	2.80	2.8	2.5	2.65

Mid-flood	WSD19			WSD20			WSD21			RW1			C1		
Date	Value	Value	Average												
21-Oct-09	6.2	5.8	6.00	5.9	6.3	6.10	8.4	8.5	8.45	10.4	10.6	10.50	6.1	6.3	6.20
23-Oct-09	7.0	6.5	6.75	5.5	5.6	5.55	6.6	6.9	6.75	8.2	8.1	8.15	6.0	5.4	5.70
27-Oct-09	6.9	6.6	6.75	3.8	3.5	3.65	7.9	7.6	7.75	7.8	7.7	7.75	5.1	5.2	5.15
29-Oct-09	4.3	4.3	4.30	3.0	2.9	2.95	5.8	6.1	5.95	6.4	6.1	6.25	4.9	4.9	4.90
31-Oct-09	5.6	7.0	6.30	4.0	3.5	3.75	4.9	5.0	4.95	4.7	5.8	5.25	4.1	4.5	4.30
2-Nov-09	5.4	4.4	4.90	5.1	4.6	4.85	5.0	4.5	4.75	4.3	4.0	4.15	6.0	5.8	5.90
4-Nov-09	4.0	4.1	4.05	6.3	6.7	6.50	6.6	6.6	6.60	5.6	5.4	5.50	4.0	3.9	3.95
6-Nov-09	5.2	5.3	5.25	5.5	5.7	5.60	6.3	6.3	6.30	6.5	6.3	6.40	3.6	3.7	3.65
10-Nov-09	7.4	7.8	7.60	4.0	4.3	4.15	6.7	7.0	6.85	4.8	5.3	5.05	4.0	3.8	3.90
12-Nov-09	9.6	9.2	9.40	6.5	6.9	6.70	5.8	5.6	5.70	4.7	4.5	4.60	3.2	3.1	3.15
14-Nov-09	5.1	5.2	5.15	5.5	5.1	5.30	4.8	5.2	5.00	6.1	5.8	5.95	4.0	3.7	3.85
16-Nov-09	1.8	1.6	1.70	1.7	1.7	1.70	8.4	8.9	8.65	7.9	7.9	7.90	8.4	8.9	8.65

Mid-ebb	WSD19			WSD20			WSD21			RW1			C1		
Date	Value	Value	Average												
21-Oct-09	8.8	8.4	8.60	6.7	6.5	6.60	6.2	6.2	6.20	6.6	6.6	6.60	5.1	5.4	5.25
23-Oct-09	5.3	4.7	5.00	4.2	4.2	4.20	5.5	5.8	5.65	4.9	5.1	5.00	5.5	5.8	5.65
27-Oct-09	3.7	3.3	3.50	3.1	3.2	3.15	6.0	6.0	6.00	5.9	5.9	5.90	8.4	8.3	8.35
29-Oct-09	5.0	4.9	4.95	2.9	2.8	2.85	4.9	5.1	5.00	4.8	4.8	4.80	6.0	6.2	6.10
31-Oct-09	3.8	3.9	3.85	4.7	5.9	5.30	4.5	4.3	4.40	4.6	4.5	4.55	4.9	4.7	4.80
2-Nov-09	4.9	5.4	5.15	3.5	3.5	3.50	4.8	4.7	4.75	3.1	2.9	3.00	4.5	3.8	4.15
4-Nov-09	3.2	3.4	3.30	3.8	3.6	3.70	6.0	5.7	5.85	5.2	5.1	5.15	4.6	4.8	4.70
6-Nov-09	7.0	6.3	6.65	5.3	4.9	5.10	5.5	5.3	5.40	4.2	4.5	4.35	4.8	4.7	4.75
10-Nov-09	4.2	4.4	4.30	3.0	3.2	3.10	4.4	4.5	4.45	3.8	4.2	4.00	4.6	4.5	4.55
12-Nov-09	4.0	4.2	4.10	3.5	3.6	3.55	4.7	4.4	4.55	4.6	4.4	4.50	4.6	4.4	4.50
14-Nov-09	2.1	2.2	2.15	2.4	2.1	2.25	5.1	5.0	5.05	6.4	6.1	6.25	4.4	4.1	4.25
16-Nov-09	2.5	2.6	2.55	1.9	1.9	1.90	8.6	8.5	8.55	9.0	8.9	8.95	9.2	8.8	9.00

Mid-flood	C2			C3			C4			C5			C6		
Date	Value	Value	Average												
21-Oct-09	5.7	5.5	5.60	8.5	7.8	8.15	6.8	7.6	7.20	9.3	9.0	9.15	5.4	5.4	5.40
23-Oct-09	5.5	5.6	5.55	6.1	6.0	6.05	7.2	7.2	7.20	6.7	6.5	6.60	5.8	5.7	5.75
27-Oct-09	7.8	8.1	7.95	7.8	7.5	7.65	7.0	7.0	7.00	7.3	7.2	7.25	7.4	7.3	7.35
29-Oct-09	6.2	6.3	6.25	7.4	6.4	6.90	9.3	8.3	8.80	7.4	7.5	7.45	6.3	5.7	6.00
31-Oct-09	6.6	6.2	6.40	4.7	4.8	4.75	5.1	5.5	5.30	4.7	4.7	4.70	4.1	4.0	4.05
2-Nov-09	3.7	3.6	3.65	3.3	3.2	3.25	3.3	3.2	3.25	3.6	3.2	3.40	5.6	5.8	5.70
4-Nov-09	5.2	4.8	5.00	6.2	6.5	6.35	5.9	5.7	5.80	5.9	5.6	5.75	4.8	4.5	4.65
6-Nov-09	6.2	6.0	6.10	4.7	4.5	4.60	6.4	6.1	6.25	6.4	6.3	6.35	3.2	3.3	3.25
10-Nov-09	5.8	5.9	5.85	5.7	5.9	5.80	6.8	6.5	6.65	6.6	6.9	6.75	5.3	5.1	5.20
12-Nov-09	4.6	4.4	4.50	4.8	4.6	4.70	5.4	5.6	5.50	5.3	5.5	5.40	3.6	3.7	3.65
14-Nov-09	5.9	5.6	5.75	3.8	3.9	3.85	4.6	4.7	4.65	4.9	5.0	4.95	4.5	4.3	4.40
16-Nov-09	9.0	8.6	8.80	8.3	8.2	8.25	9.4	9.1	9.25	9.1	8.6	8.85	8.0	7.7	7.85

Mid-ebb	C2			C3			C4			C5			C6		
Date	Value	Value	Average												
21-Oct-09	6.1	6.3	6.20	5.2	5.3	5.25	6.8	6.8	6.80	7.7	7.9	7.80	5.5	5.2	5.35
23-Oct-09	6.0	5.4	5.70	7.0	6.6	6.80	5.4	5.4	5.40	5.3	5.5	5.40	5.6	5.6	5.60
27-Oct-09	5.1	5.2	5.15	5.4	5.4	5.40	6.6	6.3	6.45	6.3	6.2	6.25	6.2	6.3	6.25
29-Oct-09	4.9	4.9	4.90	4.7	4.6	4.65	5.0	4.8	4.90	5.1	5.0	5.05	4.8	4.8	4.80
31-Oct-09	4.1	4.5	4.30	3.8	3.9	3.85	4.4	4.0	4.20	4.8	4.7	4.75	5.8	6.1	5.95
2-Nov-09	6.0	5.8	5.90	6.6	6.4	6.50	6.1	5.5	5.80	4.2	4.1	4.15	3.8	3.9	3.85
4-Nov-09	4.0	3.9	3.95	6.2	6.0	6.10	6.6	6.2	6.40	4.9	5.4	5.15	5.4	5.0	5.20
6-Nov-09	3.6	3.7	3.65	4.5	4.4	4.45	4.1	4.3	4.20	7.4	7.7	7.55	4.0	4.0	4.00
10-Nov-09	4.0	3.8	3.90	4.4	4.2	4.30	5.1	4.8	4.95	4.4	4.4	4.40	5.0	4.8	4.90
12-Nov-09	3.2	3.1	3.15	2.8	2.7	2.75	2.8	3.0	2.90	4.9	4.7	4.80	4.3	4.3	4.30
14-Nov-09	4.0	3.7	3.85	4.7	4.9	4.80	4.8	4.7	4.75	6.7	6.4	6.55	5.3	5.2	5.25
16-Nov-09	8.4	8.9	8.65	8.9	8.8	8.85	8.8	9.0	8.90	9.3	9.4	9.35	8.9	8.6	8.75

Mid-flood	C7			C8			C9			RC1			RC5		
Date	Value	Value	Average												
21-Oct-09	5.8	5.5	5.65	8.9	9.0	8.95	8.2	8.1	8.15	5.7	6.0	5.85	6.4	6.4	6.40
23-Oct-09	6.8	6.5	6.65	9.4	10.1	9.75	10.2	10.2	10.20	5.5	5.5	5.50	7.5	7.4	7.45
27-Oct-09	5.5	5.5	5.50	10.0	10.1	10.05	10.9	11.2	11.05	7.9	8.0	7.95	7.6	7.5	7.55
29-Oct-09	7.7	7.3	7.50	8.6	9.0	8.80	10.4	10.8	10.60	6.5	5.8	6.15	6.4	6.1	6.25
31-Oct-09	4.8	4.6	4.70	5.8	6.3	6.05	9.9	9.9	9.90	5.0	5.3	5.15	4.0	3.9	3.95
2-Nov-09	4.7	4.6	4.65	4.8	4.8	4.80	5.1	5.6	5.35	3.4	3.2	3.30	4.2	4.3	4.25
4-Nov-09	4.9	5.0	4.95	6.5	6.4	6.45	7.6	7.8	7.70	4.3	4.7	4.50	6.1	6.6	6.35
6-Nov-09	4.5	4.4	4.45	9.3	9.6	9.45	8.4	8.0	8.20	5.9	5.7	5.80	5.2	5.3	5.25
10-Nov-09	4.8	4.7	4.75	7.3	7.7	7.50	8.4	7.9	8.15	5.0	4.9	4.95	5.2	5.3	5.25
12-Nov-09	3.7	3.8	3.75	6.5	6.6	6.55	7.5	7.1	7.30	4.0	4.1	4.05	6.2	5.9	6.05
14-Nov-09	3.9	4.2	4.05	5.4	5.8	5.60	7.0	6.9	6.95	5.5	5.3	5.40	4.1	4.1	4.10
16-Nov-09	8.2	7.9	8.05	11.3	11.5	11.40	9.3	8.6	8.95	8.3	8.4	8.35	9.3	9.4	9.35

Mid-ebb	C7			C8			C9			RC1			RC5		
Date	Value	Value	Average												
21-Oct-09	4.8	4.5	4.65	6.6	6.8	6.70	9.7	9.5	9.60	5.0	4.9	4.95	6.1	6.1	6.10
23-Oct-09	3.8	4.0	3.90	7.0	7.2	7.10	8.6	8.7	8.65	4.7	4.6	4.65	4.2	4.2	4.20
27-Oct-09	5.6	5.6	5.60	7.4	7.4	7.40	8.1	8.0	8.05	5.1	5.3	5.20	5.9	5.9	5.90
29-Oct-09	4.3	4.3	4.30	6.0	6.2	6.10	6.4	6.2	6.30	6.2	6.2	6.20	5.0	4.9	4.95
31-Oct-09	4.0	3.7	3.85	5.3	4.9	5.10	5.6	6.2	5.90	4.4	4.3	4.35	3.9	4.4	4.15
2-Nov-09	2.9	2.6	2.75	6.6	6.0	6.30	6.5	6.5	6.50	4.4	4.3	4.35	4.6	5.6	5.10
4-Nov-09	2.8	2.9	2.85	5.8	5.8	5.80	8.0	7.6	7.80	3.9	4.1	4.00	4.8	4.5	4.65
6-Nov-09	3.4	3.3	3.35	4.5	4.4	4.45	5.2	5.5	5.35	4.3	4.3	4.30	4.9	4.7	4.80
10-Nov-09	4.8	4.3	4.55	5.1	5.1	5.10	5.2	5.2	5.20	4.4	4.3	4.35	3.7	3.8	3.75
12-Nov-09	2.7	2.6	2.65	6.3	6.7	6.50	5.9	5.9	5.90	2.5	2.5	2.50	3.7	4.0	3.85
14-Nov-09	3.6	3.6	3.60	5.6	5.8	5.70	5.8	6.1	5.95	4.3	4.2	4.25	4.5	4.4	4.45
16-Nov-09	8.2	7.9	8.05	9.9	9.9	9.90	8.1	8.5	8.30	9.7	9.4	9.55	8.4	8.4	8.40

Mid-flood	RC7		
Date	Value	Value	Average
21-Oct-09	4.9	4.9	4.90
23-Oct-09	4.0	4.1	4.05
27-Oct-09	7.7	7.5	7.60
29-Oct-09	5.5	5.3	5.40
31-Oct-09	4.8	4.8	4.80
2-Nov-09	4.3	4.1	4.20
4-Nov-09	5.0	5.1	5.05
6-Nov-09	5.2	5.4	5.30
10-Nov-09	4.6	4.5	4.55
12-Nov-09	3.4	3.3	3.35
14-Nov-09	3.4	3.1	3.25
16-Nov-09	8.9	8.7	8.80

Mid-ebb	RC7		
Date	Value	Value	Average
21-Oct-09	5.5	5.7	5.60
23-Oct-09	4.4	4.3	4.35
27-Oct-09	9.3	8.0	8.65
29-Oct-09	5.0	4.5	4.75
31-Oct-09	4.3	4.2	4.25
2-Nov-09	4.5	4.2	4.35
4-Nov-09	5.4	4.9	5.15
6-Nov-09	4.9	4.5	4.70
10-Nov-09	6.1	6.8	6.45
12-Nov-09	3.5	3.5	3.50
14-Nov-09	4.2	4.4	4.30
16-Nov-09	8.9	8.9	8.90

Projected Turbidity Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21-Oct-09	10.5	10.04	5.7	5.70	6.4	5.98	9.2	8.78	8.0	8.10	6.4	6.18	6.4	6.65	10.6	10.70
1 1	9.6	1	5.7	1	5.5		8.4		8.2		6.0	1	6.9		10.8	1
23-Oct-09	5.0	5.51	4.2	4.65	4.0	4.05	10.1	10.23	6.4	6.75	8.6	8.31	6.0	6.05	8.4	8.55
	6.0		5.1		4.1		10.3		7.1		8.0	1	6.1		8.7	
27-Oct-09	7.8	7.72	5.0	5.08	4.2	4.18	10.1	9.66	8.5	8.55	8.5	8.31	4.1	3.98	10.0	9.81
	7.6	1	5.2		4.1		9.2	0.00	8.6	0.00	8.1	1	3.8		9.6	1
29-Oct-09	8.2	8.24	4.7	4.71	6.4	6.43	4.8	4.83	4.6	4.63	5.3	5.29	3.3	3.22	7.3	7.54
	8.2		4.7	1	6.4		4.8		4.6		5.3	1	3.2		7.7	1
31-Oct-09	6.5	6.02	2.7	2.60	6.3	7.07	9.0	7.89	7.6	7.59	6.9	7.75	4.4	4.09	6.2	6.27
ľ	5.6	1	2.5	1	7.8		6.8		7.6		8.6	1	3.8		6.3	1
2-Nov-09	6.0	5.56	4.6	4.65	4.2	3.99	8.1	7.89	6.3	6.24	6.6	6.03	5.6	5.29	6.3	6.02
ľ	5.1	1	4.7	1	3.7		7.7		6.2		5.4	1	5.0		5.7	1
4-Nov-09	7.3	7.16	4.7	4.65	6.0	5.92	8.2	8.54	6.2	6.04	4.9	4.98	6.9	7.09	8.4	8.36
	7.0		4.6		5.8		8.9		5.9		5.0	1	7.3		8.4	1
6-Nov-09	8.6	8.49	4.6	4.53	3.9	3.86	5.6	5.56	5.3	5.53	6.4	6.46	6.0	6.11	8.0	7.98
	8.3	1	4.5	1	3.9		5.5		5.8		6.5	1	6.2		8.0	1
10-Nov-09	6.5	6.33	4.6	4.40	4.6	4.82	4.7	4.43	7.5	7.72	9.1	9.35	4.4	4.53	8.5	8.67
	6.2		4.2		5.0		4.2		8.0		9.6	1	4.7		8.9	1
12-Nov-09	10.1	9.78	5.5	5.39	9.1	8.75	9.0	8.94	7.7	7.85	11.8	11.57	7.1	7.31	7.3	7.22
	9.5		5.3		8.4		8.9		8.0		11.3	1	7.5		7.1	1
14-Nov-09	2.0	1.90	2.6	2.79	6.3	6.43	3.7	3.62	8.5	8.17	6.3	6.34	6.0	5.78	6.1	6.33
	1.9		3.0	1	6.6		3.5		7.8		6.4	1	5.6		6.6	
16-Nov-09	2.0	1.90	2.9	2.85	3.3	3.41	3.9	3.78	3.1	3.09	2.2	2.09	1.9	1.85	10.6	10.95
	1.9		2.9		3.5		3.7		3.1		2.0		1.9		11.3	
<u></u>			2.0		0.0		0		0.1						11.0	<u> </u>
Mid-Ebb	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21	
Mid-Ebb Date		Average		Average		Average		Average		Average		Average		Average		Average
	WSD7 Value 5.7	Average 5.66	WSD9 Value 7.8	Average 8.18	WSD10 Value 6.7	Average 6.43	WSD15 Value 11.8	Average 11.92	WSD17 Value 10.0	Average 9.84	WSD19 Value 10.8	Average 10.58	WSD20	Average 7.20	WSD21 Value 7.9	Average 7.85
Date	WSD7 Value	5.66	WSD9 Value 7.8 8.6	8.18	WSD10 Value 6.7 6.2	6.43	WSD15 Value 11.8 12.1	11.92	WSD17 Value 10.0 9.6	9.84	WSD19 Value 10.8 10.3	10.58	WSD20 Value	7.20	WSD21 Value 7.9 7.9	7.85
Date	WSD7 Value 5.7 5.7 6.4		WSD9 Value 7.8 8.6 5.3		WSD10 Value 6.7 6.2 5.5		WSD15 Value 11.8 12.1 5.0		WSD17 Value 10.0 9.6 6.9		WSD19 Value 10.8 10.3 6.5		WSD20 Value 7.3 7.1 4.6		WSD21 Value 7.9 7.9 7.0	
Date 21-Oct-09 23-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9	5.66 6.13	WSD9 Value 7.8 8.6 5.3 6.0	8.18 5.64	WSD10 Value 6.7 6.2 5.5 5.0	6.43 5.27	WSD15 Value 11.8 12.1 5.0 4.8	11.92 4.91	WSD17 Value 10.0 9.6 6.9 5.7	9.84	WSD19 Value 10.8 10.3 6.5 5.8	10.58 6.15	WSD20 Value 7.3 7.1 4.6 4.6	7.20 4.58	WSD21 Value 7.9 7.9 7.0 7.3	7.85 7.16
Date 21-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9	5.66	WSD9 Value 7.8 8.6 5.3 6.0 2.9	8.18	WSD10 Value 6.7 6.2 5.5 5.0 4.8	6.43	WSD15 Value 11.8 12.1 5.0 4.8 5.2	11.92	WSD17 Value 10.0 9.6 6.9 5.7 4.4	9.84	WSD19 Value 10.8 10.3 6.5 5.8 4.6	10.58	WSD20 Value 7.3 7.1 4.6 4.6 3.4	7.20	WSD21 Value 7.9 7.9 7.0 7.3 7.6	7.85
Date 21-Oct-09 23-Oct-09 27-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4	5.66 6.13 6.64	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1	8.18 5.64 2.98	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5	6.43 5.27 4.63	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5	11.92 4.91 5.31	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5	9.84 6.30 4.44	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1	10.58 6.15 4.31	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5	7.20 4.58 3.44	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6	7.85 7.16 7.60
Date 21-Oct-09 23-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4	5.66 6.13	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1	8.18 5.64	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3	6.43 5.27	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3	11.92 4.91	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9	9.84	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2	10.58 6.15	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2	7.20 4.58	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2	7.85 7.16
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4	5.66 6.13 6.64 4.38	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3	8.18 5.64 2.98 4.22	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3	6.43 5.27 4.63 6.30	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6	11.92 4.91 5.31 5.48	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9	9.84 6.30 4.44 5.92	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0	10.58 6.15 4.31 6.09	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1	7.20 4.58 3.44 3.11	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5	7.85 7.16 7.60 6.33
Date 21-Oct-09 23-Oct-09 27-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8	5.66 6.13 6.64	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2	8.18 5.64 2.98	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3 7.8	6.43 5.27 4.63	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1	11.92 4.91 5.31	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9	9.84 6.30 4.44	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7	10.58 6.15 4.31	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1	7.20 4.58 3.44	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7	7.85 7.16 7.60
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2	5.66 6.13 6.64 4.38 4.02	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6	8.18 5.64 2.98 4.22 4.40	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2	6.43 5.27 4.63 6.30 8.04	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1	11.92 4.91 5.31 5.48 4.59	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 5.0 4.5	9.84 6.30 4.44 5.92 4.76	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8	10.58 6.15 4.31 6.09 4.74	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4	7.20 4.58 3.44 3.11 5.78	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4	7.85 7.16 7.60 6.33 5.57
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5	5.66 6.13 6.64 4.38	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5	8.18 5.64 2.98 4.22	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6	6.43 5.27 4.63 6.30	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8	11.92 4.91 5.31 5.48	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 5.0 4.5	9.84 6.30 4.44 5.92	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0	10.58 6.15 4.31 6.09	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8	7.20 4.58 3.44 3.11	WSD21 Value 7.9 7.9 7.0 7.3 7.6 6.2 6.5 5.7 5.4 6.1	7.85 7.16 7.60 6.33
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1	5.66 6.13 6.64 4.38 4.02 6.28	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6	8.18 5.64 2.98 4.22 4.40 4.53	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3 7.8 8.2 4.6 4.8	6.43 5.27 4.63 6.30 8.04 4.69	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0	11.92 4.91 5.31 5.48 4.59 5.88	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.8	9.84 6.30 4.44 5.92 4.76 5.34	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6	10.58 6.15 4.31 6.09 4.74 6.34	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 6.4 3.8 3.8	7.20 4.58 3.44 3.11 5.78 3.82	WSD21 Value 7.9 7.9 7.0 7.3 7.6 6.2 6.5 5.7 5.4 6.1 6.0	7.85 7.16 7.60 6.33 5.57 6.02
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3	5.66 6.13 6.64 4.38 4.02	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6	8.18 5.64 2.98 4.22 4.40	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5	6.43 5.27 4.63 6.30 8.04	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8	11.92 4.91 5.31 5.48 4.59	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.8 4.5	9.84 6.30 4.44 5.92 4.76	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9	10.58 6.15 4.31 6.09 4.74	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8	7.20 4.58 3.44 3.11 5.78	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6	7.85 7.16 7.60 6.33 5.57
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4	5.66 6.13 6.64 4.38 4.02 6.28 3.35	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3	8.18 5.64 2.98 4.22 4.40 4.53 3.47	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5 3.6	6.43 5.27 4.63 6.30 8.04 4.69 3.54	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8	11.92 4.91 5.31 5.48 4.59 5.88 9.58	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 5.0 4.5 5.9 4.8 4.5 4.4	9.84 6.30 4.44 5.92 4.76 5.34 4.44	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2	10.58 6.15 4.31 6.09 4.74 6.34 4.06	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9	7.20 4.58 3.44 3.11 5.78 3.82 4.04	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2	7.85 7.16 7.60 6.33 5.57 6.02 7.41
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4	5.66 6.13 6.64 4.38 4.02 6.28	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3 3.8	8.18 5.64 2.98 4.22 4.40 4.53	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2	6.43 5.27 4.63 6.30 8.04 4.69	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2	11.92 4.91 5.31 5.48 4.59 5.88	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 4.5 4.5 4.5 5.9 4.5 5.9	9.84 6.30 4.44 5.92 4.76 5.34	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6	10.58 6.15 4.31 6.09 4.74 6.34	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8	7.20 4.58 3.44 3.11 5.78 3.82	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0	7.85 7.16 7.60 6.33 5.57 6.02
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3 3.8	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 4.5 5.9 4.5 5.9 4.5 5.9 5.7	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9	5.66 6.13 6.64 4.38 4.02 6.28 3.35	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3 3.8 3.6 6.4	8.18 5.64 2.98 4.22 4.40 4.53 3.47	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0	6.43 5.27 4.63 6.30 8.04 4.69 3.54	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9	11.92 4.91 5.31 5.48 4.59 5.88 9.58	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.5 5.9 5.0 4.5 5.9 5.7 5.3	9.84 6.30 4.44 5.92 4.76 5.34 4.44	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2	10.58 6.15 4.31 6.09 4.74 6.34 4.06	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3	7.20 4.58 3.44 3.11 5.78 3.82 4.04	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7	7.85 7.16 7.60 6.33 5.57 6.02 7.41
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 10-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86 3.86	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3 3.8 3.6 6.4 6.6	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72 6.51	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0 3.5 3.6	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12 3.54	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9 3.7	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10 3.78	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 4.5 4.5 4.4 5.9 5.9 5.0 4.5 5.9 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0 5.9 5.0	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79 5.40	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2 5.4	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3 3.5	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56 3.38	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7 5.6 5.7	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84 5.64
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9 3.8 5.3	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3 3.8 3.6 6.4 6.6 5.5	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0 3.5 3.6 7.8	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9 3.7 8.9	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.8 4.5 4.4 5.9 5.7 5.3 5.5	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2 5.4	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3 3.5 3.8	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7 5.6 5.7 6.0	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 10-Nov-09 12-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9 3.8 5.3	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86 5.25	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.3 3.8 3.6 6.4 6.6 5.5 5.6	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72 6.51 5.52	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0 3.5 3.6 7.8 7.8	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12 3.54 7.85	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9 3.7 8.9 9.2	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10 3.78 9.02	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.8 4.5 4.4 5.9 5.7 5.3 5.5 9.4 9.8	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79 5.40 9.58	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2 5.4 4.9 5.2	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18 5.29	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3 3.5 3.8 3.9	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56 3.38 3.87	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7 5.6 5.7 6.0 5.6	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84 5.64 5.76
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9 3.8 5.3 5.3	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86 3.86	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.8 3.6 6.4 6.6 5.5 5.6 3.0	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72 6.51	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0 3.5 3.6 7.8 7.8	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12 3.54	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9 3.7 8.9 9.2 2.6	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10 3.78	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.8 4.5 4.4 5.9 5.7 5.3 5.5 9.4 9.8	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79 5.40	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2 5.4 4.9 5.2 2.6	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3 3.5 3.8 3.9 2.6	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56 3.38	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7 5.6 5.7 6.0 5.6 6.5	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84 5.64
Date 21-Oct-09 23-Oct-09 29-Oct-09 2-Nov-09 6-Nov-09 12-Nov-09 14-Nov-09 14-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9 3.8 5.3 5.3 2.3	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86 5.25 2.16	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.8 3.6 6.4 6.6 5.5 5.6 3.0 3.0	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72 6.51 5.52 2.98	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0 3.5 3.6 7.8 7.8 5.7	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12 3.54 7.85 5.40	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9 3.7 8.9 9.2 2.6 2.3	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10 3.78 9.02 2.42	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.9 4.5 5.9 4.8 4.5 4.4 5.9 5.7 5.3 5.5 9.4 9.8 3.7	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79 5.40 9.58 3.86	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2 5.4 4.9 5.2 2.6 2.7	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18 5.29 5.05	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3 3.5 3.8 3.9 2.6 2.3	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56 3.38 3.87 2.45	WSD21 Value 7.9 7.9 7.0 7.3 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7 5.6 5.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0 6.7 6.0	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84 5.64 5.76 6.40
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 6-Nov-09 12-Nov-09	WSD7 Value 5.7 5.7 6.4 5.9 6.9 6.4 4.4 4.3 3.8 4.2 6.5 6.1 3.3 3.4 3.9 3.8 3.9 3.8 5.3 5.3	5.66 6.13 6.64 4.38 4.02 6.28 3.35 3.86 5.25	WSD9 Value 7.8 8.6 5.3 6.0 2.9 3.1 4.1 4.3 4.2 4.6 4.5 4.6 3.6 3.8 3.6 6.4 6.6 5.5 5.6 3.0	8.18 5.64 2.98 4.22 4.40 4.53 3.47 3.72 6.51 5.52	WSD10 Value 6.7 6.2 5.5 5.0 4.8 4.5 6.3 6.3 7.8 8.2 4.6 4.8 3.5 3.6 4.2 4.0 3.5 3.6 7.8 7.8	6.43 5.27 4.63 6.30 8.04 4.69 3.54 4.12 3.54 7.85	WSD15 Value 11.8 12.1 5.0 4.8 5.2 5.5 5.3 5.6 6.1 3.1 5.8 6.0 9.8 9.3 9.2 9.0 3.9 3.7 8.9 9.2 2.6	11.92 4.91 5.31 5.48 4.59 5.88 9.58 9.10 3.78 9.02	WSD17 Value 10.0 9.6 6.9 5.7 4.4 4.5 5.9 5.0 4.5 5.9 4.8 4.5 4.4 5.9 5.7 5.3 5.5 9.4 9.8	9.84 6.30 4.44 5.92 4.76 5.34 4.44 5.79 5.40 9.58	WSD19 Value 10.8 10.3 6.5 5.8 4.6 4.1 6.2 6.0 4.7 4.8 6.0 6.6 3.9 4.2 8.6 7.8 5.2 5.4 4.9 5.2 2.6	10.58 6.15 4.31 6.09 4.74 6.34 4.06 8.18 5.29	WSD20 Value 7.3 7.1 4.6 4.6 3.4 3.5 3.2 3.1 5.1 6.4 3.8 3.8 4.1 3.9 5.8 5.3 3.3 3.5 3.8 3.9 2.6	7.20 4.58 3.44 3.11 5.78 3.82 4.04 5.56 3.38 3.87	WSD21 Value 7.9 7.9 7.0 7.3 7.6 7.6 6.2 6.5 5.7 5.4 6.1 6.0 7.6 7.2 7.0 6.7 5.6 5.7 6.0 5.6 6.5	7.85 7.16 7.60 6.33 5.57 6.02 7.41 6.84 5.64 5.76

Projected Turbidity Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	RW21		C1		C2		C3		C4		C5		C6		C7	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21-Oct-09	13.2	13.30	7.7	7.85	7.2	7.09	10.8	10.32	8.6	9.12	9.6	9.42	6.8	6.84	7.3	7.16
	13.4	10100	8.0		7.0	1	9.9	1	9.6	1	9.3	1	6.8		7.0	1
23-Oct-09	10.4	10.32	7.6	7.22	7.0	7.03	7.7	7.66	9.1	9.12	8.5	8.36	7.3	7.28	8.6	8.42
	10.3		6.8	1	7.1		7.6		9.1	1	8.2	1	7.2	1	8.2	1
27-Oct-09	9.9	9.81	6.5	6.52	9.9	10.07	9.9	9.69	8.9	8.86	9.2	9.18	9.4	9.31	7.0	6.97
	9.8		6.6		10.3		9.5		8.9		9.1	1	9.2		7.0	1
29-Oct-09	8.1	7.92	6.2	6.21	7.9	7.92	9.4	8.74	11.8	11.14	9.4	9.43	8.0	7.60	9.8	9.50
20 00.00	7.7		6.2	0.2.	8.0		8.1	1	10.5	1	9.5	00	7.2		9.2	1 0.00
31-Oct-09	6.0	6.65	5.2	5.45	8.4	8.11	6.0	6.02	6.5	6.71	6.0	5.95	5.2	5.13	6.1	5.95
	7.3		5.7		7.9		6.1	1	7.0		6.0		5.1		5.8	1
2-Nov-09	5.4	5.26	7.6	7.47	4.7	4.62	4.2	4.12	4.2	4.12	4.6	4.31	7.1	7.22	6.0	5.89
	5.1		7.3		4.6		4.1	1	4.1	1	4.1	1	7.3		5.8	1
4-Nov-09	7.1	6.97	5.1	5.00	6.6	6.33	7.9	8.04	7.5	7.35	7.5	7.28	6.1	5.89	6.2	6.27
11101 00	6.8	0.07	4.9	0.00	6.1	0.00	8.2	0.01	7.2	1.00	7.1	1.20	5.7	0.00	6.3	0.2.
6-Nov-09	8.2	8.11	4.6	4.62	7.9	7.73	6.0	5.83	8.1	7.92	8.1	8.04	4.1	4.12	5.7	5.64
0 1107 00	8.0	0.11	4.7	4.02	7.6	7.70	5.7	0.00	7.7	7.02	8.0	0.04	4.2	7.12	5.6	0.04
10-Nov-09	6.1	6.40	5.1	4.94	7.3	7.41	7.2	7.35	8.6	8.42	8.4	8.55	6.7	6.59	6.1	6.02
10-1404-03	6.7	0.40	4.8	4.54	7.5	7.71	7.5	7.55	8.2	0.72	8.7	0.55	6.5	0.55	6.0	0.02
12-Nov-09	6.0	5.83	4.1	3.99	5.8	5.70	6.1	5.95	6.8	6.97	6.7	6.84	4.6	4.62	4.7	4.75
12 1404 03	5.7	0.00	3.9	0.00	5.6	5.70	5.8	0.55	7.1	0.57	7.0	0.04	4.7	4.02	4.8	7.75
14-Nov-09	7.7	7.54	5.1	4.88	7.5	7.28	4.8	4.88	5.8	5.89	6.2	6.27	5.7	5.57	4.9	5.13
14 1404 03	7.3	7.54	4.7	4.00	7.1	7.20	4.9	7.00	6.0	0.00	6.3	0.27	5.4	5.57	5.3	3.13
16-Nov-09	10.0	10.00	10.6	10.95	11.4	11.14	10.5	10.45	11.9	11.71	11.5	11.21	10.1	9.94	10.4	10.19
10 1407 00	10.0	10.00	11.3	10.00	10.9	1	10.4	10.40	11.5	1 ''''	10.9	1 11.21	9.8	0.04	10.0	10.10
	10.0]	11.0	I	10.0		10.1		11.0		10.0		0.0		10.0	
Mid-Ebb	RW21		C1		C2		C3		C4		C5		C6		C7	
Mid-Ebb Date	RW21 Value	Average	C1 Value	Average	C2 Value	Average	C3 Value	Average	C4 Value	Average	C5 Value	Average	C6 Value	Average	C7 Value	Average
Date		Average 8.36	Value			Average 7.85	Value	Average 6.65			Value	Average 9.88		Average 6.78		Average 5.89
	Value	Average 8.36		Average 6.65	Value			Average 6.65	Value	Average 8.61			Value		Value	Average 5.89
Date	Value 8.4 8.4	8.36	Value 6.5 6.8		Value 7.7		Value 6.6		Value 8.6 8.6		Value 9.8 10.0		Value 7.0 6.6		Value 6.1 5.7	5.89
Date 21-Oct-09	Value 8.4		Value 6.5 6.8 7.0	6.65	Value 7.7 8.0	7.85	Value 6.6 6.7	6.65	Value 8.6 8.6 6.8	8.61	9.8 10.0 6.7	9.88	Value 7.0	6.78	Value 6.1	
Date 21-Oct-09	Value 8.4 8.4 6.2	8.36	Value 6.5 6.8	6.65	Value 7.7 8.0 7.6	7.85	Value 6.6 6.7 8.9	6.65	Value 8.6 8.6	8.61	Value 9.8 10.0	9.88	7.0 6.6 7.1	6.78	Value 6.1 5.7 4.8	5.89
Date 21-Oct-09 23-Oct-09	Value 8.4 8.4 6.2 6.3	8.36 6.27	Value 6.5 6.8 7.0 7.3 10.6	6.65 7.16	Value 7.7 8.0 7.6 6.8 6.5	7.85 7.22	Value 6.6 6.7 8.9 8.4 6.8	6.65 8.61	Value 8.6 8.6 6.8 6.8 8.4	8.61 6.84	Value 9.8 10.0 6.7 7.0 8.0	9.88 6.84	Value 7.0 6.6 7.1 7.1	6.78 7.09	Value 6.1 5.7 4.8 5.1	5.89 4.94
Date 21-Oct-09 23-Oct-09	Value 8.4 8.4 6.2 6.3 7.5	8.36 6.27 7.47	Value 6.5 6.8 7.0 7.3 10.6 10.5	7.16 10.57	Value 7.7 8.0 7.6 6.8	7.85 7.22	Value 6.6 6.7 8.9 8.4	6.65 8.61 6.84	Value 8.6 8.6 6.8 6.8 8.4 8.0	8.61 6.84 8.17	Value 9.8 10.0 6.7 7.0 8.0 7.9	9.88 6.84	Value 7.0 6.6 7.1 7.1 7.9	6.78 7.09	Value 6.1 5.7 4.8 5.1 7.1	5.89 4.94 7.09
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 8.4 8.4 6.2 6.3 7.5 7.5	8.36 6.27	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6	6.65 7.16	Value 7.7 8.0 7.6 6.8 6.5 6.6	7.85 7.22 6.52	Value 6.6 6.7 8.9 8.4 6.8 6.8	6.65 8.61	Value 8.6 8.6 6.8 6.8 8.4	8.61 6.84	Value 9.8 10.0 6.7 7.0 8.0	9.88 6.84 7.92	Value 7.0 6.6 7.1 7.1 7.9 8.0	7.09 7.92	Value 6.1 5.7 4.8 5.1 7.1	5.89 4.94
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1	8.36 6.27 7.47	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9	7.16 10.57	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2	7.85 7.22 6.52	Value 6.6 6.7 8.9 8.4 6.8 6.8	6.65 8.61 6.84	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1	8.61 6.84 8.17	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3	9.88 6.84 7.92	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1	7.09 7.92	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4	5.89 4.94 7.09
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8	8.36 6.27 7.47 6.08	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2	6.65 7.16 10.57 7.73	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2	7.85 7.22 6.52 6.21	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8	6.65 8.61 6.84 5.89	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6	8.61 6.84 8.17 6.21	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1	9.88 6.84 7.92 6.40	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1	6.78 7.09 7.92 6.08	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1	5.89 4.94 7.09 5.45
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1	8.36 6.27 7.47 6.08	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9	6.65 7.16 10.57 7.73	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2	7.85 7.22 6.52 6.21	Value 6.6 6.7 8.9 8.4 6.8 6.8 6.0 5.8	6.65 8.61 6.84 5.89	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1	8.61 6.84 8.17 6.21	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0	9.88 6.84 7.92 6.40	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3	6.78 7.09 7.92 6.08	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4	5.89 4.94 7.09 5.45
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8	8.36 6.27 7.47 6.08 5.79	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0	6.65 7.16 10.57 7.73 6.08	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2	7.85 7.22 6.52 6.21 5.45	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8	6.65 8.61 6.84 5.89	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1	8.61 6.84 8.17 6.21 5.32	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3	9.88 6.84 7.92 6.40 6.02	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3	6.78 7.09 7.92 6.08 7.54	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7	5.89 4.94 7.09 5.45 4.88
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8	8.36 6.27 7.47 6.08 5.79	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8	6.65 7.16 10.57 7.73 6.08 5.26	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3	7.85 7.22 6.52 6.21 5.45	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4	6.65 8.61 6.84 5.89 4.88 8.23	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7	8.61 6.84 8.17 6.21 5.32	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2	9.88 6.84 7.92 6.40 6.02	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9	6.78 7.09 7.92 6.08 7.54	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3	5.89 4.94 7.09 5.45 4.88
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8	8.36 6.27 7.47 6.08 5.79 3.86	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7	6.65 7.16 10.57 7.73 6.08	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6	7.85 7.22 6.52 6.21 5.45 7.47	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9	6.65 8.61 6.84 5.89	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1	8.61 6.84 8.17 6.21 5.32 7.35	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3	9.88 6.84 7.92 6.40 6.02 5.26	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7	6.78 7.09 7.92 6.08 7.54 4.88	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7	5.89 4.94 7.09 5.45 4.88 3.48
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 3.9 3.8 6.6 6.5	8.36 6.27 7.47 6.08 5.79 3.86	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 5.8	6.65 7.16 10.57 7.73 6.08 5.26	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3	7.85 7.22 6.52 6.21 5.45 7.47	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4	6.65 8.61 6.84 5.89 4.88 8.23	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9	8.61 6.84 8.17 6.21 5.32 7.35 8.11	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8	9.88 6.84 7.92 6.40 6.02 5.26	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8	6.78 7.09 7.92 6.08 7.54 4.88	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5	5.89 4.94 7.09 5.45 4.88 3.48
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6	8.36 6.27 7.47 6.08 5.79 3.86 6.55	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 6.1 6.1 6.0	6.65 7.16 10.57 7.73 6.08 5.26 5.95	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.7 7.6 7.3 5.1 4.9	7.85 7.22 6.52 6.21 5.45 7.47 5.00	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.9 8.4 8.1 7.9 7.6	6.65 8.61 6.84 5.89 4.88 8.23 7.73	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2	9.88 6.84 7.92 6.40 6.02 5.26 6.52	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3	6.78 7.09 7.92 6.08 7.54 4.88 6.59	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5 3.7	5.89 4.94 7.09 5.45 4.88 3.48 3.61
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 3.9 3.8 6.6 6.5 5.3	8.36 6.27 7.47 6.08 5.79 3.86 6.55	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 5.8 6.1 6.1	6.65 7.16 10.57 7.73 6.08 5.26 5.95	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.7 7.6 7.3 5.1 4.9 4.6	7.85 7.22 6.52 6.21 5.45 7.47 5.00	Value 6.6 6.7 8.9 8.4 6.8 6.8 6.0 5.8 4.8 4.9 8.4 8.1 7.9 7.6 5.7	6.65 8.61 6.84 5.89 4.88 8.23 7.73	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2	8.61 6.84 8.17 6.21 5.32 7.35 8.11	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4	9.88 6.84 7.92 6.40 6.02 5.26 6.52	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1	6.78 7.09 7.92 6.08 7.54 4.88 6.59	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5 3.7 4.3	5.89 4.94 7.09 5.45 4.88 3.48 3.61
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5 4.8	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 6.1 6.1 6.0 5.8	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4 7.9 7.6 5.7 5.6 5.6	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4 9.8 5.6	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5 3.7 4.3	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 8.4 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41 4.94	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 6.1 6.1 6.0 5.8 5.7	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02 5.76	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7 5.1 4.8	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62	Value 6.6 6.7 8.9 8.4 6.8 6.8 6.0 5.8 4.8 4.9 8.4 7.9 7.6 5.7	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5 6.1	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32 6.27	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56 5.57	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1 6.3	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 4.2 6.1	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24 5.76
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5 4.8 5.1 5.8	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 5.8 6.1 6.0 5.8 5.7 5.8	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7 5.1 4.8 4.1	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62 4.94	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4 7.9 7.6 5.7 5.6 5.6	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64 5.45	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5 6.1 3.5	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4 9.8 5.6 5.6	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1 6.3 6.1	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07 6.21	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 4.2 6.1 5.4 3.4	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5 4.8	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41 4.94	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 6.1 6.1 6.0 5.8 5.7	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02 5.76	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7 5.1 4.8	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62 4.94	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4 8.1 7.9 7.6 5.7 5.6 5.3 3.5	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64 5.45	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5 6.1	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32 6.27	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4 9.8 5.6 6.2	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56 5.57	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1 6.3 6.1 5.4	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07 6.21	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 4.2 6.1 5.4	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24 5.76
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5 4.8 5.1 5.8 5.7	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41 4.94 5.76	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 5.8 6.1 6.1 6.0 5.8 5.7 5.8 5.6 5.6	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02 5.76 5.70	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7 5.1 4.8 4.1 3.9 5.1	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62 4.94 3.99	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 7.6 5.7 5.6 5.3 3.5	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64 5.45	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5 6.1 3.5 3.8 6.1	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32 6.27 3.67	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4 9.8 5.6 6.2 6.0 8.5	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56 5.57 6.08	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1 6.3 6.1 5.4 5.4	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07 6.21 5.45	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5 3.7 4.3 4.2 6.1 5.4 3.4 3.3	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24 5.76 3.36
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5 4.8 5.1 5.8 5.7	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41 4.94 5.76 8.01	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 5.8 6.1 6.1 6.0 5.8 5.7 5.8 5.6 5.6	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02 5.76 5.70	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7 5.1 4.8 4.1 3.9 5.1	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62 4.94 3.99	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4 8.1 7.9 5.6 5.7 5.6 5.3 3.5 3.4 6.0 6.2	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64 5.45	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5 6.1 3.5 3.8 6.1 6.0	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32 6.27 3.67	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4 9.8 5.6 6.2 6.0 8.5 8.1	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56 5.57 6.08	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1 6.3 6.1 5.4 6.7	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07 6.21 5.45	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5 3.7 4.3 4.2 6.1 5.4 3.4 3.3 4.6 4.6	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24 5.76 3.36
Date 21-Oct-09 23-Oct-09 27-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09 12-Nov-09	Value 8.4 6.2 6.3 7.5 7.5 6.1 6.1 5.8 5.8 3.9 3.8 6.6 6.5 5.3 5.5 4.8 5.1 5.8 5.7	8.36 6.27 7.47 6.08 5.79 3.86 6.55 5.41 4.94 5.76	Value 6.5 6.8 7.0 7.3 10.6 10.5 7.6 7.9 6.2 6.0 5.7 4.8 5.8 6.1 6.1 6.0 5.8 5.7 5.8 5.6 5.6	6.65 7.16 10.57 7.73 6.08 5.26 5.95 6.02 5.76 5.70 5.38	Value 7.7 8.0 7.6 6.8 6.5 6.6 6.2 6.2 5.2 5.7 7.6 7.3 5.1 4.9 4.6 4.7 5.1 4.8 4.1 3.9 5.1	7.85 7.22 6.52 6.21 5.45 7.47 5.00 4.62 4.94 3.99 4.88	Value 6.6 6.7 8.9 8.4 6.8 6.0 5.8 4.8 4.9 8.4 8.1 7.9 7.6 5.7 5.6 5.3 3.5 3.4	6.65 8.61 6.84 5.89 4.88 8.23 7.73 5.64 5.45 3.48 6.08	Value 8.6 8.6 6.8 6.8 8.4 8.0 6.3 6.1 5.6 5.1 7.7 7.0 8.4 7.9 5.2 5.4 6.5 6.1 3.5 3.8 6.1	8.61 6.84 8.17 6.21 5.32 7.35 8.11 5.32 6.27 3.67 6.02	Value 9.8 10.0 6.7 7.0 8.0 7.9 6.5 6.3 6.1 6.0 5.3 5.2 6.2 6.8 9.4 9.8 5.6 6.2 6.0 8.5	9.88 6.84 7.92 6.40 6.02 5.26 6.52 9.56 5.57 6.08	Value 7.0 6.6 7.1 7.1 7.9 8.0 6.1 6.1 7.3 7.7 4.8 4.9 6.8 6.3 5.1 5.1 6.3 6.1 5.4 6.7 6.6	6.78 7.09 7.92 6.08 7.54 4.88 6.59 5.07 6.21 5.45 6.65	Value 6.1 5.7 4.8 5.1 7.1 7.1 5.4 5.4 5.1 4.7 3.7 3.3 3.5 3.7 4.3 4.2 6.1 5.4 3.4 3.3 4.6	5.89 4.94 7.09 5.45 4.88 3.48 3.61 4.24 5.76 3.36 4.56

Projected Turbidity Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	C8		C9		RC1		RC5		RC7	
Date	Value	Average								
21-Oct-09	11.0	11.10	10.2	10.11	7.2	7.41	8.1	8.11	6.2	6.21
	11.2		10.0		7.6		8.1		6.2	
23-Oct-09	11.7	12.09	12.6	12.65	7.0	6.97	9.5	9.43	5.1	5.13
	12.5		12.6		7.0		9.4		5.2	
27-Oct-09	12.4	12.46	13.5	13.70	10.0	10.07	9.6	9.56	9.8	9.62
	12.5		13.9		10.1		9.5		9.5	
29-Oct-09	10.7	10.91	12.9	13.14	8.2	7.79	8.1	7.92	7.0	6.84
	11.2		13.4		7.3		7.7		6.7	
31-Oct-09	7.2	7.50	12.3	12.28	6.3	6.52	5.1	5.00	6.1	6.08
	7.8		12.3		6.7		4.9		6.1	
2-Nov-09	6.0	5.95	6.3	6.63	4.3	4.18	5.3	5.38	5.4	5.32
	6.0		6.9		4.1		5.4		5.2	
4-Nov-09	8.1	8.00	9.4	9.55	5.4	5.70	7.7	8.04	6.3	6.40
	7.9		9.7		6.0		8.4		6.5	
6-Nov-09	11.5	11.72	10.4	10.17	7.5	7.35	6.6	6.65	6.6	6.71
	11.9		9.9		7.2		6.7		6.8	
10-Nov-09	9.1	9.30	10.4	10.11	6.3	6.27	6.6	6.65	5.8	5.76
	9.5		9.8	1	6.2		6.7		5.7	
12-Nov-09	8.1	8.12	9.3	9.05	5.1	5.13	7.9	7.66	4.3	4.24
	8.2		8.8		5.2		7.5		4.2	
14-Nov-09	6.7	6.94	8.7	8.62	7.0	6.84	5.2	5.19	4.3	4.12
	7.2		8.6		6.7		5.2		3.9	
16-Nov-09	14.0	14.14	11.5	11.10	10.5	10.57	11.8	11.84	11.3	11.14
	14.3		10.7	1	10.6]	11.9]	11.0	

Mid-Ebb	C8		C9		RC1		RC5		RC7	
Date	Value	Average								
21-Oct-09	8.2	8.31	12.0	11.90	6.3	6.27	7.7	7.73	7.0	7.09
	8.4		11.8		6.2		7.7		7.2	
23-Oct-09	8.7	8.80	10.7	10.73	6.0	5.89	5.3	5.32	5.6	5.51
	8.9		10.8		5.8		5.3		5.4	
27-Oct-09	9.2	9.18	10.0	9.98	6.5	6.59	7.5	7.47	11.8	10.95
	9.2		9.9		6.7		7.5		10.1	
29-Oct-09	7.4	7.56	7.9	7.81	7.9	7.85	6.3	6.27	6.3	6.02
	7.7		7.7		7.9		6.2		5.7	
31-Oct-09	6.6	6.32	6.9	7.32	5.6	5.51	4.9	5.26	5.4	5.38
	6.1		7.7		5.4		5.6		5.3	
2-Nov-09	8.2	7.81	8.1	8.06	5.6	5.51	5.8	6.46	5.7	5.51
	7.4		8.1		5.4		7.1		5.3	
4-Nov-09	7.2	7.19	9.9	9.67	4.9	5.07	6.1	5.89	6.8	6.52
	7.2		9.4		5.2		5.7		6.2	
6-Nov-09	5.6	5.52	6.4	6.63	5.4	5.45	6.2	6.08	6.2	5.95
	5.5		6.8		5.4		6.0		5.7	
10-Nov-09	6.3	6.32	6.4	6.45	5.6	5.51	4.7	4.75	7.7	8.17
	6.3		6.4		5.4		4.8		8.6	
12-Nov-09	7.8	8.06	7.3	7.32	3.2	3.17	4.7	4.88	4.4	4.43
	8.3		7.3		3.2		5.1		4.4	
14-Nov-09	6.9	7.07	7.2	7.38	5.4	5.38	5.7	5.64	5.3	5.45
	7.2		7.6		5.3		5.6		5.6	
16-Nov-09	12.3	12.28	10.0	10.29	12.3	12.09	10.6	10.64	11.3	11.27
	12.3		10.5		11.9		10.6		11.3	

Mid-flood	WSD7			WSD9			WSD10			WSD15			WSD17		
Date	Value	Value	Average												
21-Oct-09	4.40	4.40	4.40	4.70	4.82	4.76	5.14	5.10	5.12	5.14	5.17	5.16	5.38	5.20	5.29
23-Oct-09	4.91	4.38	4.65	4.27	4.40	4.34	4.51	4.47	4.49	4.68	4.60	4.64	4.88	4.86	4.87
27-Oct-09	4.20	4.23	4.22	4.96	4.91	4.94	4.68	4.65	4.67	4.44	4.38	4.41	4.92	4.66	4.79
29-Oct-09	4.76	4.63	4.70	4.90	4.89	4.90	6.07	6.01	6.04	4.48	4.37	4.43	4.60	4.52	4.56
31-Oct-09	4.51	4.62	4.57	5.10	5.04	5.07	4.93	4.86	4.90	4.88	4.79	4.84	4.75	4.80	4.78
2-Nov-09	5.14	5.16	5.15	5.26	5.31	5.29	5.42	5.55	5.49	5.68	5.70	5.69	5.85	5.34	5.60
4-Nov-09	6.23	6.12	6.18	6.44	6.34	6.39	6.48	6.46	6.47	6.59	6.45	6.52	6.53	6.62	6.58
6-Nov-09	5.50	5.43	5.47	5.34	5.30	5.32	5.59	5.58	5.59	5.63	5.65	5.64	5.63	5.61	5.62
10-Nov-09	5.18	5.17	5.18	4.67	4.61	4.64	5.13	5.08	5.11	4.89	4.91	4.90	5.21	5.12	5.17
12-Nov-09	3.38	3.63	3.51	3.32	3.41	3.37	3.49	3.68	3.59	3.30	3.63	3.47	3.91	4.06	3.99
14-Nov-09	6.82	6.76	6.79	8.25	8.33	8.29	7.98	8.32	8.15	8.52	8.62	8.57	8.40	8.43	8.42
16-Nov-09	7.45	7.38	7.42	8.58	8.55	8.57	7.48	7.47	7.48	7.43	7.42	7.43	8.90	8.29	8.60

Mid-ebb	WSD7			WSD9			WSD10			WSD15			WSD17		
Date	Value	Value	Average												
21-Oct-09	4.89	4.83	4.86	4.78	4.78	4.78	5.09	5.03	5.06	4.93	4.88	4.91	4.99	4.67	4.83
23-Oct-09	4.07	3.88	3.98	4.44	4.36	4.40	5.56	5.38	5.47	4.65	4.62	4.64	4.33	4.16	4.25
27-Oct-09	4.79	4.57	4.68	4.70	4.64	4.67	4.58	4.66	4.62	4.28	4.23	4.26	5.02	4.72	4.87
29-Oct-09	5.37	5.37	5.37	5.39	5.17	5.28	5.06	4.97	5.02	4.87	4.79	4.83	4.31	4.24	4.28
31-Oct-09	4.50	4.42	4.46	5.22	5.13	5.18	5.83	5.88	5.86	5.14	5.22	5.18	5.07	5.27	5.17
2-Nov-09	5.13	5.06	5.10	5.28	5.21	5.25	5.18	5.14	5.16	4.45	4.32	4.39	4.22	4.29	4.26
4-Nov-09	6.14	6.12	6.13	6.20	6.19	6.20	6.29	6.27	6.28	6.40	6.46	6.43	6.20	6.16	6.18
6-Nov-09	5.31	5.31	5.31	5.66	5.65	5.66	5.79	5.73	5.76	5.75	5.74	5.75	5.55	5.61	5.58
10-Nov-09	6.03	5.97	6.00	5.49	5.38	5.44	4.36	4.29	4.33	4.67	4.64	4.66	5.35	5.41	5.38
12-Nov-09	4.84	4.81	4.83	3.59	3.71	3.65	4.70	4.69	4.70	2.81	3.04	2.93	3.13	3.40	3.27
14-Nov-09	7.12	7.16	7.14	8.57	8.58	8.58	8.57	8.43	8.50	8.54	8.57	8.56	8.45	8.41	8.43
16-Nov-09	7.85	7.72	7.79	8.77	8.76	8.77	6.66	6.61	6.64	6.87	6.80	6.84	7.18	7.09	7.14

Mid-flood	WSD19			WSD20			WSD21			RW1			C1		
Date	Value	Value	Average												
21-Oct-09	4.36	4.45	4.41	5.31	4.78	5.05	4.49	4.49	4.49	4.74	4.66	4.70	4.75	4.52	4.64
23-Oct-09	3.71	3.60	3.66	4.78	4.58	4.68	3.92	3.86	3.89	4.35	4.35	4.35	4.62	4.48	4.55
27-Oct-09	3.94	3.83	3.89	3.82	3.88	3.85	4.45	4.34	4.40	4.35	4.32	4.34	4.64	4.64	4.64
29-Oct-09	4.99	4.92	4.96	4.59	4.55	4.57	4.66	4.61	4.64	4.75	4.71	4.73	4.84	4.82	4.83
31-Oct-09	4.33	4.31	4.32	4.04	4.11	4.08	4.89	4.87	4.88	5.22	5.20	5.21	4.82	4.81	4.82
2-Nov-09	5.57	5.40	5.49	5.30	5.35	5.33	4.90	4.55	4.73	5.28	4.66	4.97	4.80	4.78	4.79
4-Nov-09	6.38	6.31	6.35	6.48	6.41	6.45	4.82	4.76	4.79	4.79	4.96	4.88	4.53	4.60	4.57
6-Nov-09	5.17	5.11	5.14	5.79	5.78	5.79	4.73	4.67	4.70	4.56	4.55	4.56	4.69	4.61	4.65
10-Nov-09	5.54	5.52	5.53	5.38	5.32	5.35	4.50	4.45	4.48	4.59	4.55	4.57	4.68	4.66	4.67
12-Nov-09	3.30	3.42	3.36	3.18	3.51	3.35	3.93	3.86	3.90	4.11	4.05	4.08	3.69	3.64	3.67
14-Nov-09	8.03	7.74	7.89	7.98	7.99	7.99	3.53	3.48	3.51	4.32	4.13	4.23	4.43	4.47	4.45
16-Nov-09	7.36	7.19	7.28	8.55	8.50	8.53	4.66	4.32	4.49	4.58	4.47	4.53	5.33	5.43	5.38

Mid-ebb	WSD19			WSD20			WSD21			RW1			C1		
Date	Value	Value	Average												
21-Oct-09	4.70	4.93	4.82	4.80	4.80	4.80	4.84	4.84	4.84	4.56	4.48	4.52	4.55	4.44	4.50
23-Oct-09	4.04	4.25	4.15	4.52	4.48	4.50	3.67	3.65	3.66	4.93	4.55	4.74	4.38	4.38	4.38
27-Oct-09	4.92	4.99	4.96	4.92	5.05	4.99	4.60	4.41	4.51	4.66	4.46	4.56	4.81	4.64	4.73
29-Oct-09	4.71	4.63	4.67	5.10	5.02	5.06	4.81	4.71	4.76	4.83	4.78	4.81	4.66	4.54	4.60
31-Oct-09	4.07	4.14	4.11	4.69	4.43	4.56	5.22	4.98	5.10	5.06	4.86	4.96	5.20	5.17	5.19
2-Nov-09	4.28	4.43	4.36	4.86	4.94	4.90	4.90	4.79	4.85	5.50	5.62	5.56	4.99	4.82	4.91
4-Nov-09	6.58	6.55	6.57	6.66	6.53	6.60	4.52	4.44	4.48	4.63	4.52	4.58	5.65	5.60	5.63
6-Nov-09	5.78	5.76	5.77	5.93	5.92	5.93	3.96	3.90	3.93	4.01	3.99	4.00	4.79	4.75	4.77
10-Nov-09	5.95	5.93	5.94	5.74	5.67	5.71	4.65	4.55	4.60	4.67	4.62	4.65	4.50	4.38	4.44
12-Nov-09	2.96	3.02	2.99	3.67	3.76	3.72	3.75	3.73	3.74	3.85	3.78	3.82	3.96	3.91	3.94
14-Nov-09	8.39	8.23	8.31	7.91	7.84	7.88	4.62	4.52	4.57	4.63	4.57	4.60	4.55	4.32	4.44
16-Nov-09	8.33	8.20	8.27	8.76	8.70	8.73	6.67	6.49	6.58	6.33	6.22	6.28	4.02	4.05	4.04

Mid-flood	C2			C3			C4			C5			C6		
Date	Value	Value	Average												
21-Oct-09	4.52	4.46	4.49	4.46	4.39	4.43	4.46	4.29	4.38	4.55	4.48	4.52	3.51	3.44	3.48
23-Oct-09	4.23	3.96	4.10	4.22	4.09	4.16	4.22	4.01	4.12	4.88	4.32	4.60	2.83	2.63	2.73
27-Oct-09	4.39	4.25	4.32	4.42	4.36	4.39	4.55	4.45	4.50	4.46	4.36	4.41	3.56	3.29	3.43
29-Oct-09	4.69	4.60	4.65	4.60	4.61	4.61	4.58	4.51	4.55	4.70	4.60	4.65	3.73	3.29	3.51
31-Oct-09	4.87	4.83	4.85	5.05	5.02	5.04	5.12	4.99	5.06	5.03	4.92	4.98	4.03	3.92	3.98
2-Nov-09	4.69	4.59	4.64	5.07	4.85	4.96	4.71	4.66	4.69	5.31	4.65	4.98	3.85	3.76	3.81
4-Nov-09	5.36	5.01	5.19	5.34	5.31	5.33	5.24	5.20	5.22	4.83	4.73	4.78	3.85	3.74	3.80
6-Nov-09	4.70	4.60	4.65	4.61	4.58	4.60	4.58	4.54	4.56	4.74	4.66	4.70	3.46	3.34	3.40
10-Nov-09	4.53	4.44	4.49	4.44	4.45	4.45	4.42	4.35	4.39	4.54	4.44	4.49	3.57	3.13	3.35
12-Nov-09	3.84	3.78	3.81	3.97	3.95	3.96	3.87	3.81	3.84	3.87	3.81	3.84	2.76	2.70	2.73
14-Nov-09	4.47	4.44	4.46	4.27	4.18	4.23	3.97	3.95	3.96	3.81	3.67	3.74	3.16	3.19	3.18
16-Nov-09	3.99	3.91	3.95	4.32	4.25	4.29	4.34	4.26	4.30	4.43	4.33	4.38	3.15	3.20	3.18

Mid-ebb	C2			C3			C4			C5			C6		
Date	Value	Value	Average												
21-Oct-09	4.47	4.47	4.47	4.73	4.64	4.69	4.84	4.83	4.84	4.26	4.26	4.26	3.74	3.71	3.73
23-Oct-09	4.03	3.95	3.99	4.08	4.00	4.04	3.99	3.91	3.95	4.07	3.94	4.01	3.68	3.35	3.52
27-Oct-09	4.75	4.59	4.67	4.53	4.42	4.48	4.58	4.44	4.51	4.31	4.18	4.25	4.29	3.85	4.07
29-Oct-09	5.02	4.97	5.00	4.98	4.84	4.91	4.77	4.76	4.77	4.84	4.79	4.82	3.08	2.98	3.03
31-Oct-09	5.11	5.01	5.06	4.77	4.75	4.76	4.79	4.75	4.77	5.06	4.81	4.94	4.49	3.43	3.96
2-Nov-09	5.16	5.01	5.09	4.74	4.73	4.74	4.84	4.80	4.82	5.19	5.02	5.11	4.46	4.28	4.37
4-Nov-09	5.03	5.01	5.02	4.79	4.79	4.79	4.69	4.61	4.65	4.93	4.58	4.76	4.47	4.28	4.38
6-Nov-09	4.41	4.33	4.37	4.35	4.30	4.33	4.09	4.05	4.07	3.98	3.96	3.97	3.80	3.76	3.78
10-Nov-09	4.86	4.81	4.84	4.82	4.68	4.75	4.61	4.60	4.61	4.68	4.63	4.66	2.92	2.82	2.87
12-Nov-09	3.86	3.83	3.85	4.07	4.00	4.04	3.88	3.83	3.86	3.99	3.92	3.96	2.81	2.77	2.79
14-Nov-09	4.59	4.68	4.64	4.60	4.55	4.58	4.56	4.48	4.52	4.76	4.75	4.76	3.89	3.80	3.85
16-Nov-09	5.75	5.54	5.65	6.22	6.09	6.16	5.58	5.37	5.48	6.11	6.11	6.11	5.64	5.21	5.43

Mid-flood	C7			C8			C9			RC1			RC5		
Date	Value	Value	Average												
21-Oct-09	4.07	3.91	3.99	4.96	4.96	4.96	4.93	4.78	4.86	4.15	4.15	4.15	4.54	4.55	4.55
23-Oct-09	3.51	3.38	3.45	4.19	4.07	4.13	3.83	3.81	3.82	4.18	4.18	4.18	3.94	3.92	3.93
27-Oct-09	3.76	3.35	3.56	3.90	3.63	3.77	4.22	3.46	3.84	4.42	4.30	4.36	4.52	4.48	4.50
29-Oct-09	4.23	4.09	4.16	4.16	4.04	4.10	3.55	3.45	3.50	4.65	4.62	4.64	4.74	4.72	4.73
31-Oct-09	4.27	4.19	4.23	4.63	4.53	4.58	4.05	3.99	4.02	5.00	4.93	4.97	5.28	5.32	5.30
2-Nov-09	4.32	3.60	3.96	4.03	3.90	3.97	4.90	4.45	4.68	4.53	4.49	4.51	4.42	4.34	4.38
4-Nov-09	3.89	3.82	3.86	4.36	4.32	4.34	4.58	4.47	4.53	5.80	5.77	5.79	4.80	4.76	4.78
6-Nov-09	3.89	3.78	3.84	4.43	4.42	4.43	4.66	4.59	4.63	4.52	4.46	4.49	4.76	4.66	4.71
10-Nov-09	4.07	3.93	4.00	4.00	3.88	3.94	3.39	3.29	3.34	4.49	4.46	4.48	4.58	4.56	4.57
12-Nov-09	2.87	2.82	2.85	3.98	3.94	3.96	3.99	3.92	3.96	3.90	3.82	3.86	3.89	3.85	3.87
14-Nov-09	3.09	3.12	3.11	4.65	4.57	4.61	4.51	4.48	4.50	4.77	4.75	4.76	3.96	3.91	3.94
16-Nov-09	3.97	3.65	3.81	6.37	6.33	6.35	6.33	6.13	6.23	3.62	3.68	3.65	4.32	4.35	4.34

Mid-ebb	C7			C8			C9			RC1			RC5		
Date	Value	Value	Average												
21-Oct-09	3.67	3.65	3.66	4.96	4.78	4.87	5.01	5.13	5.07	4.51	4.43	4.47	4.73	4.61	4.67
23-Oct-09	3.79	3.52	3.66	4.64	4.54	4.59	5.43	4.50	4.97	3.91	3.86	3.89	4.05	4.05	4.05
27-Oct-09	3.69	3.71	3.70	4.44	4.44	4.44	4.64	4.45	4.55	4.18	4.06	4.12	4.21	4.16	4.19
29-Oct-09	3.58	3.53	3.56	4.41	4.40	4.41	4.78	4.64	4.71	4.74	4.74	4.74	4.83	4.73	4.78
31-Oct-09	4.09	3.88	3.99	4.73	4.71	4.72	4.88	4.75	4.82	4.58	4.60	4.59	4.92	4.76	4.84
2-Nov-09	4.80	4.56	4.68	4.95	4.90	4.93	3.89	4.03	3.96	4.79	4.70	4.75	5.64	5.58	5.61
4-Nov-09	4.92	4.65	4.79	5.76	5.74	5.75	5.69	5.65	5.67	4.71	4.63	4.67	4.61	4.62	4.62
6-Nov-09	3.98	3.96	3.97	5.42	5.36	5.39	5.31	5.21	5.26	4.18	4.16	4.17	4.13	4.04	4.09
10-Nov-09	3.42	3.37	3.40	4.25	4.24	4.25	4.62	4.48	4.55	4.58	4.58	4.58	4.67	4.57	4.62
12-Nov-09	3.01	2.98	3.00	4.11	4.03	4.07	3.94	3.87	3.91	3.98	3.90	3.94	3.79	3.77	3.78
14-Nov-09	3.94	3.92	3.93	4.39	4.47	4.43	4.54	4.58	4.56	4.61	4.59	4.60	4.58	4.63	4.61
16-Nov-09	5.15	5.12	5.14	6.39	6.33	6.36	5.93	5.89	5.91	5.86	5.93	5.90	6.91	6.66	6.79

Mid-flood	RC7		
Date	Value	Value	Average
21-Oct-09	3.53	3.53	3.53
23-Oct-09	3.57	3.17	3.37
27-Oct-09	5.06	3.67	4.37
29-Oct-09	4.16	4.02	4.09
31-Oct-09	4.27	4.14	4.21
2-Nov-09	4.04	3.73	3.89
4-Nov-09	3.88	3.66	3.77
6-Nov-09	3.60	3.51	3.56
10-Nov-09	4.00	3.86	3.93
12-Nov-09	1.71	1.67	1.69
14-Nov-09	2.16	2.12	2.14
16-Nov-09	4.32	4.32	4.32

Mid-ebb	RC7		
Date	Value	Value	Average
21-Oct-09	3.69	3.71	3.70
23-Oct-09	4.17	3.81	3.99
27-Oct-09	4.57	4.07	4.32
29-Oct-09	4.09	3.67	3.88
31-Oct-09	4.16	4.00	4.08
2-Nov-09	4.78	4.54	4.66
4-Nov-09	5.04	4.91	4.98
6-Nov-09	3.94	3.88	3.91
10-Nov-09	3.93	3.51	3.72
12-Nov-09	2.73	2.70	2.72
14-Nov-09	3.58	3.62	3.60
16-Nov-09	5.53	5.53	5.53

Projected DO Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21	
Date	Value	Average	Value	Average	Value	Average	Value	Average								
21-Oct-09	4.01	4.01	4.26	4.31	4.50	4.48	3.80	3.81	4.71	4.63	3.97	4.01	4.53	4.30	4.01	4.01
	4.01	1	4.37	1	4.47		3.82	1	4.55	1	4.05	1	4.07	1	4.01	
23-Oct-09	4.47	4.23	3.87	3.93	3.95	3.93	3.46	3.43	4.27	4.27	3.22	3.17	4.07	3.99	3.51	3.48
	3.99	1	3.99	1	3.91	1	3.40	1	4.26	1	3.13	1	3.90	1	3.45	
27-Oct-09	3.82	3.84	4.50	4.47	4.10	4.09	3.28	3.26	4.31	4.19	3.42	3.37	3.26	3.28	3.98	3.93
	3.85	1	4.45	1	4.07	1	3.23	1	4.08	1	3.33	1	3.31	1	3.88	1
29-Oct-09	4.33	4.27	4.44	4.44	5.32	5.29	3.31	3.27	4.03	3.99	4.33	4.30	3.91	3.89	4.17	4.14
	4.21	1	4.43	1	5.26	1	3.23	1	3.96	1	4.27	1	3.88	1	4.12	1
31-Oct-09	4.11	4.16	4.62	4.60	4.32	4.29	3.60	3.57	4.16	4.18	3.76	3.75	3.44	3.47	4.37	4.36
	4.21		4.57	1	4.26	1	3.54		4.20	1	3.74	1	3.50	1	4.35	
2-Nov-09	4.68	4.69	4.77	4.79	4.75	4.80	4.19	4.20	5.12	4.90	4.84	4.76	4.52	4.54	4.38	4.22
	4.70	1	4.81	1	4.86	1	4.21	1	4.68	1	4.69	1	4.56	1	4.07	1
4-Nov-09	5.67	5.62	5.84	5.79	5.68	5.67	4.87	4.81	5.72	5.76	5.54	5.51	5.52	5.49	4.31	4.28
7 1407 00	5.57	0.02	5.75	0.75	5.66	0.07	4.76	7.01	5.80	0.70	5.48	0.01	5.46	0.40	4.26	4.20
6-Nov-09	5.01	4.97	4.84	4.82	4.90	4.89	4.16	4.16	4.93	4.92	4.49	4.46	4.93	4.93	4.23	4.20
0 1100 03	4.94	7.57	4.80	4.02	4.89	4.03	4.17	7.10	4.91	4.52	4.44	7.70	4.93	4.55	4.18	7.20
10-Nov-09	4.72	4.71	4.23	4.21	4.49	4.47	3.61	3.62	4.56	4.52	4.81	4.80	4.59	4.56	4.02	4.00
10-1100-09	4.72	4.71	4.23	4.21	4.45	4.47	3.63	3.02	4.48	4.52	4.79	4.00	4.53	4.50	3.98	4.00
12-Nov-09	3.08	3.19	3.01	3.05	3.06	3.14	2.44	2.56	3.42	3.49	2.87	2.92	2.71	2.85	3.51	3.48
12-1100-09		3.19		3.03	3.22	3.14		2.50	3.56	3.49	2.97	2.92		2.00		3.40
14-Nov-09	3.30	6.18	3.09 7.48	7.54	6.99	7.14	2.68 6.29	6.33		7.07	6.97	6.85	2.99 6.80	6.81	3.45 3.16	3.13
14-1100-09	6.21	0.10		7.51		7.14		0.33	7.36	7.37		0.65		0.61		3.13
40 Nov. 00	6.15	0.75	7.55	7.70	7.29	0.55	6.37	5.40	7.38	7.50	6.72	0.00	6.81	7.07	3.11	1.04
16-Nov-09	6.78	6.75	7.78	7.76	6.55	6.55	5.49	5.48	7.79	7.53	6.39	6.32	7.29	7.27	4.17	4.01
	6.72		7.75		6.54		5.48		7.26		6.24		7.24		3.86	
Mid-Ebb	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21	1
Mid-Ebb Date	WSD7 Value	Average	WSD9 Value	Average	WSD10 Value	Average	WSD15 Value	Average	WSD17 Value	Average	WSD19 Value	Average	WSD20 Value	Average	WSD21 Value	Average
Date	Value	Average 4.42	Value	Average 4.33	Value	Average 4.43	Value	Average 3.62	Value	Average 4.23	Value	Average 4.18	Value	Average 4.09	Value	Average 4.33
		Average 4.42	Value 4.33	Average 4.33	Value 4.46	Average 4.43	Value 3.64	Average 3.62	Value 4.37	Average 4.23	Value 4.08	Average 4.18	Value 4.09	Average 4.09	Value 4.33	Average 4.33
Date 21-Oct-09	Value 4.45 4.40	4.42	Value 4.33 4.33	4.33	Value 4.46 4.41	4.43	Value 3.64 3.60	3.62	Value 4.37 4.09	4.23	Value 4.08 4.28	4.18	Value 4.09 4.09	4.09	Value 4.33 4.33	4.33
Date	Value 4.45 4.40 3.70		Value 4.33 4.33 4.02		Value 4.46 4.41 4.87		Value 3.64 3.60 3.43		Value 4.37 4.09 3.79		Value 4.08 4.28 3.51		Value 4.09 4.09 3.85		Value 4.33 4.33 3.28	
Date 21-Oct-09 23-Oct-09	Value 4.45 4.40 3.70 3.53	4.42 3.62	Value 4.33 4.33 4.02 3.95	4.33 3.99	Value 4.46 4.41 4.87 4.71	4.43 4.79	Value 3.64 3.60 3.43 3.41	3.62 3.42	Value 4.37 4.09 3.79 3.64	4.23 3.72	Value 4.08 4.28 3.51 3.69	4.18 3.60	Value 4.09 4.09 3.85 3.82	4.09 3.84	Value 4.33 4.33 3.28 3.26	4.33 3.27
Date 21-Oct-09	Value 4.45 4.40 3.70 3.53 4.36	4.42	Value 4.33 4.33 4.02 3.95 4.26	4.33	Value 4.46 4.41 4.87 4.71 4.01	4.43	Value 3.64 3.60 3.43 3.41 3.16	3.62	Value 4.37 4.09 3.79 3.64 4.40	4.23	Value 4.08 4.28 3.51 3.69 4.27	4.18	Value 4.09 4.09 3.85 3.82 4.19	4.09	Value 4.33 4.33 3.28 3.26 4.11	4.33
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16	4.42 3.62 4.26	Value 4.33 4.33 4.02 3.95 4.26 4.21	4.33 3.99 4.23	Value 4.46 4.41 4.87 4.71 4.01 4.08	4.43 4.79 4.05	Value 3.64 3.60 3.43 3.41 3.16 3.12	3.62 3.42 3.14	Value 4.37 4.09 3.79 3.64 4.40 4.13	4.23 3.72 4.27	Value 4.08 4.28 3.51 3.69 4.27 4.33	4.18 3.60 4.30	Value 4.09 4.09 3.85 3.82 4.19 4.30	4.09 3.84 4.25	Value 4.33 4.33 3.28 3.26 4.11 3.94	4.33 3.27 4.03
Date 21-Oct-09 23-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89	4.42 3.62	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89	4.33 3.99	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43	4.43 4.79	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60	3.62 3.42	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77	4.23 3.72	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09	4.18 3.60	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35	4.09 3.84	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30	4.33 3.27
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89	4.42 3.62 4.26 4.89	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69	4.33 3.99 4.23 4.79	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35	4.43 4.79 4.05 4.39	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54	3.62 3.42 3.14 3.57	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71	4.23 3.72 4.27 3.74	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02	4.18 3.60 4.30 4.06	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28	4.09 3.84 4.25 4.31	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21	4.33 3.27 4.03 4.26
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10	4.42 3.62 4.26	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73	4.33 3.99 4.23	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11	4.43 4.79 4.05	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80	3.62 3.42 3.14	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44	4.23 3.72 4.27	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53	4.18 3.60 4.30	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00	4.09 3.84 4.25	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67	4.33 3.27 4.03
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02	4.42 3.62 4.26 4.89 4.06	Value 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65	4.33 3.99 4.23 4.79 4.69	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15	4.43 4.79 4.05 4.39 5.13	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85	3.62 3.42 3.14 3.57 3.83	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62	4.23 3.72 4.27 3.74 4.53	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60	4.18 3.60 4.30 4.06 3.57	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78	4.09 3.84 4.25 4.31 3.89	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45	4.33 3.27 4.03 4.26 4.56
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67	4.42 3.62 4.26 4.89	Value 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79	4.33 3.99 4.23 4.79	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54	4.43 4.79 4.05 4.39	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29	3.62 3.42 3.14 3.57	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70	4.23 3.72 4.27 3.74	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72	4.18 3.60 4.30 4.06	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14	4.09 3.84 4.25 4.31	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38	4.33 3.27 4.03 4.26
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61	4.42 3.62 4.26 4.89 4.06 4.64	Value 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72	4.33 3.99 4.23 4.79 4.69	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50	4.43 4.79 4.05 4.39 5.13 4.52	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19	3.62 3.42 3.14 3.57 3.83 3.24	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76	4.23 3.72 4.27 3.74 4.53 3.73	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85	4.18 3.60 4.30 4.06 3.57 3.78	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21	4.09 3.84 4.25 4.31 3.89 4.18	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28	4.33 3.27 4.03 4.26 4.56 4.33
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61 5.59	4.42 3.62 4.26 4.89 4.06	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62	4.33 3.99 4.23 4.79 4.69	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51	4.43 4.79 4.05 4.39 5.13	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73	3.62 3.42 3.14 3.57 3.83	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43	4.23 3.72 4.27 3.74 4.53	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71	4.18 3.60 4.30 4.06 3.57	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68	4.09 3.84 4.25 4.31 3.89	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04	4.33 3.27 4.03 4.26 4.56
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61 5.59 5.57	4.42 3.62 4.26 4.89 4.06 4.64 5.58	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61	4.33 3.99 4.23 4.79 4.69 4.75 5.62	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49	4.43 4.79 4.05 4.39 5.13 4.52 5.50	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77	3.62 3.42 3.14 3.57 3.83 3.24 4.75	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39	4.23 3.72 4.27 3.74 4.53 3.73 5.41	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69	4.18 3.60 4.30 4.06 3.57 3.78 5.70	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57	4.09 3.84 4.25 4.31 3.89 4.18 5.62	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97	4.33 3.27 4.03 4.26 4.56 4.33 4.01
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83	4.42 3.62 4.26 4.89 4.06 4.64	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 5.62 5.61 5.13	4.33 3.99 4.23 4.79 4.69	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07	4.43 4.79 4.05 4.39 5.13 4.52	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25	3.62 3.42 3.14 3.57 3.83 3.24	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86	4.23 3.72 4.27 3.74 4.53 3.73	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02	4.18 3.60 4.30 4.06 3.57 3.78	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05	4.09 3.84 4.25 4.31 3.89 4.18	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54	4.33 3.27 4.03 4.26 4.56 4.33
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 5.62 5.61 5.13 5.12	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25 4.24	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49	4.42 3.62 4.26 4.89 4.06 4.64 5.58	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98	4.33 3.99 4.23 4.79 4.69 4.75 5.62	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82	4.43 4.79 4.05 4.39 5.13 4.52 5.50	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25 4.24 3.45	3.62 3.42 3.14 3.57 3.83 3.24 4.75	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69	4.23 3.72 4.27 3.74 4.53 3.73 5.41	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17	4.18 3.60 4.30 4.06 3.57 3.78 5.70	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89	4.09 3.84 4.25 4.31 3.89 4.18 5.62	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.16	4.33 3.27 4.03 4.26 4.56 4.33 4.01
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49 5.43	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83 5.46	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98 4.88	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13 4.93	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82 3.76	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04 3.79	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25 4.24 3.45 3.43	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24 3.44	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69 4.74	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89 4.71	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17 5.15	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01 5.16	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89 4.83	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05 4.86	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.16 4.07	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51 4.11
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49 5.43 4.41	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98 4.88 3.25	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82 3.76 4.12	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25 4.24 3.45 3.43 2.07	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69 4.74 2.74	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17 5.15 2.57	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89 4.83 3.13	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.16 4.07 3.35	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 6-Nov-09 10-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49 5.43 4.41 4.38	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83 5.46 4.39	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98 4.88 3.25 3.36	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13 4.93 3.31	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82 3.76 4.12 4.11	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04 3.79 4.11	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25 4.24 3.45 3.43 2.07 2.24	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24 3.44 2.16	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69 4.74 2.98	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89 4.71 2.86	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17 5.15 2.57 2.62	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01 5.16 2.60	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89 4.83 3.13 3.20	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05 4.86 3.17	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.16 4.07 3.35 3.34	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51 4.11 3.34
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49 5.43 4.41 4.38 6.48	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83 5.46	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98 4.88 3.25 3.36 7.77	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13 4.93	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82 3.76 4.12 4.11 7.51	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04 3.79	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.77 4.25 4.24 3.45 3.43 2.07 2.24 6.31	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24 3.44	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69 4.74 2.74 2.98 7.40	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89 4.71	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17 5.15 2.57 2.62 7.29	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01 5.16	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89 4.83 3.13 3.20 6.74	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05 4.86	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.16 4.07 3.35 3.34 4.13	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51 4.11
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 10-Nov-09 12-Nov-09 14-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49 5.43 4.41 4.38 6.48 6.52	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83 5.46 4.39 6.50	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98 4.88 3.25 3.36 7.77 7.78	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13 4.93 3.31 7.77	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82 3.76 4.12 4.11 7.51 7.38	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04 3.79 4.11 7.44	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.73 4.77 4.25 4.24 3.45 3.43 2.07 2.24 6.31 6.33	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24 3.44 2.16 6.32	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69 4.74 2.74 2.98 7.40 7.37	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89 4.71 2.86 7.38	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17 5.15 2.57 2.62 7.29 7.15	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01 5.16 2.60 7.22	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89 4.83 3.13 3.20 6.74 6.68	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05 4.86 3.17 6.71	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.10 4.07 3.35 3.34 4.13 4.04	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51 4.11 3.34 4.09
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 6-Nov-09 10-Nov-09	Value 4.45 4.40 3.70 3.53 4.36 4.16 4.89 4.10 4.02 4.67 4.61 5.59 5.57 4.83 4.83 5.49 5.43 4.41 4.38 6.48	4.42 3.62 4.26 4.89 4.06 4.64 5.58 4.83 5.46 4.39	Value 4.33 4.33 4.02 3.95 4.26 4.21 4.89 4.69 4.73 4.65 4.79 4.72 5.62 5.61 5.13 5.12 4.98 4.88 3.25 3.36 7.77	4.33 3.99 4.23 4.79 4.69 4.75 5.62 5.13 4.93 3.31	Value 4.46 4.41 4.87 4.71 4.01 4.08 4.43 4.35 5.11 5.15 4.54 4.50 5.51 5.49 5.07 5.02 3.82 3.76 4.12 4.11 7.51	4.43 4.79 4.05 4.39 5.13 4.52 5.50 5.04 3.79 4.11	Value 3.64 3.60 3.43 3.41 3.16 3.12 3.60 3.54 3.80 3.85 3.29 3.19 4.77 4.25 4.24 3.45 3.43 2.07 2.24 6.31	3.62 3.42 3.14 3.57 3.83 3.24 4.75 4.24 3.44 2.16	Value 4.37 4.09 3.79 3.64 4.40 4.13 3.77 3.71 4.44 4.62 3.70 3.76 5.43 5.39 4.86 4.91 4.69 4.74 2.74 2.98 7.40	4.23 3.72 4.27 3.74 4.53 3.73 5.41 4.89 4.71 2.86	Value 4.08 4.28 3.51 3.69 4.27 4.33 4.09 4.02 3.53 3.60 3.72 3.85 5.71 5.69 5.02 5.00 5.17 5.15 2.57 2.62 7.29	4.18 3.60 4.30 4.06 3.57 3.78 5.70 5.01 5.16 2.60	Value 4.09 4.09 3.85 3.82 4.19 4.30 4.35 4.28 4.00 3.78 4.14 4.21 5.68 5.57 5.05 5.05 4.89 4.83 3.13 3.20 6.74	4.09 3.84 4.25 4.31 3.89 4.18 5.62 5.05 4.86 3.17	Value 4.33 4.33 3.28 3.26 4.11 3.94 4.30 4.21 4.67 4.45 4.38 4.28 4.04 3.97 3.54 3.49 4.16 4.07 3.35 3.34 4.13	4.33 3.27 4.03 4.26 4.56 4.33 4.01 3.51 4.11 3.34

Projected DO Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	RW21		C1		C2		C3		C4		C5		C6		C7	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21-Oct-09	4.24	4.20	4.25	4.14	4.04	4.01	3.99	3.96	3.99	3.91	4.14	4.11	3.14	3.11	3.64	3.57
	4.17	1	4.04	1	3.99	1	3.93	1	3.84	1	4.08	1	3.08	1	3.50	1
23-Oct-09	3.89	3.89	4.13	4.07	3.78	3.66	3.77	3.72	3.77	3.68	4.36	4.11	2.53	2.44	3.14	3.08
	3.89	1	4.01	1	3.54	1	3.66	1	3.59	1	3.86	1	2.35	1	3.02	1
27-Oct-09	3.89	3.88	4.15	4.15	3.93	3.86	3.95	3.93	4.07	4.02	3.99	3.94	3.18	3.06	3.36	3.18
	3.86	1	4.15	1	3.80	1	3.90	1	3.98	1	3.90	1	2.94	1	3.00	1
29-Oct-09	4.25	4.23	4.33	4.32	4.19	4.15	4.11	4.12	4.10	4.06	4.20	4.16	3.34	3.14	3.78	3.72
	4.21	1	4.31	1	4.11	1	4.12	1	4.03	1	4.11	1	2.94	1	3.66	1
31-Oct-09	4.67	4.66	4.31	4.31	4.35	4.34	4.52	4.50	4.58	4.52	4.50	4.45	3.60	3.55	3.82	3.78
	4.65	1	4.30	1	4.32	1	4.49	1	4.46	1	4.40	1	3.51	1	3.75	1
2-Nov-09	4.72	4.44	4.29	4.28	4.19	4.15	4.53	4.44	4.21	4.19	4.75	4.45	3.44	3.40	3.86	3.54
	4.17	1	4.27	1	4.10		4.34	1	4.17		4.16	1	3.36] [3.22	
4-Nov-09	4.28	4.36	4.05	4.08	4.79	4.64	4.77	4.76	4.69	4.67	4.32	4.27	3.44	3.39	3.48	3.45
	4.44		4.11		4.48		4.75		4.65		4.23		3.34] [3.42	
6-Nov-09	4.08	4.07	4.19	4.16	4.20	4.16	4.12	4.11	4.10	4.08	4.24	4.20	3.09	3.04	3.48	3.43
	4.07	1	4.12	1	4.11		4.10	1	4.06		4.17	1	2.99] [3.38	
10-Nov-09	4.10	4.09	4.18	4.18	4.05	4.01	3.97	3.97	3.95	3.92	4.06	4.01	3.19	3.00	3.64	3.58
	4.07	1	4.17	1	3.97		3.98	1	3.89		3.97	1	2.80	1 [3.51	
12-Nov-09	3.67	3.65	3.30	3.28	3.43	3.41	3.55	3.54	3.46	3.43	3.46	3.43	2.47	2.44	2.57	2.54
	3.62	1	3.25	1	3.38		3.53	1	3.41		3.41	1	2.41] [2.52	
14-Nov-09	3.86	3.78	3.96	3.98	4.00	3.98	3.82	3.78	3.55	3.54	3.41	3.34	2.83	2.84	2.76	2.78
	3.69		4.00		3.97		3.74		3.53		3.28		2.85		2.79	
16-Nov-09	4.10	4.05	4.77	4.81	3.57	3.53	3.86	3.83	3.88	3.84	3.96	3.92	2.82	2.84	3.55	3.41
	4.00		4.86		3.50		3.80		3.81		3.87		2.86		3.26	
	511/6/													1		
Mid-Ebb	RW21	Ι.,	C1	Ι	C2	Ι. Δ	C3	Ι. Δ	C4		C5		C6		C7	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
	Value 4.08	Average 4.06	Value 4.07	Average 4.02	Value 4.00	Average 4.00	Value 4.23	Average 4.19	Value 4.33	Average 4.32	Value 3.81	Average 3.81	Value 3.34	Average 3.33	Value 3.28	Average 3.27
Date 21-Oct-09	Value 4.08 4.04	4.06	Value 4.07 3.97	4.02	Value 4.00 4.00	4.00	Value 4.23 4.15	4.19	Value 4.33 4.32	4.32	Value 3.81 3.81	3.81	Value 3.34 3.32	3.33	Value 3.28 3.26	3.27
Date	Value 4.08 4.04 4.41		Value 4.07 3.97 3.92		Value 4.00 4.00 3.60		Value 4.23 4.15 3.65		Value 4.33 4.32 3.57		Value 3.81 3.81 3.64		Value 3.34 3.32 3.29		Value 3.28 3.26 3.39	
Date 21-Oct-09 23-Oct-09	Value 4.08 4.04 4.41 4.24	4.06 4.32	Value 4.07 3.97 3.92 3.92	4.02 3.92	Value 4.00 4.00 3.60 3.53	4.00 3.57	Value 4.23 4.15 3.65 3.58	4.19 3.61	Value 4.33 4.32 3.57 3.50	4.32 3.53	Value 3.81 3.81 3.64 3.52	3.81	Value 3.34 3.32 3.29 3.00	3.33	Value 3.28 3.26 3.39 3.15	3.27
Date 21-Oct-09	Value 4.08 4.04 4.41 4.24 4.17	4.06	Value 4.07 3.97 3.92 3.92 4.30	4.02	Value 4.00 4.00 3.60 3.53 4.25	4.00	Value 4.23 4.15 3.65 3.58 4.05	4.19	Value 4.33 4.32 3.57 3.50 4.10	4.32	Value 3.81 3.81 3.64 3.52 3.85	3.81	Value 3.34 3.32 3.29 3.00 3.84	3.33	Value 3.28 3.26 3.39 3.15 3.30	3.27
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08	4.06 4.32 4.12	Value 4.07 3.97 3.92 3.92 4.30 4.15	4.02 3.92 4.22	Value 4.00 4.00 3.60 3.53 4.25 4.10	4.00 3.57 4.18	Value 4.23 4.15 3.65 3.58 4.05 3.95	4.19 3.61 4.00	Value 4.33 4.32 3.57 3.50 4.10 3.97	4.32 3.53 4.03	Value 3.81 3.81 3.64 3.52 3.85 3.74	3.81 3.58 3.80	Value 3.34 3.32 3.29 3.00 3.84 3.44	3.33 3.14 3.64	Value 3.28 3.26 3.39 3.15 3.30 3.32	3.27 3.27 3.31
Date 21-Oct-09 23-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32	4.06 4.32	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17	4.02 3.92	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49	4.00 3.57	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45	4.19 3.61	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27	4.32 3.53	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33	3.81	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75	3.33	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20	3.27
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30	4.06 4.32 4.12 4.31	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06	4.02 3.92 4.22 4.11	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44	4.00 3.57 4.18 4.47	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33	4.19 3.61 4.00 4.39	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26	4.32 3.53 4.03 4.26	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33 4.28	3.81 3.58 3.80 4.31	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66	3.33 3.14 3.64 2.71	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16	3.27 3.27 3.31 3.18
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52	4.06 4.32 4.12	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65	4.02 3.92 4.22	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57	4.00 3.57 4.18	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27	4.19 3.61 4.00	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28	4.32 3.53 4.03	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52	3.81 3.58 3.80	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01	3.33 3.14 3.64	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66	3.27 3.27 3.31
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44	4.06 4.32 4.12 4.31 4.48	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62	4.02 3.92 4.22 4.11 4.64	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48	4.00 3.57 4.18 4.47 4.52	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25	4.19 3.61 4.00 4.39 4.26	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25	4.32 3.53 4.03 4.26 4.27	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30	3.81 3.58 3.80 4.31 4.41	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07	3.33 3.14 3.64 2.71 3.54	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47	3.27 3.27 3.31 3.18 3.56
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92	4.06 4.32 4.12 4.31	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46	4.02 3.92 4.22 4.11	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61	4.00 3.57 4.18 4.47	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24	4.19 3.61 4.00 4.39	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33	4.32 3.53 4.03 4.26	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64	3.81 3.58 3.80 4.31	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99	3.33 3.14 3.64 2.71	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29	3.27 3.27 3.31 3.18
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97	4.06 4.32 4.12 4.31 4.48 4.94	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31	4.02 3.92 4.22 4.11 4.64 4.39	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48	4.00 3.57 4.18 4.47 4.52 4.55	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23	4.19 3.61 4.00 4.39 4.26 4.23	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29	4.32 3.53 4.03 4.26 4.27 4.31	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49	3.81 3.58 3.80 4.31 4.41 4.56	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83	3.33 3.14 3.64 2.71 3.54 3.91	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08	3.27 3.27 3.31 3.18 3.56 4.18
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14	4.06 4.32 4.12 4.31 4.48	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05	4.02 3.92 4.22 4.11 4.64	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50	4.00 3.57 4.18 4.47 4.52	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28	4.19 3.61 4.00 4.39 4.26	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19	4.32 3.53 4.03 4.26 4.27	Value 3.81 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41	3.81 3.58 3.80 4.31 4.41	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00	3.33 3.14 3.64 2.71 3.54	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40	3.27 3.27 3.31 3.18 3.56
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10	4.06 4.32 4.12 4.31 4.48 4.94 4.12	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01	4.02 3.92 4.22 4.11 4.64 4.39 5.03	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48	4.00 3.57 4.18 4.47 4.52 4.55 4.49	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28	4.19 3.61 4.00 4.39 4.26 4.23 4.28	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.12	4.32 3.53 4.03 4.26 4.27 4.31 4.16	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10	3.81 3.58 3.80 4.31 4.41 4.56 4.25	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83	3.33 3.14 3.64 2.71 3.54 3.91 3.91	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16	3.27 3.27 3.31 3.18 3.56 4.18
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59	4.06 4.32 4.12 4.31 4.48 4.94	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28	4.02 3.92 4.22 4.11 4.64 4.39	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94	4.00 3.57 4.18 4.47 4.52 4.55	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 3.89	4.19 3.61 4.00 4.39 4.26 4.23	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.12 3.66	4.32 3.53 4.03 4.26 4.27 4.31	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56	3.81 3.58 3.80 4.31 4.41 4.56	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40	3.33 3.14 3.64 2.71 3.54 3.91	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56	3.27 3.27 3.31 3.18 3.56 4.18
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 3.89 3.84	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.12 3.66 3.62	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 3.36	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18	4.06 4.32 4.12 4.31 4.48 4.94 4.12	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02	4.02 3.92 4.22 4.11 4.64 4.39 5.03	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.35	4.00 3.57 4.18 4.47 4.52 4.55 4.49	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 3.89 3.84 4.31	4.19 3.61 4.00 4.39 4.26 4.23 4.28	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.12 3.66 3.62 4.12	4.32 3.53 4.03 4.26 4.27 4.31 4.16	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54 4.18	3.81 3.58 3.80 4.31 4.41 4.56 4.25	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 3.36 2.61	3.33 3.14 3.64 2.71 3.54 3.91 3.91	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06	3.27 3.27 3.31 3.18 3.56 4.18
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18 4.16	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58 4.17	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02 3.92	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27 3.97	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.35 4.30	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91 4.32	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 3.89 3.84 4.31 4.18	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87 4.25	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 3.66 3.62 4.12 4.11	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64 4.12	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 3.56 3.54 4.18	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55 4.16	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 3.36 2.61 2.52	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38 2.57	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06 3.01	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55 3.04
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18 4.16 3.44	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02 3.92 3.54	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.35 4.30 3.45	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 4.28 3.89 3.84 4.31 4.18 3.64	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.12 3.66 3.62 4.12 4.11 3.47	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54 4.18 4.14	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 2.61 2.52 2.51	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06 3.01 2.69	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18 4.16 3.44 3.42	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58 4.17 3.43	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02 3.92 3.54 3.50	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27 3.97 3.52	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.35 4.30 3.45 3.42	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91 4.32 3.44	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 4.28 3.89 3.84 4.31 4.18 3.64 3.58	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87 4.25 3.61	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.11 3.66 3.62 4.12 4.11 3.47 3.42	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64 4.12 3.45	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54 4.18 4.14 3.57 3.51	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55 4.16	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 2.51 2.52 2.51 2.48	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38 2.57 2.49	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06 3.01 2.69 2.66	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55 3.04 2.68
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18 4.16 3.44 3.42 4.14	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58 4.17	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02 3.92 3.54 3.50 4.07	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27 3.97	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.35 4.30 3.45 3.42 4.10	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91 4.32	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 4.28 3.89 3.84 4.31 4.18 3.64 3.58 4.11	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87 4.25	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.11 3.66 3.62 4.12 4.11 3.47 3.42 4.08	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64 4.12	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54 4.18 4.14 3.57 3.51 4.26	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55 4.16	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 2.61 2.52 2.51 2.48 3.48	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38 2.57	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06 3.01 2.69 2.66 3.52	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55 3.04
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 6-Nov-09 10-Nov-09 12-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18 4.16 3.44 3.42 4.11	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58 4.17 3.43 4.13	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02 3.92 3.54 3.50 4.07 3.86	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27 3.97 3.52 3.97	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.30 3.45 3.42 4.10 4.18	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91 4.32 3.44 4.14	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 4.28 3.89 3.84 4.31 4.18 3.64 3.58 4.11 4.07	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87 4.25 3.61 4.09	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.11 3.66 3.62 4.12 4.11 3.47 3.42 4.08 4.01	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64 4.12 3.45 4.04	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54 4.14 3.57 3.51 4.26 4.25	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55 4.16 3.54 4.25	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 3.36 2.51 2.52 2.51 2.48 3.48 3.40	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38 2.57 2.49 3.44	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06 3.01 2.69 2.66 3.52 3.51	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55 3.04 2.68 3.51
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 4.08 4.04 4.41 4.24 4.17 4.08 4.32 4.30 4.52 4.44 4.92 4.97 4.14 4.10 3.59 3.58 4.18 4.16 3.44 3.42 4.14	4.06 4.32 4.12 4.31 4.48 4.94 4.12 3.58 4.17 3.43	Value 4.07 3.97 3.92 3.92 4.30 4.15 4.17 4.06 4.65 4.62 4.46 4.31 5.05 5.01 4.28 4.25 4.02 3.92 3.54 3.50 4.07	4.02 3.92 4.22 4.11 4.64 4.39 5.03 4.27 3.97 3.52	Value 4.00 4.00 3.60 3.53 4.25 4.10 4.49 4.44 4.57 4.48 4.61 4.48 4.50 4.48 3.94 3.87 4.35 4.30 3.45 3.42 4.10	4.00 3.57 4.18 4.47 4.52 4.55 4.49 3.91 4.32 3.44	Value 4.23 4.15 3.65 3.58 4.05 3.95 4.45 4.33 4.27 4.25 4.24 4.23 4.28 4.28 3.89 3.84 4.31 4.18 3.64 3.58 4.11	4.19 3.61 4.00 4.39 4.26 4.23 4.28 3.87 4.25 3.61	Value 4.33 4.32 3.57 3.50 4.10 3.97 4.27 4.26 4.28 4.25 4.33 4.29 4.19 4.11 3.66 3.62 4.12 4.11 3.47 3.42 4.08	4.32 3.53 4.03 4.26 4.27 4.31 4.16 3.64 4.12 3.45	Value 3.81 3.64 3.52 3.85 3.74 4.33 4.28 4.52 4.30 4.64 4.49 4.41 4.10 3.56 3.54 4.18 4.14 3.57 3.51 4.26	3.81 3.58 3.80 4.31 4.41 4.56 4.25 3.55 4.16	Value 3.34 3.32 3.29 3.00 3.84 3.44 2.75 2.66 4.01 3.07 3.99 3.83 4.00 3.83 3.40 2.61 2.52 2.51 2.48 3.48	3.33 3.14 3.64 2.71 3.54 3.91 3.91 3.38 2.57 2.49	Value 3.28 3.26 3.39 3.15 3.30 3.32 3.20 3.16 3.66 3.47 4.29 4.08 4.40 4.16 3.56 3.54 3.06 3.01 2.69 2.66 3.52	3.27 3.27 3.31 3.18 3.56 4.18 4.28 3.55 3.04 2.68

Projected DO Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	C8		C9		RC1		RC5		RC7	
Date	Value	Average								
21-Oct-09	4.50	4.50	4.47	4.40	3.71	3.71	4.06	4.06	3.16	3.16
	4.50		4.33		3.71		4.07		3.16	
23-Oct-09	3.80	3.74	3.47	3.46	3.74	3.74	3.52	3.51	3.19	3.01
	3.69		3.45		3.74	1	3.51		2.83	
27-Oct-09	3.53	3.41	3.83	3.48	3.95	3.90	4.04	4.02	4.52	3.90
	3.29		3.14		3.84		4.01		3.28	
29-Oct-09	3.77	3.72	3.22	3.17	4.16	4.14	4.24	4.23	3.72	3.66
	3.66		3.13		4.13		4.22		3.59	
31-Oct-09	4.20	4.15	3.67	3.64	4.47	4.44	4.72	4.74	3.82	3.76
	4.11		3.62		4.41		4.76		3.70	
2-Nov-09	3.65	3.59	4.44	4.24	4.05	4.03	3.95	3.92	3.61	3.47
	3.53		4.03		4.01		3.88		3.34	
4-Nov-09	3.95	3.93	4.15	4.10	5.19	5.17	4.29	4.27	3.47	3.37
	3.92		4.05		5.16	1	4.26		3.27	
6-Nov-09	4.02	4.01	4.22	4.19	4.04	4.01	4.26	4.21	3.22	3.18
	4.01		4.16		3.99	1	4.17		3.14	
10-Nov-09	3.63	3.57	3.07	3.03	4.01	4.00	4.10	4.09	3.58	3.51
	3.52		2.98		3.99	1	4.08		3.45	
12-Nov-09	3.61	3.59	3.62	3.58	3.49	3.45	3.48	3.46	1.53	1.51
	3.57		3.55		3.42	1	3.44		1.49	
14-Nov-09	4.21	4.18	4.09	4.07	4.27	4.26	3.54	3.52	1.93	1.91
	4.14		4.06		4.25	1	3.50		1.90	
16-Nov-09	5.77	5.76	5.74	5.65	3.24	3.26	3.86	3.88	3.86	3.86
	5.74		5.56		3.29		3.89		3.86	
Mid-Ebb	C8		C9		RC1		RC5		RC7	
Date	Value	Average								
21-Oct-09	4.50	4.41	4.54	4.60	4.03	4.00	4.23	4.18	3.30	3.31
Ī	4.33		4.65		3.96		4.12		3.32	
23-Oct-09	4.21	4.16	4.92	4.50	3.50	3.47	3.62	3.62	3.73	3.57
ľ	4.12		4.08		3.45		3.62		3.41	
27-Oct-09	4.02	4.02	4.21	4.12	3.74	3.68	3.76	3.74	4.09	3.86
ľ	4.02		4.03		3.63		3.72		3.64	
29-Oct-09	4.00	3.99	4.33	4.27	4.24	4.24	4.32	4.27	3.66	3.47
ļ	3.99	1	4.21	1	4.24	1	4.23	1	3.28	
31-Oct-09	4.29	4.28	4.42	4.36	4.10	4.10	4.40	4.33	3.72	3.65
ļ	4.27]	4.31]	4.11	1	4.26]	3.58	1
2-Nov-09	4.49	4.46	3.53	3.59	4.28	4.24	5.04	5.02	4.27	4.17
	4.44	1	3.65	1	4.20	1	4.99	1	4.06	1
4-Nov-09	5.22	5.21	5.16	5.14	4.21	4.18	4.12	4.13	4.51	4.45
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6-Nov-09

10-Nov-09

12-Nov-09

14-Nov-09

16-Nov-09

4.89

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Mid-flood	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21		RW1	
Date	Value	Average																
21-Oct-09	11.0	11.5	11.0	10.5	9.0	8.5	7.0	7.5	10.0	10.0	9.0	9.5	11.0	11.5	14.0	14.0	10.0	9.0
	12.0		10.0		8.0		8.0		10.0		10.0		12.0	Ī	14.0]	8.0	
23-Oct-09	10.0	11.5	6.0	6.0	8.0	7.0	11.0	10.5	9.0	9.5	11.0	11.0	13.0	13.0	14.0	13.0	14.0	13.5
	13.0		6.0		6.0		10.0		10.0		11.0		13.0	Ī	12.0]	13.0	
27-Oct-09	12.0	12.5	10.0	10.5	9.0	8.5	10.0	10.0	11.0	10.5	12.0	11.0	8.0	8.0	10.0	10.0	10.0	11.0
	13.0		11.0		8.0		10.0		10.0		10.0		8.0		10.0		12.0	
29-Oct-09	14.0	14.0	8.0	8.5	8.0	7.5	9.0	9.0	7.0	7.0	7.0	7.5	7.0	6.5	13.0	12.0	12.0	12.0
	14.0		9.0		7.0		9.0		7.0		8.0		6.0	Ī	11.0]	12.0	
31-Oct-09	13.0	12.0	8.0	7.0	7.0	7.5	8.0	8.0	12.0	11.0	11.0	12.0	8.0	8.0	11.0	10.0	9.0	9.0
	11.0		6.0		8.0		8.0		10.0		13.0		8.0		9.0		9.0	
2-Nov-09	13.0	12.5	10.0	9.5	11.0	10.0	9.0	8.5	8.0	8.5	11.0	10.0	9.0	10.0	8.0	7.5	9.0	9.0
	12.0		9.0		9.0		8.0		9.0		9.0		11.0		7.0		9.0	
4-Nov-09	12.0	13.0	9.0	8.5	8.0	9.0	10.0	11.0	9.0	8.5	8.0	8.5	10.0	11.5	13.0	12.5	9.0	10.0
	14.0		8.0		10.0		12.0		8.0		9.0		13.0		12.0		11.0	
6-Nov-09	18.0	18.5	8.0	8.0	7.0	8.0	8.0	9.0	9.0	10.0	8.0	9.0	11.0	11.5	10.0	9.5	12.0	12.0
	19.0		8.0		9.0		10.0		11.0		10.0		12.0		9.0		12.0	
10-Nov-09	12.0	13.0	10.0	11.0	13.0	12.5	6.0	6.5	13.0	12.5	14.0	14.5	7.0	8.0	10.0	10.5	10.0	11.0
	14.0		12.0		12.0		7.0		12.0		15.0		9.0		11.0		12.0	
12-Nov-09	11.0	11.0	7.0	8.0	5.0	4.5	8.0	7.5	14.0	13.5	12.0	11.5	6.0	6.5	10.0	9.5	9.0	9.0
	11.0		9.0		4.0		7.0		13.0		11.0		7.0		9.0		9.0	
14-Nov-09	9.0	8.0	7.0	6.0	10.0	9.5	9.0	8.5	8.0	8.0	12.0	11.5	10.0	10.0	11.0	10.5	7.0	7.5
	7.0		5.0		9.0		8.0		8.0		11.0		10.0		10.0		8.0	
16-Nov-09	8.0	9.0	6.0	6.5	4.0	4.5	6.0	7.0	6.0	6.0	6.0	6.0	6.0	7.0	6.0	5.0	6.0	6.5
	10.0		7.0		5.0		8.0		6.0		6.0		8.0		4.0		7.0	

Mid-Ebb	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21		RW1	
Date	Value	Average																
21-Oct-09	9.0	8.5	7.0	7.0	8.0	7.5	6.0	6.5	16.0	15.5	14.0	13.0	9.0	10.0	9.0	9.5	9.0	9.5
	8.0]	7.0		7.0		7.0		15.0		12.0		11.0	Ī	10.0]	10.0	
23-Oct-09	8.0	8.0	8.0	8.0	8.0	7.0	6.0	5.5	9.0	8.5	10.0	9.5	5.0	6.0	11.0	10.5	10.0	11.0
	8.0]	8.0		6.0		5.0		8.0		9.0		7.0	Ī	10.0]	12.0	
27-Oct-09	10.0	9.5	6.0	5.0	9.0	8.0	7.0	7.5	8.0	7.5	7.0	6.5	7.0	7.5	7.0	8.0	9.0	8.5
	9.0		4.0		7.0		8.0		7.0		6.0		8.0		9.0		8.0	
29-Oct-09	12.0	11.5	8.0	8.0	8.0	8.0	8.0	8.5	8.0	8.5	8.0	9.0	9.0	8.5	8.0	9.0	9.0	9.0
	11.0		8.0		8.0		9.0		9.0		10.0		8.0		10.0		9.0	
31-Oct-09	10.0	9.0	8.0	7.0	9.0	10.0	7.0	6.0	9.0	9.5	9.0	9.0	11.0	11.0	11.0	10.5	10.0	10.0
	8.0		6.0		11.0		5.0		10.0		9.0		11.0		10.0		10.0	
2-Nov-09	12.0	11.5	7.0	8.0	6.0	6.5	12.0	11.0	12.0	12.0	9.0	8.5	8.0	7.5	10.0	10.5	8.0	8.5
	11.0		9.0		7.0		10.0		12.0		8.0		7.0		11.0		9.0	
4-Nov-09	7.0	8.0	7.0	6.5	6.0	7.0	11.0	12.5	5.0	6.0	9.0	8.5	7.0	8.0	10.0	10.5	10.0	9.5
	9.0		6.0		8.0		14.0		7.0		8.0		9.0		11.0		9.0	
6-Nov-09	11.0	10.0	6.0	6.5	7.0	6.5	11.0	10.0	10.0	9.0	10.0	9.0	8.0	9.0	9.0	8.5	11.0	10.0
	9.0		7.0		6.0		9.0		8.0		8.0		10.0		8.0		9.0	
10-Nov-09	8.0	9.0	9.0	9.0	8.0	7.0	6.0	7.0	9.0	8.5	5.0	5.5	7.0	7.0	8.0	8.0	9.0	8.0
	10.0		9.0		6.0		8.0		8.0		6.0		7.0		8.0		7.0	
12-Nov-09	8.0	7.5	6.0	5.5	5.0	5.5	10.0	9.0	9.0	9.0	9.0	9.5	5.0	5.5	11.0	10.5	10.0	10.5
	7.0	ļ	5.0		6.0		8.0		9.0		10.0		6.0		10.0		11.0	
14-Nov-09	6.0	6.0	7.0	6.5	8.0	7.5	8.0	8.0	8.0	8.5	9.0	8.0	7.0	7.0	10.0	11.0	11.0	10.5
10.11	6.0		6.0		7.0		8.0		9.0		7.0		7.0		12.0		10.0	
16-Nov-09	7.0	6.5	8.0	8.0	4.0	5.0	6.0	7.0	11.0	9.5	4.0	4.0	8.0	8.5	8.0	8.0	10.0	9.0
	6.0		8.0		6.0		8.0		8.0		4.0		9.0		8.0		8.0	

Mid-flood	C1		C2		C3		C4		C5		C6		C7		C8		C9	
Date	Value	Average																
21-Oct-09	8.0	8.0	9.0	8.5	9.0	9.5	11.0	11.5	14.0	14.5	6.0	6.5	6.0	6.5	12.0	11.0	11.0	11.0
	8.0		8.0		10.0		12.0		15.0		7.0		7.0		10.0		11.0	
23-Oct-09	12.0	11.5	12.0	12.5	14.0	12.5	14.0	14.0	15.0	14.0	10.0	9.0	11.0	12.0	21.0	19.5	23.0	21.5
	11.0		13.0		11.0		14.0		13.0		8.0		13.0		18.0		20.0	
27-Oct-09	13.0	12.5	8.0	9.0	9.0	8.0	11.0	10.0	11.0	11.5	10.0	10.5	10.0	9.0	15.0	14.0	23.0	23.0
	12.0		10.0		7.0		9.0		12.0		11.0		8.0		13.0		23.0	
29-Oct-09	18.0	18.5	10.0	11.0	11.0	11.0	15.0	14.5	11.0	11.5	10.0	9.5	12.0	11.5	16.0	16.0	23.0	23.5
	19.0		12.0		11.0		14.0		12.0		9.0		11.0		16.0		24.0	
31-Oct-09	11.0	10.5	10.0	10.0	15.0	15.0	10.0	9.5	9.0	9.5	8.0	7.0	6.0	7.0	14.0	13.5	19.0	18.5
	10.0		10.0		15.0		9.0		10.0		6.0		8.0		13.0		18.0	
2-Nov-09	9.0	9.0	8.0	8.0	8.0	8.5	7.0	7.0	5.0	5.5	8.0	9.0	9.0	9.0	10.0	10.0	10.0	10.5
	9.0		8.0		9.0		7.0		6.0		10.0		9.0		10.0		11.0	
4-Nov-09	10.0	11.5	9.0	9.5	10.0	10.0	9.0	9.5	10.0	10.5	4.0	5.0	8.0	8.0	13.0	12.5	14.0	14.0
	13.0		10.0		10.0		10.0		11.0		6.0		8.0		12.0		14.0	
6-Nov-09	13.0	12.0	9.0	8.5	14.0	13.0	14.0	13.5	16.0	15.0	10.0	9.5	9.0	9.0	19.0	17.5	12.0	12.0
	11.0		8.0		12.0		13.0		14.0		9.0		9.0		16.0		12.0	
10-Nov-09	9.0	8.5	11.0	10.5	12.0	11.5	10.0	10.5	10.0	10.0	7.0	7.0	8.0	7.0	14.0	12.5	13.0	13.0
	8.0		10.0		11.0		11.0		10.0		7.0		6.0		11.0		13.0	
12-Nov-09	10.0	10.0	10.0	10.0	10.0	10.0	11.0	11.0	10.0	9.5	10.0	11.0	8.0	9.0	24.0	22.0	18.0	18.5
	10.0		10.0		10.0		11.0		9.0		12.0		10.0		20.0		19.0	
14-Nov-09	6.0	7.0	9.0	10.0	12.0	11.0	12.0	13.0	16.0	14.5	8.0	7.5	7.0	7.0	14.0	14.5	16.0	15.0
	8.0		11.0		10.0		14.0		13.0		7.0		7.0		15.0		14.0	
16-Nov-09	5.0	5.5	8.0	7.0	6.0	6.5	12.0	11.0	6.0	6.0	6.0	7.0	9.0	9.0	7.0	6.0	6.0	6.0
	6.0		6.0		7.0		10.0		6.0		8.0		9.0		5.0		6.0	

Mid-Ebb	C1		C2		C3		C4		C5		C6		C7		C8		C9	
Date	Value	Average																
21-Oct-09	10.0	10.5	8.0	7.0	8.0	7.0	11.0	11.5	10.0	10.5	7.0	7.5	5.0	5.5	10.0	11.0	20.0	18.5
	11.0		6.0		6.0		12.0		11.0		8.0]	6.0	Ī	12.0		17.0	1
23-Oct-09	6.0	5.5	14.0	14.5	10.0	10.0	9.0	9.5	11.0	12.0	10.0	9.0	8.0	7.0	13.0	12.5	10.0	11.5
	5.0		15.0		10.0		10.0		13.0		8.0		6.0		12.0		13.0	
27-Oct-09	4.0	4.5	7.0	6.0	6.0	5.0	8.0	8.0	8.0	8.0	7.0	7.0	5.0	5.0	9.0	9.0	10.0	10.0
	5.0		5.0		4.0		8.0		8.0		7.0		5.0		9.0		10.0	
29-Oct-09	9.0	9.5	10.0	9.0	11.0	10.5	7.0	6.5	9.0	10.0	9.0	8.5	8.0	7.5	12.0	12.0	13.0	13.0
	10.0		8.0		10.0		6.0		11.0		8.0		7.0		12.0		13.0	
31-Oct-09	10.0	9.5	9.0	8.5	11.0	10.0	10.0	10.0	12.0	11.0	12.0	11.0	6.0	5.5	12.0	11.0	13.0	13.5
	9.0		8.0		9.0		10.0		10.0		10.0		5.0		10.0		14.0	
2-Nov-09	11.0	10.0	10.0	10.0	12.0	13.0	13.0	12.5	12.0	12.5	10.0	9.0	9.0	8.5	12.0	13.0	13.0	12.0
	9.0		10.0		14.0		12.0		13.0		8.0		8.0		14.0		11.0	
4-Nov-09	6.0	7.0	8.0	8.5	8.0	8.5	13.0	13.5	11.0	12.5	6.0	6.0	10.0	9.0	12.0	12.5	14.0	13.5
	8.0		9.0		9.0		14.0		14.0		6.0		8.0		13.0		13.0	
6-Nov-09	6.0	6.0	7.0	8.0	7.0	6.5	9.0	9.5	11.0	11.5	8.0	8.0	9.0	8.0	9.0	10.0	12.0	13.0
	6.0		9.0		6.0		10.0		12.0		8.0		7.0		11.0		14.0	
10-Nov-09	8.0	8.0	5.0	5.0	6.0	6.0	6.0	6.5	8.0	8.0	9.0	8.0	7.0	7.0	10.0	9.5	8.0	8.0
	8.0		5.0		6.0		7.0		8.0		7.0		7.0		9.0		8.0	
12-Nov-09	6.0	7.0	7.0	7.0	7.0	7.5	8.0	9.0	16.0	15.0	7.0	6.5	7.0	5.5	8.0	8.5	12.0	12.5
	8.0		7.0		8.0		10.0		14.0		6.0		4.0		9.0		13.0	
14-Nov-09	9.0	10.0	10.0	9.5	9.0	9.5	11.0	12.0	11.0	10.5	10.0	9.0	5.0	5.5	10.0	10.0	14.0	13.0
	11.0		9.0		10.0		13.0		10.0		8.0		6.0		10.0		12.0	
16-Nov-09	6.0	6.5	8.0	7.5	7.0	6.5	8.0	8.5	7.0	7.5	10.0	9.0	8.0	7.0	8.0	8.5	7.0	7.0
	7.0		7.0		6.0		9.0		8.0		8.0		6.0		9.0		7.0	

Mid-flood	RC1		RC5		RC7	
Date	Value	Average	Value	Average	Value	Average
21-Oct-09	7.0	7.0	15.0	14.0	8.0	8.0
	7.0		13.0		8.0	
23-Oct-09	10.0	10.0	12.0	11.0	11.0	12.0
	10.0		10.0		13.0	
27-Oct-09	8.0	7.5	11.0	11.5	25.0	23.5
	7.0		12.0		22.0	
29-Oct-09	14.0	13.0	12.0	11.5	9.0	9.0
	12.0		11.0		9.0	
31-Oct-09	9.0	9.5	8.0	7.5	7.0	7.0
	10.0		7.0		7.0	
2-Nov-09	8.0	7.5	9.0	8.0	7.0	6.5
	7.0		7.0		6.0	
4-Nov-09	8.0	8.0	10.0	10.0	8.0	7.5
	8.0		10.0		7.0	
6-Nov-09	16.0	15.5	12.0	11.5	9.0	9.0
	15.0		11.0		9.0	
10-Nov-09	9.0	9.5	8.0	8.0	6.0	6.5
	10.0		8.0		7.0	
12-Nov-09	6.0	7.0	10.0	9.5	6.0	6.5
	8.0		9.0		7.0	
14-Nov-09	11.0	12.5	8.0	9.0	10.0	10.0
	14.0		10.0		10.0	
16-Nov-09	5.0	6.0	6.0	6.5	7.0	6.5
	7.0		7.0		6.0	1

Mid-Ebb	RC1		RC5		RC7	
Date	Value	Average	Value	Average	Value	Average
21-Oct-09	7.0	7.5	8.0	8.5	6.0	5.5
	8.0		9.0		5.0	
23-Oct-09	7.0	6.5	7.0	7.0	13.0	12.5
	6.0		7.0		12.0	
27-Oct-09	6.0	5.0	5.0	5.5	10.0	10.0
	4.0		6.0		10.0	
29-Oct-09	9.0	9.5	10.0	9.5	10.0	9.0
	10.0		9.0		8.0	
31-Oct-09	10.0	9.5	8.0	8.5	10.0	10.0
	9.0		9.0		10.0	
2-Nov-09	10.0	11.0	9.0	9.0	8.0	7.5
	12.0		9.0		7.0	
4-Nov-09	6.0	6.5	10.0	10.0	9.0	9.5
	7.0		10.0		10.0	
6-Nov-09	8.0	8.5	8.0	8.5	9.0	9.0
	9.0		9.0		9.0	
10-Nov-09	7.0	7.0	8.0	7.5	8.0	8.0
	7.0		7.0		8.0	
12-Nov-09	9.0	8.5	11.0	10.5	9.0	8.0
	8.0		10.0		7.0	
14-Nov-09	8.0	7.0	10.0	9.5	10.0	9.0
	6.0		9.0		8.0	
16-Nov-09	6.0	6.5	9.0	9.0	7.0	7.0
	7.0		9.0		7.0	

Projected SS Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21-Oct-09	10.8	11.3	13.7	13.1	10.6	10.0	12.6	13.6	11.8	11.8	8.4	8.8	7.9	8.3	17.2	17.2
	11.8	1	12.4	1	9.4	1	14.5	1	11.8	1	9.3	1	8.7		17.2	
23-Oct-09	9.9	11.3	7.5	7.5	9.4	8.2	19.9	19.0	10.6	11.2	10.2	10.2	9.4	9.4	17.2	16.0
	12.8	1	7.5	1	7.1	1	18.1	1	11.8	1	10.2	1	9.4		14.7	
27-Oct-09	11.8	12.3	12.4	13.1	10.6	10.0	18.1	18.1	13.0	12.4	11.1	10.2	5.8	5.8	12.3	12.3
	12.8	1	13.7	1	9.4	1	18.1	1	11.8	1	9.3	1	5.8		12.3	
29-Oct-09	13.8	13.8	10.0	10.6	9.4	8.8	16.3	16.3	8.2	8.2	6.5	7.0	5.1	4.7	16.0	14.7
1 -0 00.00	13.8	10.0	11.2	1	8.2	0.0	16.3	10.0	8.2	0.2	7.4	1	4.3		13.5	1
31-Oct-09	12.8	11.8	10.0	8.7	8.2	8.8	14.5	14.5	14.1	13.0	10.2	11.1	5.8	5.8	13.5	12.3
0.00.00	10.8	1	7.5	1	9.4	0.0	14.5	1	11.8	.0.0	12.1	1	5.8	0.0	11.0	1
2-Nov-09	12.8	12.3	12.4	11.8	13.0	11.8	16.3	15.4	9.4	10.0	10.2	9.3	6.5	7.2	9.8	9.2
2 1407 00	11.8	12.0	11.2	1 ''	10.6	1	14.5	10.4	10.6	10.0	8.4	0.0	7.9	7.2	8.6	0.2
4-Nov-09	11.8	12.8	11.2	10.6	9.4	10.6	18.1	19.9	10.6	10.0	7.4	7.9	7.2	8.3	16.0	15.3
4-1107-03	13.8	12.0	10.0	10.0	11.8	10.0	21.7	19.9	9.4	10.0	8.4	7.5	9.4	0.5	14.7	15.5
6-Nov-09	17.7	18.2	10.0	10.0	8.2	9.4	14.5	16.3	10.6	11.8	7.4	8.4	7.9	8.3	12.3	11.7
0-1100-09	18.7	10.2	10.0	10.0	10.6	9.4	18.1	10.5	13.0	11.0	9.3	0.4	8.7	0.5	11.0	- ' ' ' '
10-Nov-09		40.0		13.7	15.3	14.7	10.1	11.7		447		13.5		5.8	12.3	12.9
10-1100-09	11.8	12.8	12.4	13.7		14.7		11.7	15.3	14.7	13.0	13.5	5.1	5.6		12.9
40 Nov. 00	13.8	40.0	14.9	40.0	14.1	F 2	12.6	40.0	14.1	45.0	13.9	40.7	6.5	4.7	13.5	44.7
12-Nov-09	10.8	10.8	8.7	10.0	5.9	5.3	14.5	13.6	16.5	15.9	11.1	10.7	4.3	4.7	12.3	11.7
44 Nov. 00	10.8	7.0	11.2	7.5	4.7	44.0	12.6	45.4	15.3	0.4	10.2	40.7	5.1	7.0	11.0	40.0
14-Nov-09	8.9	7.9	8.7	7.5	11.8	11.2	16.3	15.4	9.4	9.4	11.1	10.7	7.2	7.2	13.5	12.9
10.11 00	6.9		6.2		10.6		14.5		9.4		10.2		7.2		12.3	
16-Nov-09	7.9	8.9	7.5	8.1	4.7	5.3	10.8	12.6	7.1	7.1	5.6	5.6	4.3	5.1	7.4	6.1
	9.9		8.7		5.9		14.5		7.1		5.6		5.8		4.9	
						•										
Mid-Ebb	WSD7		WSD9		WSD10		WSD15		WSD17		WSD19		WSD20		WSD21	
Mid-Ebb Date	WSD7 Value	Average	WSD9 Value	Average	WSD10 Value	Average	WSD15 Value	Average	WSD17 Value	Average	WSD19 Value	Average	WSD20 Value	Average	WSD21 Value	Average
Date	Value	Average 8.4	Value	Average 8.7	Value	Average 8.8	Value	Average	Value	Average 18.3	Value	Average	Value	Average 7.2	Value	Average 11.7
	Value 8.9	Average 8.4	Value 8.7	Average 8.7	Value 9.4	Average 8.8	Value 10.8	Average 11.7	Value 18.9	Average 18.3	Value 13.0	Average 12.1	Value 6.5	Average 7.2	Value 11.0	Average 11.7
Date 21-Oct-09	Value 8.9 7.9	8.4	Value 8.7 8.7	8.7	Value 9.4 8.2	8.8	Value 10.8 12.6	11.7	Value 18.9 17.7	18.3	Value 13.0 11.1	12.1	Value 6.5 7.9	7.2	Value 11.0 12.3	11.7
Date	Value 8.9 7.9 7.9		Value 8.7 8.7 10.0		Value 9.4 8.2 9.4		Value 10.8 12.6 10.8		Value 18.9 17.7 10.6		Value 13.0 11.1 9.3		Value 6.5 7.9 3.6		Value 11.0 12.3 13.5	
Date 21-Oct-09 23-Oct-09	Value 8.9 7.9 7.9 7.9	8.4 7.9	Value 8.7 8.7 10.0 10.0	8.7	Value 9.4 8.2 9.4 7.1	8.8 8.2	Value 10.8 12.6 10.8 9.0	9.9	Value 18.9 17.7 10.6 9.4	18.3 10.0	Value 13.0 11.1 9.3 8.4	12.1 8.8	Value 6.5 7.9 3.6 5.1	7.2 4.3	Value 11.0 12.3 13.5 12.3	11.7
Date 21-Oct-09	Value 8.9 7.9 7.9 7.9 9.9	8.4	Value 8.7 8.7 10.0 10.0 7.5	8.7	Value 9.4 8.2 9.4 7.1 10.6	8.8	Value 10.8 12.6 10.8 9.0 12.6	11.7	Value 18.9 17.7 10.6 9.4 9.4	18.3	Value 13.0 11.1 9.3 8.4 6.5	12.1	Value 6.5 7.9 3.6 5.1	7.2	Value 11.0 12.3 13.5 12.3 8.6	11.7
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9	7.9 9.4	Value 8.7 8.7 10.0 10.0 7.5 5.0	8.7 10.0 6.2	Value 9.4 8.2 9.4 7.1 10.6 8.2	8.8 8.2 9.4	Value 10.8 12.6 10.8 9.0 12.6 14.5	9.9 13.6	Value 18.9 17.7 10.6 9.4 9.4 8.2	18.3 10.0 8.8	Value 13.0 11.1 9.3 8.4 6.5 5.6	12.1 8.8 6.0	Value 6.5 7.9 3.6 5.1 5.1 5.8	7.2 4.3 5.4	Value 11.0 12.3 13.5 12.3 8.6 11.0	11.7 12.9 9.8
Date 21-Oct-09 23-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8	8.4 7.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0	8.7	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4	8.8 8.2	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5	9.9	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4	18.3 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4	12.1 8.8	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5	7.2 4.3	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8	11.7
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8	7.9 9.4 11.3	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0	8.7 10.0 6.2	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 9.4 9.4	8.8 8.2 9.4 9.4	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5	9.9 13.6 15.4	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6	18.3 10.0 8.8 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3	8.8 6.0 8.4	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8	7.2 4.3 5.4 6.1	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3	11.7 12.9 9.8 11.0
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9	7.9 9.4	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 10.0 10.0	8.7 10.0 6.2	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 9.4 10.6	8.8 8.2 9.4	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6	9.9 13.6	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6	18.3 10.0 8.8	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4	12.1 8.8 6.0	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 7.9	7.2 4.3 5.4	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5	11.7 12.9 9.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9	7.9 9.4 11.3 8.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 10.0 7.5	8.7 10.0 6.2 10.0 8.7	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 9.4 10.6 13.0	8.8 8.2 9.4 9.4 11.8	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0	9.9 13.6 15.4 10.8	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8	18.3 10.0 8.8 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4	8.8 6.0 8.4 8.4	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8 7.9 7.9	7.2 4.3 5.4 6.1 7.9	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3	11.7 12.9 9.8 11.0
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8	7.9 9.4 11.3	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 10.0 7.5 8.7	8.7 10.0 6.2	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 9.4 10.6 13.0 7.1	8.8 8.2 9.4 9.4	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7	9.9 13.6 15.4	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8	18.3 10.0 8.8 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 8.4	8.8 6.0 8.4	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 7.9 7.9 5.8	7.2 4.3 5.4 6.1	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3	11.7 12.9 9.8 11.0
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 10.8	8.4 7.9 9.4 11.3 8.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2	8.7 10.0 6.2 10.0 8.7	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 9.4 10.6 13.0 7.1 8.2	9.4 9.4 11.8 7.7	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1	11.7 9.9 13.6 15.4 10.8 19.9	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1	18.3 10.0 8.8 10.0 11.2	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 8.4 7.4	8.8 6.0 8.4 8.4 7.9	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 7.9 7.9 5.8 7.9 7.9 5.8 5.1	7.2 4.3 5.4 6.1 7.9 5.4	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5	11.7 12.9 9.8 11.0 12.9
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 10.8 6.9	7.9 9.4 11.3 8.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2	8.7 10.0 6.2 10.0 8.7	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1	8.8 8.2 9.4 9.4 11.8	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9	9.9 13.6 15.4 10.8	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1 5.9	18.3 10.0 8.8 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4	8.8 6.0 8.4 8.4	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 5.1	7.2 4.3 5.4 6.1 7.9	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 12.3 13.5	11.7 12.9 9.8 11.0
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 10.8 6.9 8.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5	8.7 10.0 6.2 10.0 8.7 10.0	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4	8.8 8.2 9.4 9.4 11.8 7.7 8.2	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3	11.7 9.9 13.6 15.4 10.8 19.9 22.6	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1 5.9 8.2	18.3 10.0 8.8 10.0 11.2 14.1 7.1	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4	12.1 8.8 6.0 8.4 8.4 7.9 7.9	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 6.5	7.2 4.3 5.4 6.1 7.9 5.4 5.8	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5	11.7 12.9 9.8 11.0 12.9 12.9
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 6.9 8.9 10.8	8.4 7.9 9.4 11.3 8.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 7.5	8.7 10.0 6.2 10.0 8.7	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2	9.4 9.4 11.8 7.7	Value 10.8 12.6 10.8 9.0 12.6 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9	11.7 9.9 13.6 15.4 10.8 19.9	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1 5.9 8.2 11.8	18.3 10.0 8.8 10.0 11.2	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 9.3	8.8 6.0 8.4 8.4 7.9	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 6.5 5.8	7.2 4.3 5.4 6.1 7.9 5.4	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 11.0	11.7 12.9 9.8 11.0 12.9
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 10.8 6.9 8.9 10.8	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 8.7	8.7 10.0 6.2 10.0 8.7 10.0 8.1	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4	18.3 10.0 8.8 10.0 11.2 14.1 7.1	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 5.1 5.8 7.9 7.9 5.8 5.1 5.1 6.5 5.8	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3	11.7 12.9 9.8 11.0 12.9 12.9 12.9
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 10.8 6.9 8.9 10.8 8.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 8.7 11.2	8.7 10.0 6.2 10.0 8.7 10.0	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9 16.3 10.8	11.7 9.9 13.6 15.4 10.8 19.9 22.6	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6	18.3 10.0 8.8 10.0 11.2 14.1 7.1	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 9.3 7.4 4.6	12.1 8.8 6.0 8.4 8.4 7.9 7.9	Value 6.5 7.9 3.6 5.1 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 6.5 5.1 5.1 6.5 5.8 7.2 5.1	7.2 4.3 5.4 6.1 7.9 5.4 5.8	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3	11.7 12.9 9.8 11.0 12.9 12.9
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 6-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 11.8 10.8 6.9 8.9 10.8 8.9 7.9 9.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9 8.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 8.7 11.2 11.2	8.7 10.0 6.2 10.0 8.7 10.0 8.1 8.1	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7 8.2	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9 16.3 10.8	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1 12.6	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6 9.4	18.3 10.0 8.8 10.0 11.2 14.1 7.1 10.6 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4 4.6 5.6	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4 5.1	Value 6.5 7.9 3.6 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1 5.1	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 12.3	11.7 12.9 9.8 11.0 12.9 12.9 12.9 10.4 9.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 11.8 10.8 6.9 8.9 7.9 9.9 7.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 8.7 11.2 11.2 7.5	8.7 10.0 6.2 10.0 8.7 10.0 8.1	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1 9.4 7.1 5.9	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9 16.3 10.8 14.5 18.1	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6 9.4 10.6	18.3 10.0 8.8 10.0 11.2 14.1 7.1	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4 4.6 5.6 8.4	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4	Value 6.5 7.9 3.6 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 5.1 5.1 5.1 5.1 6.5 5.8 7.2 5.1 3.6	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 11.0 9.8 9.8 9.8 13.5	11.7 12.9 9.8 11.0 12.9 12.9 12.9
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 10-Nov-09 12-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 7.9 10.8 8.9 10.8 8.9 7.9 9.9 7.9 6.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9 8.9 7.4	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 7.5 8.7 11.2 11.2 7.5 6.2	8.7 10.0 6.2 10.0 8.7 10.0 8.1 8.1 11.2 6.8	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1 9.4 7.1 5.9 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7 8.2 6.5	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 10.8 14.5 18.1 14.5	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1 12.6 16.3	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6 9.4 10.6 10.6	18.3 10.0 8.8 10.0 11.2 14.1 7.1 10.6 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4 4.6 5.6 8.4 9.3	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4 5.1 8.8	Value 6.5 7.9 3.6 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 5.1 5.1 6.5 5.8 7.2 5.1 5.1 3.6 4.3	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5 5.1 4.0	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 11.0 9.8 9.8 9.8 13.5 12.3	11.7 12.9 9.8 11.0 12.9 12.9 12.9 10.4 9.8
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 6-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 11.8 10.8 6.9 8.9 10.8 8.9 7.9 9.9 7.9 6.9 5.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9 8.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 7.5 11.2 11.2 7.5 6.2 8.7	8.7 10.0 6.2 10.0 8.7 10.0 8.1 8.1	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1 9.4 7.1 9.4 7.1 5.9 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7 8.2	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9 16.3 10.8 14.5 18.1 14.5	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1 12.6	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6 9.4 10.6 9.4	18.3 10.0 8.8 10.0 11.2 14.1 7.1 10.6 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4 4.6 5.6 8.4 9.3 8.4	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4 5.1	Value 6.5 7.9 3.6 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 6.5 5.8 7.9 7.9 5.8 5.1 6.5 5.8 7.2 5.1 3.6 4.3 5.1	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 11.0 9.8 9.8 9.8 13.5 12.3 12.3	11.7 12.9 9.8 11.0 12.9 12.9 12.9 10.4 9.8
Date 21-Oct-09 23-Oct-09 29-Oct-09 2-Nov-09 6-Nov-09 12-Nov-09 14-Nov-09 14-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 11.8 10.8 6.9 8.9 10.8 8.9 7.9 6.9 5.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9 8.9 7.4 5.9	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 8.7 11.2 11.2 7.5 6.2 8.7 7.5	8.7 10.0 6.2 10.0 8.7 10.0 8.1 8.1 11.2 6.8 8.1	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1 9.4 8.2 7.1 9.4 8.2 7.1 5.9 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7 8.2 6.5 8.8	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9 16.3 10.8 14.5 14.5 14.5 14.5	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1 12.6 16.3 14.5	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6 9.4 10.6 10.6	18.3 10.0 8.8 10.0 11.2 14.1 7.1 10.6 10.0 10.6	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4 4.6 5.6 8.4 9.3 8.4 6.5	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4 5.1 8.8 7.4	Value 6.5 7.9 3.6 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 6.5 5.1 6.5 5.8 7.2 5.1 3.6 4.3 5.1 5.1	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5 5.1 4.0	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 11.0 9.8 9.8 9.8 13.5 12.3 14.7	11.7 12.9 9.8 11.0 12.9 12.9 12.9 10.4 9.8 12.9
Date 21-Oct-09 23-Oct-09 29-Oct-09 31-Oct-09 4-Nov-09 10-Nov-09 12-Nov-09	Value 8.9 7.9 7.9 7.9 9.9 8.9 11.8 10.8 9.9 11.8 10.8 6.9 8.9 10.8 8.9 7.9 9.9 7.9 6.9 5.9	8.4 7.9 9.4 11.3 8.9 11.3 7.9 9.9 8.9 7.4	Value 8.7 8.7 10.0 10.0 7.5 5.0 10.0 10.0 7.5 8.7 11.2 8.7 7.5 7.5 11.2 11.2 7.5 6.2 8.7	8.7 10.0 6.2 10.0 8.7 10.0 8.1 8.1 11.2 6.8	Value 9.4 8.2 9.4 7.1 10.6 8.2 9.4 10.6 13.0 7.1 8.2 7.1 9.4 8.2 7.1 9.4 7.1 9.4 7.1 5.9 7.1	8.8 8.2 9.4 9.4 11.8 7.7 8.2 7.7 8.2 6.5	Value 10.8 12.6 10.8 9.0 12.6 14.5 14.5 16.3 12.6 9.0 21.7 18.1 19.9 25.3 19.9 16.3 10.8 14.5 18.1 14.5	11.7 9.9 13.6 15.4 10.8 19.9 22.6 18.1 12.6 16.3	Value 18.9 17.7 10.6 9.4 9.4 8.2 9.4 10.6 11.8 14.1 14.1 5.9 8.2 11.8 9.4 10.6 9.4 10.6 9.4	18.3 10.0 8.8 10.0 11.2 14.1 7.1 10.6 10.0	Value 13.0 11.1 9.3 8.4 6.5 5.6 7.4 9.3 8.4 8.4 7.4 8.4 7.4 9.3 7.4 4.6 5.6 8.4 9.3 8.4	12.1 8.8 6.0 8.4 8.4 7.9 7.9 8.4 5.1 8.8	Value 6.5 7.9 3.6 5.1 5.8 6.5 5.8 7.9 7.9 5.8 5.1 5.1 6.5 5.8 7.9 7.9 5.8 5.1 6.5 5.8 7.2 5.1 3.6 4.3 5.1	7.2 4.3 5.4 6.1 7.9 5.4 5.8 6.5 5.1 4.0	Value 11.0 12.3 13.5 12.3 8.6 11.0 9.8 12.3 13.5 12.3 13.5 12.3 13.5 12.3 13.5 11.0 9.8 9.8 9.8 13.5 12.3 12.3	11.7 12.9 9.8 11.0 12.9 12.9 12.9 10.4 9.8

Projected SS Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	RW21		C1		C2		C3		C4		C5		C6		C7	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21-Oct-09	12.3	11.0	9.8	9.8	11.0	10.4	11.0	11.7	13.5	14.1	17.2	17.8	7.4	8.0	7.4	8.0
	9.8		9.8	† ···	9.8	1	12.3	1	14.7		18.4		8.6	1	8.6	
23-Oct-09	17.2	16.6	14.7	14.1	14.7	15.3	17.2	15.3	17.2	17.2	18.4	17.2	12.3	11.0	13.5	14.7
	16.0		13.5	† · · · · · · · · · · · · · · · · · · ·	16.0	1	13.5	1	17.2		16.0	1	9.8	1	16.0	1
27-Oct-09	12.3	13.5	16.0	15.3	9.8	11.0	11.0	9.8	13.5	12.3	13.5	14.1	12.3	12.9	12.3	11.0
	14.7		14.7	1	12.3	1	8.6	1	11.0	1	14.7	1	13.5	1	9.8	
29-Oct-09	14.7	14.7	22.1	22.7	12.3	13.5	13.5	13.5	18.4	17.8	13.5	14.1	12.3	11.7	14.7	14.1
	14.7		23.3	1	14.7	1	13.5		17.2	1	14.7	1	11.0	1	13.5	1
31-Oct-09	11.0	11.0	13.5	12.9	12.3	12.3	18.4	18.4	12.3	11.7	11.0	11.7	9.8	8.6	7.4	8.6
	11.0		12.3	1	12.3	1	18.4		11.0	1	12.3	1	7.4	1	9.8	
2-Nov-09	11.0	11.0	11.0	11.0	9.8	9.8	9.8	10.4	8.6	8.6	6.1	6.8	9.8	11.0	11.0	11.0
	11.0		11.0	1	9.8	1	11.0		8.6	1	7.4	1	12.3	1	11.0	
4-Nov-09	11.0	12.3	12.3	14.1	11.0	11.7	12.3	12.3	11.0	11.7	12.3	12.9	4.9	6.1	9.8	9.8
	13.5		16.0	1 1	12.3	1	12.3		12.3	1	13.5	1	7.4	1	9.8	
6-Nov-09	14.7	14.7	16.0	14.7	11.0	10.4	17.2	16.0	17.2	16.6	19.6	18.4	12.3	11.7	11.0	11.0
	14.7		13.5	1	9.8	1	14.7		16.0	1	17.2	1	11.0	1	11.0	
10-Nov-09	12.3	13.5	11.0	10.4	13.5	12.9	14.7	14.1	12.3	12.9	12.3	12.3	8.6	8.6	9.8	8.6
	14.7		9.8	1	12.3	1	13.5		13.5	1	12.3	1	8.6	1	7.4	
12-Nov-09	11.0	11.0	12.3	12.3	12.3	12.3	12.3	12.3	13.5	13.5	12.3	11.7	12.3	13.5	9.8	11.0
ľ	11.0		12.3	1	12.3	1	12.3		13.5	1	11.0	1	14.7	1	12.3	
14-Nov-09	8.6	9.2	7.4	8.6	11.0	12.3	14.7	13.5	14.7	16.0	19.6	17.8	9.8	9.2	8.6	8.6
ľ	9.8		9.8	1	13.5	1	12.3		17.2	1	16.0	1	8.6	1	8.6	
16-Nov-09	7.4	8.0	6.1	6.8	9.8	8.6	7.4	8.0	14.7	13.5	7.4	7.4	7.4	8.6	11.0	11.0
	8.6		7.4		7.4		8.6		12.3		7.4		9.8		11.0	
		•		•		•		•				•				
Mid-Ebb	RW21		C1	•	C2		C3		C4		C5		C6		C7	
Mid-Ebb Date	RW21 Value	Average	C1 Value	Average	C2 Value	Average	C3 Value	Average		Average	C5 Value	Average	C6 Value	Average		Average
	Value 11.0	Average 11.7	Value 12.3	Average 12.9	Value 9.8	Average 8.6	Value 9.8	Average 8.6	C4 Value 13.5	Average 14.1	Value 12.3	Average 12.9	Value 8.6	Average 9.2	C7 Value 6.1	Average 6.8
Date 21-Oct-09	Value 11.0 12.3	11.7	Value 12.3 13.5	12.9	Value 9.8 7.4	8.6	Value 9.8 7.4	8.6	C4 Value 13.5 14.7	14.1	Value 12.3 13.5	12.9	Value 8.6 9.8	9.2	C7 Value 6.1 7.4	6.8
Date	Value 11.0 12.3 12.3		Value 12.3 13.5 7.4		9.8 7.4 17.2		9.8 7.4 12.3		C4 Value 13.5 14.7 11.0		Value 12.3 13.5 13.5		Value 8.6 9.8 12.3		C7 Value 6.1 7.4 9.8	
Date 21-Oct-09 23-Oct-09	Value 11.0 12.3 12.3 14.7	11.7	Value 12.3 13.5 7.4 6.1	12.9	Value 9.8 7.4 17.2 18.4	8.6 17.8	Value 9.8 7.4 12.3 12.3	8.6	C4 Value 13.5 14.7 11.0	14.1	Value 12.3 13.5 13.5 16.0	12.9	Value 8.6 9.8 12.3 9.8	9.2	C7 Value 6.1 7.4 9.8 7.4	6.8 8.6
Date 21-Oct-09	Value 11.0 12.3 12.3 14.7 11.0	11.7	Value 12.3 13.5 7.4 6.1 4.9	12.9	Value 9.8 7.4 17.2 18.4 8.6	8.6	Value 9.8 7.4 12.3 12.3 7.4	8.6	C4 Value 13.5 14.7 11.0 12.3 9.8	14.1	Value 12.3 13.5 13.5 16.0 9.8	12.9	Value 8.6 9.8 12.3 9.8 8.6	9.2	C7 Value 6.1 7.4 9.8 7.4 6.1	6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8	11.7 13.5 10.4	Value 12.3 13.5 7.4 6.1 4.9 6.1	12.9 6.8 5.5	Value 9.8 7.4 17.2 18.4 8.6 6.1	8.6 17.8 7.4	Value 9.8 7.4 12.3 12.3 7.4 4.9	8.6 12.3 6.1	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8	14.1 11.7 9.8	Value 12.3 13.5 13.5 16.0 9.8 9.8	12.9 14.7 9.8	Value 8.6 9.8 12.3 9.8 8.6 8.6	9.2 11.0 8.6	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1	6.8 8.6 6.1
Date 21-Oct-09 23-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0	11.7	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0	12.9	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3	8.6 17.8	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5	8.6	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6	14.1	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0	12.9	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0	9.2	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1	6.8 8.6
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0	11.7 13.5 10.4 11.0	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3	12.9 6.8 5.5	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8	7.4 11.0	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3	8.6 12.3 6.1 12.9	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4	14.1 11.7 9.8 8.0	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5	12.9 14.7 9.8 12.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8	9.2 11.0 8.6 10.4	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6	6.8 8.6 6.1 9.2
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 11.0 12.3	11.7 13.5 10.4	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3	12.9 6.8 5.5	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0	8.6 17.8 7.4	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5	8.6 12.3 6.1	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3	14.1 11.7 9.8	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7	12.9 14.7 9.8	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7	9.2 11.0 8.6	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4	6.8 8.6 6.1
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 11.0 12.3 12.3	11.7 13.5 10.4 11.0 12.3	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0	12.9 6.8 5.5 11.7	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8	8.6 17.8 7.4 11.0	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0	8.6 12.3 6.1 12.9 12.3	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3	14.1 11.7 9.8 8.0 12.3	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3	12.9 14.7 9.8 12.3 13.5	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3	9.2 11.0 8.6 10.4 13.5	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1	6.8 8.6 6.1 9.2 6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 11.0 12.3 12.3 9.8	11.7 13.5 10.4 11.0	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5	12.9 6.8 5.5	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3	7.4 11.0	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7	8.6 12.3 6.1 12.9	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3 16.0	14.1 11.7 9.8 8.0	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7	12.9 14.7 9.8 12.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3	9.2 11.0 8.6 10.4	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0	6.8 8.6 6.1 9.2
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 11.0 12.3 12.3 9.8 11.0	11.7 13.5 10.4 11.0 12.3	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0	12.9 6.8 5.5 11.7 11.7	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3	8.6 17.8 7.4 11.0 10.4 12.3	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2	8.6 12.3 6.1 12.9 12.3 16.0	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 7.4 12.3 12.3 16.0 14.7	14.1 11.7 9.8 8.0 12.3 15.3	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0	12.9 14.7 9.8 12.3 13.5 15.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8	9.2 11.0 8.6 10.4 13.5	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 6.6 7.4 6.1 11.0	6.8 8.6 6.1 9.2 6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 9.8 11.0 12.3	11.7 13.5 10.4 11.0 12.3	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4	12.9 6.8 5.5 11.7	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 9.8	8.6 17.8 7.4 11.0	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8	8.6 12.3 6.1 12.9 12.3	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3 16.0 14.7	14.1 11.7 9.8 8.0 12.3	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5	12.9 14.7 9.8 12.3 13.5	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4	9.2 11.0 8.6 10.4 13.5	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8	6.8 8.6 6.1 9.2 6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 12.3 12.3 12.3 11.0 12.3 11.0	11.7 13.5 10.4 11.0 12.3 10.4 11.7	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 7.4 9.8	12.9 6.8 5.5 11.7 11.7 12.3 8.6	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 9.8 11.0	8.6 17.8 7.4 11.0 10.4 12.3	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0	8.6 12.3 6.1 12.9 12.3 16.0	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3 16.0 14.7 16.0	14.1 11.7 9.8 8.0 12.3 15.3	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2	12.9 14.7 9.8 12.3 13.5 15.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4	9.2 11.0 8.6 10.4 13.5 11.0	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8	6.8 8.6 6.1 9.2 6.8 10.4
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 12.3 12.3 12.3 12.3 11.0 12.3 11.0 13.5	11.7 13.5 10.4 11.0 12.3	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4	12.9 6.8 5.5 11.7 11.7	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 11.0 8.6	8.6 17.8 7.4 11.0 10.4 12.3	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 14.7 17.2 9.8 11.0 8.6	8.6 12.3 6.1 12.9 12.3 16.0	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3 16.0 14.7 16.0 17.2	14.1 11.7 9.8 8.0 12.3 15.3	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5	12.9 14.7 9.8 12.3 13.5 15.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 9.8	9.2 11.0 8.6 10.4 13.5	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8	6.8 8.6 6.1 9.2 6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 12.3 11.0 12.3 11.0 12.3 11.0 13.5 11.0	11.7 13.5 10.4 11.0 12.3 10.4 11.7	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4 7.4	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 11.0 8.6 11.0	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4	8.6 12.3 6.1 12.9 12.3 16.0 10.4	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3 16.0 14.7 16.0 17.2 11.0	14.1 11.7 9.8 8.0 12.3 15.3 16.6	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7	12.9 14.7 9.8 12.3 13.5 15.3 15.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4 9.8 9.8	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 12.3 12.3 12.3 11.0 12.3 11.0 11.0 13.5 11.0 11.0	11.7 13.5 10.4 11.0 12.3 10.4 11.7	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4 9.8	12.9 6.8 5.5 11.7 11.7 12.3 8.6	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 9.8 11.0 6.1	8.6 17.8 7.4 11.0 10.4 12.3	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4	8.6 12.3 6.1 12.9 12.3 16.0	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4	14.1 11.7 9.8 8.0 12.3 15.3	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8	12.9 14.7 9.8 12.3 13.5 15.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 9.8 9.8 11.0	9.2 11.0 8.6 10.4 13.5 11.0	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6	6.8 8.6 6.1 9.2 6.8 10.4
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 11.0 12.3 14.7 11.0 9.8 11.0 12.3 12.3 14.7 11.0 11.0 12.3 12.3 9.8 11.0 12.3 11.0 12.3 11.0 12.3 11.0 13.5 11.0 11.0 8.6	11.7 13.5 10.4 11.0 12.3 10.4 11.7 12.3 9.8	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4 9.8 9.8	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4 9.8	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 12.3 9.8 11.0 6.1 6.1	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8 6.1	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4 7.4	8.6 12.3 6.1 12.9 12.3 16.0 10.4 8.0 7.4	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4 8.6	14.1 11.7 9.8 8.0 12.3 15.3 16.6 11.7	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8 9.8	12.9 14.7 9.8 12.3 13.5 15.3 15.3 14.1 9.8	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 9.8 9.8 11.0 8.6	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8 8.6
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09	Value 11.0 12.3 14.7 11.0 9.8 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 9.8 11.0 12.3 11.0 12.3 11.0 12.3 11.0 12.3	11.7 13.5 10.4 11.0 12.3 10.4 11.7	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 9.8 7.4 7.4	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 9.8 11.0 6.1 6.1 6.1 8.6	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4 8.6	8.6 12.3 6.1 12.9 12.3 16.0 10.4	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4 8.6 9.8	14.1 11.7 9.8 8.0 12.3 15.3 16.6	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8 9.8 19.6	12.9 14.7 9.8 12.3 13.5 15.3 15.3	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4 9.8 9.8 11.0 8.6 8.6	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6 8.6	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 9.8 11.0 12.3 11.0 12.3 11.0 13.5 11.0 13.5 11.0 13.5 11.0 13.5	11.7 13.5 10.4 11.0 12.3 10.4 11.7 12.3 9.8	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4 9.8 9.8	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4 9.8 8.6	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 9.8 11.0 6.1 6.1 8.6 8.6	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8 6.1 8.6	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4 8.6 9.8	8.6 12.3 6.1 12.9 12.3 16.0 10.4 8.0 7.4 9.2	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4 8.6 9.8	14.1 11.7 9.8 8.0 12.3 15.3 16.6 11.7 8.0	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8 9.8 19.6 17.2	12.9 14.7 9.8 12.3 13.5 15.3 15.3 14.1 9.8	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4 9.8 9.8 11.0 8.6 8.6 7.4	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8 9.8	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6 8.6 8.6	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8 8.6 6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 9.8 11.0 12.3 11.0 13.5 11.0 13.5 11.0 8.6 12.3 13.5	11.7 13.5 10.4 11.0 12.3 10.4 11.7 12.3 9.8	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4 9.8 9.8 7.4 9.8 11.0	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4 9.8	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 9.8 11.0 6.1 6.1 8.6 8.6 12.3	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8 6.1	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4 8.6 9.8 11.0	8.6 12.3 6.1 12.9 12.3 16.0 10.4 8.0 7.4	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4 8.6 9.8 12.3 13.5	14.1 11.7 9.8 8.0 12.3 15.3 16.6 11.7	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8 9.8 19.6 17.2 13.5	12.9 14.7 9.8 12.3 13.5 15.3 15.3 14.1 9.8	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4 9.8 9.8 11.0 8.6 8.6 7.4 12.3	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6 8.6 8.6	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8 8.6
Date 21-Oct-09 23-Oct-09 27-Oct-09 31-Oct-09 4-Nov-09 10-Nov-09 12-Nov-09 14-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 9.8 11.0 12.3 11.0 12.3 11.0 13.5 11.0 8.6 12.3 13.5 13.5	11.7 13.5 10.4 11.0 12.3 10.4 11.7 12.3 9.8 12.9 12.9	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 7.4 9.8 7.4 9.8 9.8 7.4 9.8 11.0 13.5	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4 9.8 8.6	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 9.8 11.0 8.6 11.0 6.1 8.6 12.3 11.0	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8 6.1 8.6	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4 8.6 9.8 11.0 12.3	8.6 12.3 6.1 12.9 12.3 16.0 10.4 8.0 7.4 9.2	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4 8.6 9.8 12.3 13.5 16.0	14.1 11.7 9.8 8.0 12.3 15.3 16.6 11.7 8.0 11.0	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8 9.8 19.6 17.2 13.5 12.3	12.9 14.7 9.8 12.3 13.5 15.3 15.3 14.1 9.8 18.4	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4 9.8 9.8 11.0 8.6 8.6 7.4 12.3 9.8	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8 9.8 8.0 11.0	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6 8.6 4.9 6.1 7.4	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8 8.6 6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09 4-Nov-09 10-Nov-09	Value 11.0 12.3 12.3 14.7 11.0 9.8 11.0 12.3 12.3 9.8 11.0 12.3 11.0 13.5 11.0 13.5 11.0 8.6 12.3 13.5	11.7 13.5 10.4 11.0 12.3 10.4 11.7 12.3 9.8	Value 12.3 13.5 7.4 6.1 4.9 6.1 11.0 12.3 12.3 11.0 13.5 11.0 7.4 9.8 7.4 9.8 9.8 7.4 9.8 11.0	12.9 6.8 5.5 11.7 11.7 12.3 8.6 7.4 9.8 8.6	Value 9.8 7.4 17.2 18.4 8.6 6.1 12.3 9.8 11.0 9.8 12.3 12.3 9.8 11.0 6.1 6.1 8.6 8.6 12.3	8.6 17.8 7.4 11.0 10.4 12.3 10.4 9.8 6.1 8.6	Value 9.8 7.4 12.3 12.3 7.4 4.9 13.5 12.3 13.5 11.0 14.7 17.2 9.8 11.0 8.6 7.4 7.4 8.6 9.8 11.0	8.6 12.3 6.1 12.9 12.3 16.0 10.4 8.0 7.4 9.2	C4 Value 13.5 14.7 11.0 12.3 9.8 9.8 8.6 7.4 12.3 16.0 14.7 16.0 17.2 11.0 12.3 7.4 8.6 9.8 12.3 13.5	14.1 11.7 9.8 8.0 12.3 15.3 16.6 11.7 8.0	Value 12.3 13.5 13.5 16.0 9.8 9.8 11.0 13.5 14.7 12.3 14.7 16.0 13.5 17.2 13.5 14.7 9.8 9.8 19.6 17.2 13.5	12.9 14.7 9.8 12.3 13.5 15.3 15.3 14.1 9.8	Value 8.6 9.8 12.3 9.8 8.6 8.6 11.0 9.8 14.7 12.3 12.3 9.8 7.4 7.4 9.8 9.8 11.0 8.6 8.6 7.4 12.3	9.2 11.0 8.6 10.4 13.5 11.0 7.4 9.8 9.8	C7 Value 6.1 7.4 9.8 7.4 6.1 6.1 9.8 8.6 7.4 6.1 11.0 9.8 12.3 9.8 11.0 8.6 8.6 8.6 8.6	6.8 8.6 6.1 9.2 6.8 10.4 11.0 9.8 8.6 6.8

Projected SS Monitoring Data (Wet Season) adjusted with Mean Variation Percentage of EPD Marine Monitoring Data (2006 - 2008)

Mid-flood	C8		C9		RC1		RC5		RC7	
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
21-Oct-09	14.9	13.7	13.7	13.7	8.6	8.6	18.4	17.2	9.8	9.8
	12.4		13.7		8.6		16.0		9.8	
23-Oct-09	26.1	24.3	28.6	26.8	12.3	12.3	14.7	13.5	13.5	14.7
	22.4		24.9		12.3		12.3		16.0	1
27-Oct-09	18.7	17.4	28.6	28.6	9.8	9.2	13.5	14.1	30.7	28.9
	16.2	1	28.6	1	8.6	1	14.7	1	27.0	
29-Oct-09	19.9	19.9	28.6	29.2	17.2	16.0	14.7	14.1	11.0	11.0
	19.9	1	29.9		14.7	1	13.5	1	11.0	1
31-Oct-09	17.4	16.8	23.6	23.0	11.0	11.7	9.8	9.2	8.6	8.6
0.00.00	16.2	. 5.5	22.4	_5.0	12.3	1	8.6	V	8.6	0.0
2-Nov-09	12.4	12.4	12.4	13.1	9.8	9.2	11.0	9.8	8.6	8.0
21107 00	12.4	12.1	13.7	10.1	8.6	0.2	8.6	0.0	7.4	0.0
4-Nov-09	16.2	15.6	17.4	17.4	9.8	9.8	12.3	12.3	9.8	9.2
4-1100-03	14.9	13.0	17.4	17.4	9.8	9.0	12.3	12.0	8.6	9.2
6-Nov-09	23.6	21.8	14.9	14.9	19.6	19.0	14.7	14.1	11.0	11.0
0-1100-09	19.9	21.0	14.9	14.9	18.4	19.0	13.5	14.1	11.0	11.0
10-Nov-09	17.4	1F.C		16.0		11.7		0.0		0.0
10-1100-09		15.6	16.2	16.2	11.0	11.7	9.8	9.8	7.4	8.0
40 Nov. 00	13.7	07.4	16.2	22.0	12.3	0.0	9.8	44.7	8.6	0.0
12-Nov-09	29.9	27.4	22.4	23.0	7.4	8.6	12.3	11.7	7.4	8.0
44 Nov. 00	24.9	40.0	23.6	40.7	9.8	45.0	11.0	44.0	8.6	40.0
14-Nov-09	17.4	18.0	19.9	18.7	13.5	15.3	9.8	11.0	12.3	12.3
	18.7		17.4		17.2		12.3		12.3	
16-Nov-09	8.7	7.5	7.5	7.5	6.1	7.4	7.4	8.0	8.6	8.0
	6.2		7.5		8.6		8.6		7.4	
Mid-Ebb	C8		Ca		PC1		PC5		PC7	
Mid-Ebb	C8	Avorago	C9	Avorago	RC1	Avorago	RC5	Avorago	RC7	Avorago
Date	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
	Value 12.4	Average 13.7	Value 24.9	Average 23.0	Value 8.6	Average 9.2	Value 9.8	Average 10.4	Value 7.4	Average 6.8
Date 21-Oct-09	Value 12.4 14.9	13.7	Value 24.9 21.2	23.0	Value 8.6 9.8	9.2	Value 9.8 11.0	10.4	Value 7.4 6.1	6.8
Date	Value 12.4 14.9 16.2		Value 24.9 21.2 12.4		Value 8.6 9.8 8.6		Value 9.8 11.0 8.6		7.4 6.1 16.0	
Date 21-Oct-09 23-Oct-09	Value 12.4 14.9 16.2 14.9	13.7 15.6	Value 24.9 21.2 12.4 16.2	23.0	Value 8.6 9.8 8.6 7.4	9.2 8.0	Value 9.8 11.0 8.6 8.6	10.4 8.6	Value 7.4 6.1 16.0 14.7	6.8 15.3
Date 21-Oct-09	Value 12.4 14.9 16.2 14.9 11.2	13.7	Value 24.9 21.2 12.4 16.2 12.4	23.0	Value 8.6 9.8 8.6 7.4 7.4	9.2	Value 9.8 11.0 8.6 8.6 6.1	10.4	Value 7.4 6.1 16.0 14.7 12.3	6.8
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 12.4 14.9 16.2 14.9 11.2	13.7 15.6 11.2	Value 24.9 21.2 12.4 16.2 12.4 12.4	23.0 14.3 12.4	Value 8.6 9.8 8.6 7.4 7.4 4.9	9.2 8.0 6.1	Value 9.8 11.0 8.6 8.6 6.1 7.4	8.6 6.8	Value 7.4 6.1 16.0 14.7 12.3 12.3	6.8 15.3 12.3
Date 21-Oct-09 23-Oct-09	Value 12.4 14.9 16.2 14.9 11.2 11.2	13.7 15.6	Value 24.9 21.2 12.4 16.2 12.4 12.4 16.2	23.0	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0	9.2 8.0	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3	10.4 8.6	Value 7.4 6.1 16.0 14.7 12.3 12.3	6.8 15.3
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9	13.7 15.6 11.2 14.9	Value 24.9 21.2 12.4 16.2 12.4 12.4 16.2 16.2	23.0 14.3 12.4 16.2	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3	9.2 8.0 6.1 11.7	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0	10.4 8.6 6.8 11.7	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8	6.8 15.3 12.3
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9 14.9	13.7 15.6 11.2	Value 24.9 21.2 12.4 16.2 12.4 16.2 16.2 16.2 16.2	23.0 14.3 12.4	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3 12.3	9.2 8.0 6.1	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0 9.8	8.6 6.8	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8 12.3	6.8 15.3 12.3
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9 14.9 14.9	13.7 15.6 11.2 14.9	Value 24.9 21.2 12.4 16.2 12.4 16.2 16.2 16.2 17.4	23.0 14.3 12.4 16.2 16.8	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3 12.3 11.0	9.2 8.0 6.1 11.7	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0 9.8 11.0	10.4 8.6 6.8 11.7	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8 12.3 12.3	6.8 15.3 12.3 11.0 12.3
Date 21-Oct-09 23-Oct-09 27-Oct-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9 14.9 14.9 14.9 12.4	13.7 15.6 11.2 14.9	Value 24.9 21.2 12.4 16.2 12.4 16.2 16.2 16.2 17.4 16.2	23.0 14.3 12.4 16.2	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3 12.3 11.0 12.3	9.2 8.0 6.1 11.7	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0 9.8 11.0 11.0	10.4 8.6 6.8 11.7	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8 12.3 9.8	6.8 15.3 12.3
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09 31-Oct-09 2-Nov-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9 14.9 14.9 17.4	13.7 15.6 11.2 14.9 13.7	Value 24.9 21.2 12.4 16.2 12.4 16.2 16.2 16.2 17.4 16.2 13.7	23.0 14.3 12.4 16.2 16.8 14.9	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3 12.3 14.7	9.2 8.0 6.1 11.7 11.7	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0 9.8 11.0 11.0 11.0	10.4 8.6 6.8 11.7 10.4 11.0	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8 12.3 12.3 9.8 8.6	6.8 15.3 12.3 11.0 12.3 9.2
Date 21-Oct-09 23-Oct-09 27-Oct-09 29-Oct-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9 14.9 14.9 12.4 14.9 17.4	13.7 15.6 11.2 14.9	Value 24.9 21.2 12.4 16.2 12.4 16.2 16.2 16.2 17.4 16.2 13.7 17.4	23.0 14.3 12.4 16.2 16.8	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3 12.3 11.0 12.3 14.7 7.4	9.2 8.0 6.1 11.7	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0 9.8 11.0 11.0 12.3	10.4 8.6 6.8 11.7	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8 12.3 12.3 9.8 11.3 12.3 12.3 12.3	6.8 15.3 12.3 11.0 12.3
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Date 21-Oct-09 23-Oct-09 29-Oct-09 2-Nov-09 6-Nov-09 12-Nov-09 14-Nov-09 14-Nov-09	Value 12.4 14.9 16.2 14.9 11.2 11.2 14.9 14.9 14.9 12.4 14.9 17.4 14.9 16.2 11.2 13.7 12.4 11.2 10.0 11.2 12.4 12.4	13.7 15.6 11.2 14.9 13.7 16.2 15.6 12.4 11.8 10.6	Value 24.9 21.2 12.4 16.2 12.4 16.2 16.2 16.2 17.4 16.2 13.7 17.4 16.2 14.9 17.4 10.0 14.9 16.2 17.4 14.9	23.0 14.3 12.4 16.2 16.8 14.9 16.8 16.2 10.0 15.6 16.2	Value 8.6 9.8 8.6 7.4 7.4 4.9 11.0 12.3 12.3 14.7 7.4 8.6 9.8 11.0 8.6 11.0 9.8 9.8 7.4	9.2 8.0 6.1 11.7 11.7 13.5 8.0 10.4 8.6 10.4	Value 9.8 11.0 8.6 8.6 6.1 7.4 12.3 11.0 9.8 11.0 11.0 12.3 12.3 9.8 11.0 9.8 11.0 12.3 13.5 12.3 12.3 11.0	10.4 8.6 6.8 11.7 10.4 11.0 12.3 10.4 9.2 12.9 11.7	Value 7.4 6.1 16.0 14.7 12.3 12.3 12.3 9.8 12.3 9.8 8.6 11.0 12.3 11.0 9.8 9.8 11.0 9.8 11.0 9.8 9.8	6.8 15.3 12.3 11.0 12.3 9.2 11.7 11.0 9.8 9.8
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Contract no. HK/2009/05 WanChai Development Phase II and Central-Wanchai Bypass Sampling, Field Measurement, Testing Works (Stage 1)

Existing Action and Limit Levels for Water Quality proposed as Dry Season AL & LL

Parameters	Action	Limit	
WSD Salt Water Intakes			
SS in mg/L	13.00	14.43	
Turbidity in NTU	8.04	9.49	
DO in mg/L	3.66	3.28	
Cooling Water Intakes			
SS in mg/L	15.00	22.13	
Turbidity in NTU	9.10	10.25	
DO in mg/L	3.36	2.73	

Proposed Action and Limit Levels for Water Quality in Wet Season (with projection using EPD data)

Parameters	Action	Limit
WSD Salt Water Intakes		
SS in mg/L	16.2	6 19.74
Turbidity in NTU	10.0	1 11.54
DO in mg/L	3.1	7 2.63
Cooling Water Intakes		
SS in mg/L	18.4	27.54
Turbidity in NTU	11.3	5 12.71
DO in mg/L	3.0	2.44

Appendix K Terms of Reference and Details for the ENPC and CLG

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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.
- 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 Chal 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. <u>Terms of Reference</u>

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;

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- (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.

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

2. <u>Terms of Reference</u>

- 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) <u>Causeway Bay CLG</u> 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

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

(d) <u>Central CLG</u> 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.

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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:

- 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

ltern	The Community	Address and Contact Telephone Number	Contact Person
1.	PLK Yu Lee Mo Fan Memorial school	19 Wharf Road,	To be confirmed
		North Point, Hong Kong	To be commend
		Tel :2566 3805	
2.	Hong Kong Baptist Church	2 City Garden Road,	Mr. Dai
	Henrietta Secondary School	North Point, Hong Kong	
3.	110	Tel :25701466	
•	Management Office of City Garden	9 City Garden Road,	Mr. Chin
		North Point, Hong Kong	
1		Tel :270 4584	
٧.	Harbour Grand Hong Kong	23 Oil Street,	
		North Point, Hong Kong	To be confirmed
		Tel :2121 2688	
j.	Management Office of Fu Lee Loy	9-27 King Wah Road,	To be confirmed
	Mansion	North Point, Hong Kong	. o oc oonmined
	Wan Wah Mansion	11-13 Oil Street,	To be confirmed
		North Point, Hong kong	
	Wang Fa Mansion	2 Wang On Road,	To be confirmed
		North Point, Hong Kong	10 be commed
	Victor Court	14-28 Wang On Rd,	To be confirmed
		North Point, Hong Kong	
T	Causeway Bay Community Centre	7 Fook Yum Road,	Me Emily Chang
		North Point, Hong Kong	Ms. Emily Cheng
		Tel :3104 2303	
.	Management Office of Harbour Heights	3 Fook Yum Road.	To be confirmed
	3	North Point, Hong Kong	

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l reil	The Community	Address and Contact	Contact Person
11.	Management Office of Sea View Estate	Telephone Number	
	Sale view Estate	29-41 Tong Chong Street	To be confirmed
12.	Management Office of Victoria Centre	Quarry Bay, Hong Kong	
	Management Office of Victoria Certife	15 Watson Road,	
		Causeway Bay,	To be confirmed
13.		Hong Kong	
, 0.	Management Office of Hoi Tao Building	3 King Ming Road,	To be confirmed
		Causeway Bay,	İ
14.		Hong Kong	
14.	Kam Tao Building	4 Whitfield Road,	To be confirmed
		Causeway Bay,	
		Hong Kong	
15.	Ngan Tao Building	8 Whitfield Road,	To be confirmed
		Causeway Bay,	
40		Hong Kong	
16,	Management Office of Citicorp Centre	18 Whitfield Road,	To be confirmed
		Causeway Bay,	
·		Hong Kong	
17.	Management Offices of Belle House	98 Hing Fat Street,	To be confirmed
		Causeway Bay,	
		Hong Kong	
18.	Whitfield Mansion	15-19 Whitfield Road,	To be confirmed
		Causeway Bay,	, , , , , , , , , , , , , , , , , , , ,
		Hong Kong	
9.	Shun Hing Building	11-13 Whitfield Road.	To be confirmed
		Causeway Bay	10 20 QUIIIIII EQ
20.	Hoi Sing Building	128-142 2nd Street,	To be confirmed
		Sai Ying Pun – located at	to be committed
1		Kenny Town, to be further	
		checked	
1.	Ming Hing Building	9-11 Gordon Road,	To be a first
		Causeway Bay,	To be confirmed
	i	Hong Kong	
2.	Management Office of Gordon House		_
	and of Cordon House	62-86 Hing Fat Street	To be confirmed
	· ·	Causeway Bay,	
		Hong Kong	

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Item	The Community		(version 1
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- The Community	Address and Contact	Contact Person
23.	Management	Telephone Number	
	Management Office of Mayson Garden	1A-1B Tsing Fung Street,	To be confirmed
	Building	Causeway Bay,	
24.		Hong Kong	
A. 7.	Management Office Victoria Court	2A Tsing Fung Street,	To be confirmed
		Causeway Bay,	
		Hong Kong or	
		50-56 Hing Fat Street,	
		Causeway Bay	
		Hong Kong	
25.	Management Office of Viking Garden	40 Hing Fat Street,	To be confirmed
		Causeway Bay,	
		Hong Kong	
26.	Victoria Park School for the Deaf	38 Hing Fat Street,	To be confirmed
		Causeway Bay,	
		Hong Kong	
27.	Management Office of Park Towers	1 King's Road,	To be confirmed
		Causeway Bay,	
		Hong Kong	
8.	Operations Branch of Water Supplies	WSD Hong Kong	To be confirmed
	Department	Regional Building,	
		611 King's Road,	
		North Point, Hong Kong	
9.	Harbour Grand Hong Kong	23 Oil Street, North Point,	To be confirmed
		Hong Kong	.o be committed
).	Management Office of Provident Centre	23 Wharf Road,	To be confirmed
		North Point	to be committed
\bot		Hong Kong	
.]	Management Office of King Wah House	5-7 King Wah Road,	To be confirmed
	·	North Point,	io pa coulilmed
		Hong Kong	

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

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

ltem	The Community	Address and Contact	Contact Person
		Telephone Number	
1.	Management Offices of Prospect Mansion	OO IZ I diefaun dijeet,	To be supplemented
2,		Causeway Bay	
-	Management Offices of Welcome Mansion	58-64 Paterson Street,	To be supplemented
3.		Causeway Bay	
4.	Management Offices of Towning Mansion	50-56 Paterson Street, Causeway Bay	To be supplemented
+.	Management Offices of Causeway Bay	42-48 Paterson Street,	7-1-
 5.	Mansion	Causeway Bay	To be supplemented
) .	Management Offices of Miami Mansion	13-15 Cleveland Street,	To be supplemented
 ì,		Causeway Bay	
••	Management Offices of Florida Mansion	9-11 Cleveland Street,	To be supplemented
		Causeway Bay	
•	Management Offices of Cleveland	5-7 Cleveland Street,	To be supplemented
· · · · · ·	Mansion	Causeway Bay	
•	Management Offices of Hamilton Mansion	1-3 Cleveland Street,	To be supplemented
		Causeway Bay	
-	Management Offices of Highland Mansion	8 Cleveland Street,	To be supplemented
0.		Causeway Bay	
J.	Management Offices of Marco Polo	10 Cleveland Street,	To be supplemented
	Mansion	Causeway Bay	
١,	Management Offices of Newtown Mansion	6 Cleveland Street,	
		Causeway Bay	To be supplemented
	Management Offices of Victoria Park Mansion	15 Kingston Street,	
		Causeway Bay	To be supplemented
٠	Management Offices of Clarke Mansion	9 Kingston Street,	To be supplemented
-		Causeway Bay	
	Management Offices of Chesterfield	11 Kingston Street,	To be supplemented
_	Mansion	Causeway Bay	
	Management Offices of Riviera Mansion	59-65 Paterson Street, Causeway Bay	To be supplemented
- 1	Management Offices of Haywood	57 Paterson Street,	To be supplemented
	Mansion	Causeway Bay	-t-h
	Management Offices of Vienna Mansion	55 Paterson Street,	To be supplemented
		Causeway Bay	l. le . A A

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

ltem	The Community	Address and Contact	(version 1
		Telephone Number	Contact Person
32.	Hong Kong Transport, Logistics &	Administration Building	To be evenly and
	Management Co. Ltd	Cross-Harbour Tunnel	To be supplemented
		Hunghom, Kowloon,	
		Hong Kong	
33.	Causeway Bay Typhoon shelter Mutual Aid Committee	To be confirmed	To be supplemented
34.	Hong Kong Cargo-Vessel Traders'	2/F, 21-23 Man Wai	To be complement
	Association Limited	Building, Man Cheong	To be supplemented
		Street	
35.	Hong Kong Pilots Association	1601-1606,	To be supplemented
		Hong Kong Plaza,	io de supplemente
		186-191 Connaught	
		Road West,	
		Hong Kong.	
6.	Owners of temporary structures at CBTS	To be confirmed	To be supplemented
7.	香港漁民近岸作業協會	Rm 1209, Sui Yick hse,	Mr. Lai Tai Hei
		Siu Sai Wan Est, Chai	Wii. Edi Tai Tjej
		Wan	
		Tel: 9088 8728	
	夠鍵灣朝船	To be confirmed	To be supplemented
	海上業界聯席會議	To be confirmed	To be supplemented
).] :	港九電船拖輪商會	46 & 48 Man Cheong	To be supplemented
		Bldg., 3/F., Ferry Point,	to be aupplemented
		Kowloon	
		Hong Kong ,	
1	每上遊覽業聯會	Rm 1615, One Grand	建 有业
		Tower, 639 nathan Rd,	張有光
		Mong Kok	
		Tel: 9484 5417	

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

Item	The Community	Address and Contact	Contact Person
		Telephone Number	
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 Tel: 2802 7966	Mr. C. K. Wu
3	Management Office of the Hong Kong Academy for Performing Arts	1 Gloucester Road, Wan Chai Tel: 2584 8500	Mr. Joseph Law
4	Management Office of Hong Kong Arts Centre	2 Harbour Road 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 Tel: 2879 1803	Ms. Eva Wong
6	Managernent Office of Sun Hung Kai Centre	26/F., Sun Hung Kai Centre, 30 Harbour Road, Wan Chai Tel: 2828 5218	Mr. Ricky Kwan
	Management Office of Great Eagle/Harbour Centre	Suite 3206, Great Eagle Centre, 23 Harbour Road, Wan Chai	Ms. Polly Lo
		Tel: 2879 2118 (for Great Eagle Centre)	
		26/F., Sun Hung Kai Centre, 30 Harbour	Mr. S. C. Ip
		Road, Wan Chai Tel: 2828 0852 (for	
		Harbour Centre)	
3	Management Office of China Resources Building	Room 4206-10, 42/F., China Resources Building, 26 Harbour Road, Hong Kong Tel: 2828 5688	Mr. Dave Law
	Management Office for Convention Plaza	Convention Plaza	Mr. George Lau
	Apartments	Apartments, 1 Harbour	5 5 5 . 2 5 5
		Road, Wan Chai	
		Tel.: 2829 7098	
0	Telecom House (managed by REACH)	19 th Floor, Telecom House, 3 Gloucester Road, Wan Chai	Mr. Herrick Chong
		Tel: 2983 3719	

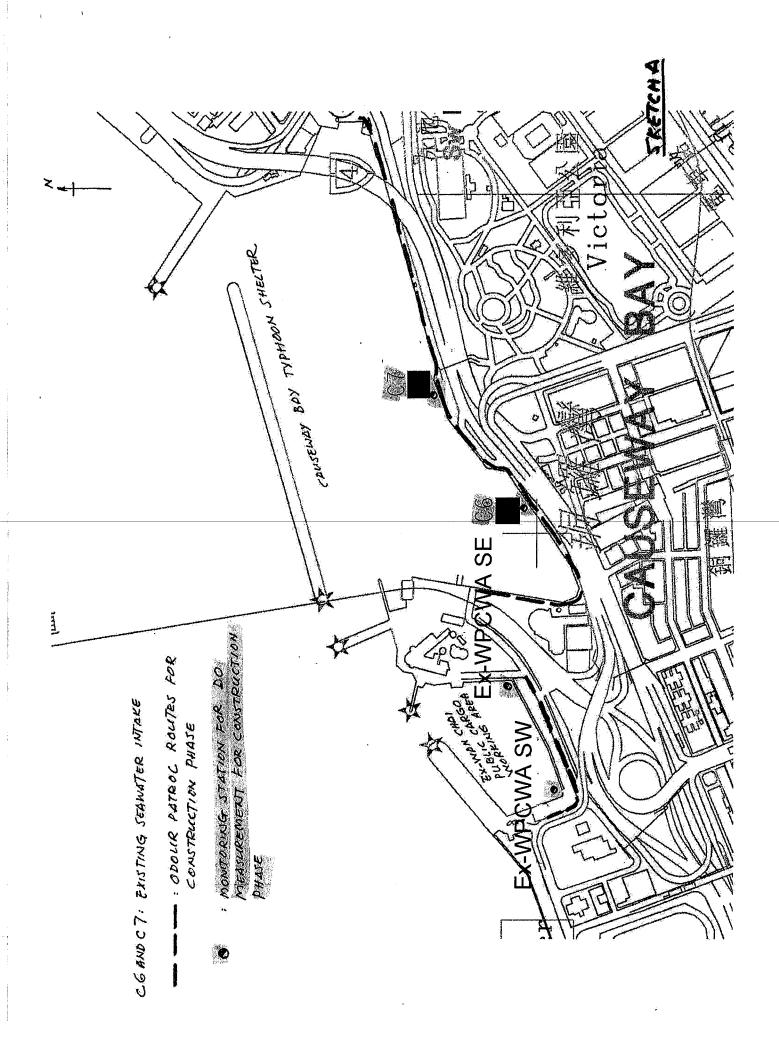
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Item	The Community	Address and Contact	Contact Person
			Contact Person
11	Grand Hyatt Hong Kong Hotel	Telephone Number	
''	orana tryak trong trong troter	1 Harbour Road	
	1	Hong Kong	Mr. Kwong Ms. Siu To be confirmed To be confirmed To be confirmed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

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, Central	To be supplemented
3.	Management Offices of the Bauhinla (Korea Centre)	119-120 Connaught Rd Central, Sheung Wan	To be supplemented

Appendix L Sketch A for Enhanced Water Quality Monitoring and Audit Programme



Appendix M Proposal for Real-time Noise Monitoring System

CONTRACT NO: HK/2009/05

WANCHAI DEVELOPMENT PHASE II AND CENTRAL WANCHAI BYPASS SAMPLING, FIELD MEASUREMENT AND TESTING WORK (STAGE 1)

PROPOSAL ON THE REAL-TIME NOISE MONITORING SYSTEM

CLIENTS:

Civil Engineering and Development Department

and

Highways Department

PREPARED BY:

Lam Geotechnics Limited

11/F Centre Point 181-185 Gloucester Road, Wanchai, H.K.

Telephone: (852) 2882-3939 Facsimile: (852) 2882-3331 E-mail: info@lamenviro.com

Website: http://www.lamenviro.com

CHECKED BY:

Raymond Dai

Environmental Team Leader

DATE:

2 July 2010



Proposal on the Real-time Noise Monitoring System

1. <u>Introduction</u>

According to Condition 2.5(c) of EP-356/2009 and Condition2.5(b) and EP-364/2009, a real-time on-site monitoring system of the noise level around the works sites shall be set up at North Point and Tin Hau areas during the construction phase. This proposal presents the details of system configuration and installation details for the real time on site monitoring system.

2. Equipments

Component equipments of the real-time noise monitoring are listed below. Details of equipments are as follows. Specifications of proposed equipments are shown in **Appendix A**.

- Bruel & Kjaer Handheld Analyzer 2250 Light Model no. 2250-L-400 (Hand-held Analyzer with Sound Level Meter Software BZ-7130, logging software BZ-7133 and Utility Software for Hand-held Analyzers, BZ-5503);
- Bruel & Kjaer outdoor microphone kit UA-1404;
- Sound Level Calibrator
- 3m Microphone Extension Cable
- Rechargeable battery for power supply;
- Wireless modem (GPS or equivalent mechanism)
- Weatherproof Cabinet; and
- Equipment power converter for battery 12V to 5V (if necessary)
- Rechargeable battery (12V, 50AH) for location where a/c supply cannot be obtained (From suppler information, 12V battery can supply normally 30-40days in this real-time noise monitoring set-up and the battery condition could be indicated by the screen of SLM.)
- Weatherproof Cabinet of approximate dimension (roughly 0.25m X 0.4m X 0.5m) to house all the necessary equipment

3. **Proposed Monitoring Stations**

The proposed real-time noise monitoring stations for EP- 356/2009 and EP-364/2009 are summarized as below. The proposed locations of monitoring stations are enclosed in **Appendix B**.

Table 3.1 Summary of the proposed monitoring stations

ration of the definition of the proposed memoring elements				
EP	District	Monitoring Location	Measurement Type	Commencement of Monitoring
EP-	Tin Hau	Tung Lo Wan Fireboat Station	,	Land-based pilling and filling works
356/2009	North Point	Oil Street Community Liaison Centre		Land-based pilling and filling works



Lam Geotechnics Limited

EP	District	Monitoring Location	Measurement Type	Commencement of Monitoring
	Tin Hau Station Causeway Bay Co Centre Oil Street Co North Liaison Centre Point Hong Kong Baptist	, 5	Façade Measurement	CWB Pilling works
EP-		, , ,	Façade Measurement	IECL Bridge Demolition
364/2009			Free-field Measurement	IECL Bridge Demolition
		Hong Kong Baptist Church Henrietta Secondary School		IECL Bridge Demolition

For free-field measurement at Oil Street Community Liaison Centre and Hong Kong Baptist Church Henrietta Secondary School, additional 3dB(A) shall be made on the measured results.

4. Set-up Monitoring Stations

- a) The sound level meter, GSM modem, power converter and rechargeable battery should be stored inside the weatherproof cabinet to protect from sunlight and rain.
- b) Rechargeable battery and Converter should be provided for the power supply of the sound level meter and wireless modem.
- c) Outdoor microphone kit UA-1404 is a weather-proof microphone and suitable for semi-permanent, unsupervised outdoor installation. It is effective to protect the microphone from wind, rain, chemical resistant and birds during the real-time noise monitoring.
- d) Outdoor microphone should be mounted a mast connects to the sound level meter inside weatherproof cabinet. The mast shall be mounted on parapet wall at the premise. Schematic drawing of the monitoring equipments and proposed locations of monitoring stations are enclosed in **Appendix B**.

5. Methodology

- a) Liaison with the appropriate Noise Sensitive Receivers (NSRs) at North Point and Tin Hau to set up a real time on site noise monitoring on their premise.
- b) After obtained approval from the NSR, setting-up of equipments on-site shall be prior to the commencement of construction phase as stated in **Table 3.1**.
- c) Testing and commissioning of the stations shall be conducted for at least 14 works days before the commencement of the monitoring station.
- d) The on-site monitoring system shall be automatically conducted for 24 hours a day.
- e) Noise level shall be measured in term of the A-weighted equivalent continuous sound pressure level L_{eq} . $L_{eq(30min)}$ shall be used as the monitoring parameter for the time period between 0700-1900 hrs in normal weekdays. $L_{eq(5min)}$ shall be used for the measurement during all days during 1900 0700 hrs and general holiday 0700 2300 hrs.
- f) As supplementary information for data auditing, L_{10} and L_{90} shall be also obtained for reference.
- g) The noise data shall be transmitted through GSM wireless communication or equivalent device to head office computer server by mobile dial up mechanism (Relevant information is shown in **Appendix A**).





- h) The data shall be audited within two working days of sampling and audited data shall be posted onto EM&A website for public access two working days after sampling
- Calibration check of sound level meter shall be conducted once every two weeks. Laboratory calibration of sound level meters and calibrator shall be conducted annually.
- j) For public safety, the microphone extension shall be dissembled upon the hoisting of typhoon signal No. 3 or above and no data shall be captured until the microphone is re-assembled when the typhoon signal is removed. Moreover, it is not sensible to capture noise data during the typhoon period as the data are not representative.
- k) Regular checking of monitoring stations and renew rechargeable battery shall be maintained at least every two weeks so as to keep the consistency of the real time noise monitoring.

6. Compliance Checking of Noise Data

- a) In order to avoid the erroneous noise data, background noise shall be studied before the commencement of the construction works as described in **Table 3.1**.
- b) For the review of background noise, it is recommenced to obtain 14 days during the period of non-construction hours for both non-restricted hours and restricted hours. The non-constructed hours are defined as the time without any construction works near the monitoring station. The duration of selected time periods for the comparison and elimination of background noise from measured noise level is shown as **Table 6.1**. The measured noise levels obtained in these periods will be compared with the background noise level of the same period obtained during the non-construction hours. The actual non-construction hours will be determined with the Contractor works programme.

Table 6.1 Duration of selected periods for comparison

Time Periods	Period for Non-constructed Hours
Non-restricted hours	0700-1000hrs (normal weekdays)
	1000-1700hrs (normal weekdays)
	1700-1900hrs (normal weekdays)
Restricted hours	1900-2300hrs (all days)
	2300-0700hrs (all days)
	0700-1900hrs (Sunday and Public Holiday)

- c) The duration and parameter of background noise shall be in term of $L_{eq(30min)}$ during the period of 0700-1900 hours on normal weekday and $L_{eq(5min)}$ during the period other than 0700-1900 hours on normal weekday. It shall be as a factor to eliminate the background noise from the measured noise level.
- d) Compliance checking of the corrected noise level shall be applied to the normal construction hours 0700-1900 hrs between Monday and Saturday.
- e) It shall be also applied to the restricted hour if any construction works conducted with valid CNP during this period.





Sampling, Field Measurement and Testing Works (Stage 1)

f) In case of any action and limit level exceedances occur, the exceeded noise level will be analysed and reviewed any relationship with the construction works. Shall the non-compliance occurs, action shall be taken in accordance with the Event/Action Plan stipulated in EM&A Manual.

APPENDIX A

SPECIFICATIONS OF PROPOSED EQUIPMENTS



PRODUCT DATA

2250 Light – with Sound Level Meter Software BZ-7130 Optional Software: 1/1-oct. Frequency Analysis BZ-7131, 1/3-oct. Frequency Analysis BZ-7132 and Logging BZ-7133

2250 Light has been developed specifically for measuring occupational, environmental and product noise, while complying fully with all the relevant national and international standards.

Extensive user studies have been paired with state-ofthe-art technology to make this analyzer a robust, effective and elegant tool for those applications.

Using the large, high contrast, touch screen interface, the analyzer can easily be set up to display and measure just what is needed from the extensive list of parameters provided by the analyzer.

2250 Light comes with Sound Level Meter Software installed, measuring all parameters simultaneously within its wide 120 dB dynamic range. For frequency analysis, add the 1/1- and/or 1/3-octave software module. For time profile investigation, add the Logging software module. The optional software modules install easily and work seamlessly with the Sound Level Meter Software.



Back in the office, USB connectivity lets you use your PC to archive, manage, view or even control 2250 Light, as well as export your results to software packages such as Microsoft[®] Excel and Brüel & Kjær Types 7815, 7820 or 7825 for post-processing and reporting.

Uses and Features

USES

- Environmental noise assessment, monitoring and complaints
- Occupational noise evaluation
- Selection of hearing protection
- · Noise reduction
- · Product quality control
- General purpose Class 1 sound measurements
- Real-time analysis of sound in 1/1- and 1/3-octave bands
- Analysis of time histories for broadband parameters and spectra (Logging)

FEATURES

- · Large, high-resolution, touch-sensitive screen
- · 'Traffic Light' status indicator
- Plug-in rechargeable Li-ion battery
- Data storage on plug-in memory cards
- 120 dB dynamic range up to 140 dB
- Real-time frequency analysis in 1/1-octave bands
- Real-time frequency analysis in 1/3-octave bands
- · Broadband and spectrum logging
- · Logging profile display with markers
- Back-erase to delete unwanted noise events
- PC software included for archiving, export and reporting
- Robust and environmentally protected (IP 44)
- · Upgrade to Type 2250 on exchange basis

Introduction

2250 Light combines renowned Brüel & Kjær measurement excellence and the Type 2250 platform's ease of use, in an efficient and versatile sound measurement instrument. Whether you are addressing workplace noise compliance, environmental noise assessment, or product noise certification, 2250 Light offers the functionality to meet your requirements. A unique user-interface makes your measurements easier to perform with results that are easier to analyze and report.

This data sheet describes the suite of software applications available for 2250 Light. All instruments come with the Sound Level Meter Software for 2250 Light (BZ-7130) included.

Note: 2250 Light can be upgraded to a Type 2250 Hand-held Analyzer, to include more features and applications such as advanced logging, sound recording or reverberation time software. Please refer to Type 2250 Product Data BP 2025 for more information. The upgrade is on an exchange basis, please contact you local Brüel & Kjær representative for details.

Applications

Workplace and Industrial Hygiene Noise Measurement Applications

2250 Light was developed with special interest for the measurement of workplace noise. The comfortable and secure design feels safe in your hand. With the display located relatively close to you, the buttons fall precisely where they need to be for a one thumb operated Start, Stop and Save. The 'Traffic Light' indicator surrounding the Start/Pause pushbutton gives you an immediate visual indication of measurement status – even in the brightest sunshine. The large, high contrast, touch screen/display, lets you select parameters on the display, and 2250 Light can memorise those setups for your next measurement.



As for occupational health noise parameters, nothing was left out. 2250 Light can measure Fast and Slow, A-weighted and C-Weighted SPLs simultaneously, along with a separately weighted peak detector, so that the values you need to specify hearing protection are immediately on the display. Parallel analysis allows you to compare a 3 dB exchange rate average measurement with a selectable alternate 4, 5 or 6 dB exchange rate, including separate dose, expected dose and exposure values.

2250 Light also offers three independent threshold peak event counters, along with simultaneous Fast, Slow and Impulse RMS detectors, to assess impulsive noise.

When you add the optional 1/1-octave frequency analysis software option, you are ready to instantly assess noise control and detailed hearing protection requirements for a surveyed location. With 2250 Light there is no filter switching, or range changing, all the octaves are measured at the same instant, along with the broadband A- and C-weighted values. For even more detail, add the 1/3-octave frequency analysis option. Instantly see the maximum and average levels across 31 frequency bands spanning three decades from 12.5 Hz to 16 kHz.

Sometimes noise levels in the workplace vary dramatically, and perhaps irregularly. To assess this kind of noise it is helpful to measure and analyse a noise profile - a measurement that shows how the sound varies with time.

The Logging option for 2250 Light provides this capability in a naturally intuitive way, using simultaneous views of the complete profile and a 'zoomed-in' 100-second 'window'. Set up to five different user-defined markers anywhere in the profile, to identify noise sources or events. If you have installed either the 1/1- or 1/3-octave real-time frequency analysis options, 2250 Light seamlessly integrates the spectrum information into the noise profile.

Back at your desk after a survey, or even a single measurement, archive the measurements using the included utility program, where you can view all the results of your measurement on a Windows® compatible PC. Use the same utility program to transfer measurement results to Excel to easily produce reports, or export the results directly to Brüel & Kjær's Protector Type 7825, where you can organise and analyze the company's noise and hearing conservation program. Type 7825 calculates noise exposure according to ISO 9612.2.

So, whether you are making a simple noise survey, or supplementing noise dose measurements for noise control or hearing protection selection, 2250 Light is an easy, yet powerful tool to make you more productive, and more confident in analysing hearing conservation programs.

Environmental Noise Measurement Applications

The tasks for environmental noise measurements are varied, so the instrument you pick for your measurements needs to be flexible, easy to configure, powerful and accurate. 2250 Light is all that, and more, making it ideal for a simple noise enforcement measurement one moment, then a complex environmental impact survey the next. 2250 Light is built on the core platform of the award winning design of Type 2250. It borrows the robust construction, intuitive touch screen interface, and legendary Brüel & Kjær measurement accuracy.



2250 Light with the standard Sound Level Meter software (BZ-7130) is ideal for a spot noise enforcement check. Use the large numeric display, press the conveniently located Start pushbutton, and when ready, press the same button to stop the measurement. Press the Save pushbutton, and you will not only be saving the results, but also the actual time of the measurement, its duration, and even the date and time for the last calibration of the instrument.

2250 Light can measure all the parameters needed for environmental noise, including dual frequency weightings, Fast, Slow, and Impulse Time Averaging, L_{eq} 's and a full

range of statistical distributions. But just as important, you can set 2250 Light to display just the parameters you need, then save that display so 2250 Light powers-up, tailor-made for your use, every time.

For more involved environmental applications, you'll need to add the Logging option. Now you can set the instrument to record all, or up to ten selected measurement results at intervals from one second to one day, for a duration only limited by the size of the CF or SD memory card used in the external memory slots. The display offers two simultaneous views, one of

the complete profile and a 'zoomed-in' 100-second 'window', that are intuitively linked by the cursor.

For the precise timing of noise events, an alternative 'Fast Log' view gives you either or both of the $L_{\rm AF}$ and $L_{\rm Aeq}$ results for 100 ms intervals. In either the fast log, or profile view, you can define up to five different markers anywhere in the profile, to identify noise sources or events. When you use the real-time frequency analysis options, 1/1-octave or 1/3-octave, the frequency spectrum average, maximum and minimum values can be logged along with the overall values. Save and view the noise profiles on your Windows® PC with the included utility program, or for easy analysis of the noise profile, export the whole measurement to Brüel & Kjær Environmental Noise Software (Type 7820 Evaluator or Type 7821 Evaluator Light) which have built-in calculation algorithms that allow you to produce compound sound level figures from several contributions. Some may have impulse or pure tone penalties, depending on which measurement standard you choose, for example, ISO 1996, DIN 45 645, TA Lärm, NF S 31-010, or BS 4142. (See Product Data BP 1752.)

You'll take these measurements with the incredible 120 dB dynamic range of 2250 Light, allowing measurements from the low noise floor of the instrument to over 140 dB. Without a range switch to consider, you can now make measurements without fear of overload, and still capture the nuances of a silent night. 2250 Light is an ideal entry point to safe, easy and precise environmental noise measurements.

Product Noise Measurement

Brüel & Kjær long ago set the standard for product noise measurements. Now, whether you have a simple A-weighted sound limit requirement, or need to evaluate a 1/3-octave reverberation chamber sound power test, 2250 Light is scalable to your requirements.



2250 Light can be used as a hand-held device for easy portability, or it can be operated using your Windows[®] PC as an on-line USB controlled device in your laboratory. The user-defined templates make switching between applications easy.

The wide 120 dB dynamic range of 2250 Light eliminates concern for overloads, and you can set a preset measurement time to add consistency to your measurements. Use the built-in headphone style (3.5 mm) output jack to send the signal out to other measurement instrumentation. The included utility program makes it easy to keep track of results in an organised, archive structure. And, of course, there's the Class 1 precision and reputation of Brüel & Kjær, giving you and your customers' complete confidence in your measurements, while adding value to your products.

For comprehensive data management and post-process reporting, consider using 2250 Light data together with Type 7815 Noise Explorer, which supports a wide range of user-definable graphic and tabular displays.

Graphs and tables can be imported into standard Windows® applications such as word processors and spreadsheets.

Fig. 1 Key features of 2250 Light



Fig. 2
The large numeric display - ideal for a spot noise enforcement check

SLM Module



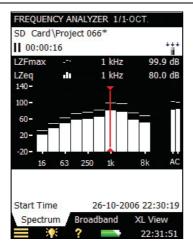
2250 Light comes with the Sound Level Meter Software for 2250 Light included. This makes 2250 Light into a versatile broadband sound level meter; it complies with the latest international standard (IEC 61672–1) as well as previous international and national standards.

All quantities are measured at the same time. For example, A and C frequency weighted levels are measured simultaneously, and at the same time F, S and I time weightings are applied in parallel. In addition, Peak levels are measured. Full statistics are also computed on-the-fly. Combine this with the dynamic range exceeding 120 dB and you will never miss a beat! You get all the parameters in one attempt, under-range is non-existent and you will have difficulties provoking an overload. A full compliment of occupational health sound parameters

are provided simultaneously, complying with national and international standards. The detailed list of available parameters can be found in the specifications section. You choose what you want on the display, but, at any time – during or after the measurement – all other parameters can be inspected and reported.

1/1- and 1/3-octave Frequency Analysis Software for 2250 Light - BZ-7131 and BZ-7132

Fig. 3
Example of 1/1-octave frequency analysis.
Note that two spectra are displayed simultaneously



1/1-octave Frequency Analysis Software for 2250 Light BZ-7131, and 1/3-octave Frequency Analysis Software for 2250 Light BZ-7132 are optional software modules. They allow you to make real-time measurements in 1/1- or 1/3-octave bands over a wide frequency range. This makes it a simple matter to obtain spectra in order to, for example, select hearing protection, qualify heat and ventilation systems, and assess tonality.

The following frequency ranges are available:

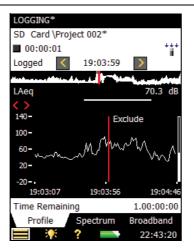
- 1/1-octave spectra (centre frequencies 16 Hz to 8 kHz)
- 1/3-octave spectra (centre frequencies 12.5 Hz to 16 kHz)

In each band you have a full and unrivalled dynamic range from the noise floor in that particular band to 140 dB. That is, a dynamic range generally in excess of 135 dB.

Spectra can be A-, B-, C- or Z-weighted. Five spectra are measured and stored and, in addition, two instantaneous spectra are available for display. Two spectra, for example, a minimum and maximum spectrum, can be superimposed on the display. All the broadband quantities measured by Sound Level Meter Software BZ-7130 are computed in parallel with the frequency analysis.

Logging Software for 2250 Light - BZ-7133

Fig. 4
Display showing part of a logging profile and an exclude marker



With the optional Logging Software enabled, 2250 Light becomes a versatile instrument for obtaining time histories. The Logging Software allows you to select freely among the broadband parameters and log them at intervals from 1 s to 24 h. At the same time $L_{\rm Aeq}$ and/or $L_{\rm AF}$ can be logged at 100 ms intervals.

If Frequency Analysis Software BZ-7131 or BZ-7132 is enabled, the Logging Software additionally lets you log spectra at the same 1 s to 24 h intervals.

Logging Software BZ-7133 incorporates a number of features designed to make difficult field work as manageable as possible.

Among the most salient of these features are the following:

- Five user-definable markers can be set on-the-fly in the profile. Use these, for example, to clearly indicate specific noise sources or events
- Markers can be set directly on the profile display using the stylus and the touch screen.
 Simply 'tap and drag' on the part of the profile you want to mark and select a marker from the drop-down list
- Three of the markers can also be set using the three marker pushbuttons
- Markers can even be set 'after the fact'. The display covers the latest 100 samples (that is, 100 s of profile when logging at 1 s intervals, otherwise more) meaning that in most cases you can wait for the event (or disturbance) to stop before placing your marker. Alternatively, scroll back in the profile and set your marker
- Lets you browse easily between markers
- The profile display can be 'frozen' at any time (this happens automatically when you tap the screen), allowing you to work at ease

All markers are saved with the measurement, see Fig. 4. No further bookkeeping is required. When exporting data to, for example, 7821 Evaluator Light software for further analyses, markers are directly accessible on the profile.

Data is stored directly on SD or CF cards; for availability, please refer to the Ordering Information. Data can be directly read from the memory card by the included PC software BZ-5503 (see following section). This means that even large amounts of data can be quickly transferred to a PC.

In order to give an indication of the amount of memory required, some examples have been listed below. Values should be compared to the standard size of the SD cards used, which start at 128 Mbyte.

For convenience, values for 1 s logging periods during 24 h are given. Other values easily compute from these:

- Five broadband parameters, no statistics: 1 Mbyte
- All broadband parameters, one 100 ms parameter: 3 Mbyte
- All broadband parameters, no statistics: 4 Mbyte
- All broadband parameters, one 100 ms parameter, all 1/3-octave spectra: 30 Mbyte
- All broadband parameters with full statistics: 58 Mbyte
- All broadband parameters, one 100 ms parameter, all 1/3-octave spectra, full statistics: 86 Mbyte

Type 2250 PC Software - Utility Software for Hand-held Analyzers BZ-5503

Utility Software for Hand-held Analyzers BZ-5503 is an archiving tool for 2250 Light data and setups, and functions as the link between 2250 Light and post-processing or reporting software on a PC. It enables you to do the following:

- Control 2250 Light from a PC
- Manage and archive data on a PC
- Keep your 2250 Light software up to date

Overview of 2250 Light Software Features

The table that follows presents a summary of the features of each of the software modules available with 2250 Light. See Specifications for details.

Feature	SLM Software (Included)	1/1-octave Frequency Analysis Software	1/3-octave Frequency Analysis Software	Logging Software
120+dB Dynamic Range – no need for range switching	•	•	•	•
Sound levels up to 140 dB with supplied Microphone Type 4950	•	•	•	•
IEC/ANSI SLM standards Type/Class 1	•	•	•	•
Frequency weightings A, B, C, Z (linear) and time weightings F, S, I	•	•	•	•
Free-field/diffuse-field correction	•	•	•	•
Pre-set time start/stop	•	•	•	•
Back-erase – last 5 seconds of measurement data	•	•	•	
Multi-language user interface	•	•	•	•
Context-sensitive help	•	•	•	•
Broadband statistics based on L _{Aeq} , L _{AF} or L _{AS}	•	•	•	•
Broadband frequency range: 5 Hz - 18 kHz	•	•	•	•
Remote control using Analogue or GSM modem	•	•	•	•
Transfer of data files while measuring (USB or modem)	•	•	•	•
1/1-octave spectra (centre frequencies 16 Hz to 8 kHz)		•		●a
1/3-octave spectra (centre frequencies 12.5 Hz to 16 kHz)			•	ea
Logging of all or selected broadband parameters and spectra				•
Logging period 1s to 24h				•
L _{Aeq} and/or L _{AF} logged every 100 ms				•
Profile display				•
Profile overview of entire measurement				•
Markers on profile display				•

a. If 1/1- or 1/3-octave Frequency Analysis Software is enabled

Compliance with Standards

CE, C	CE-mark indicates compliance with the EMC Directive and Low Voltage Directive. C-Tick mark indicates compliance with the EMC requirements of Australia and New Zealand.
Safety	EN/IEC 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use. UL 61010B-1: Standard for Safety – Electrical measuring and test equipment.
EMC Emission	EN/IEC 61000–6–3: Generic emission standard for residential, commercial and light industrial environments. CISPR 22: Radio disturbance characteristics of information technology equipment. Class B Limits. FCC Rules, Part 15: Complies with the limits for a Class B digital device. IEC 61672–1, IEC 61260, IEC 60651 and IEC 60804: Instrumentation standards
EMC Immunity	EN/IEC 61000-6-2: Generic standard – Immunity for industrial environments. EN/IEC 61326: Electrical equipment for measurement, control and laboratory use – EMC requirements. IEC 61672-1, IEC 61260, IEC 60651 and IEC 60804: Instrumentation standards

Specifications - 2250 Light Platform

Specifications apply to 2250 Light fitted with Microphone Type 4950 and Microphone Preamplifier ZC-0032

SUPPLIED MICROPHONE

Type 4950: Prepolarized Free-field 1/2" Microphone

Nominal Open-circuit Sensitivity: 50 mV/Pa (corresponding to

-26 dB re 1 V/Pa) ± 2 dB Capacitance: 12.5 pF (at 250 Hz)

MICROPHONE PREAMPLIFIER ZC-0032 Nominal Preamplifier Attenuation: 0.3 dB

Connector: 10-pin LEMO

Extension Cables: Up to 100 m in length between the microphone preamplifier and 2250 Light, without degradation of the specifications

SELF-GENERATED NOISE LEVEL

Typical values at 23°C for nominal microphone open-circuit sensitivity:

Weighting	Microphone	Electrical	Total
"A"	14.0 dB	12.9 dB	16.4 dB
"B"	12.9 dB	11.8 dB	15.4 dB
"C"	13.0 dB	13.4 dB	16.2 dB
"Z" 5 Hz–20 kHz	14.4 dB	19.2 dB	20.4 dB

KEYBOARD

Pushbuttons: 11 keys with backlight, optimised for measurement control and screen navigation

ON-OFF BUTTON

Function: Press 1s to turn on; press 1s to enter standby; press for more than 5s to switch off

STATUS INDICATORS
LEDs: Red, amber and green

DISPLAY

Type: Transflective back-lit touch screen 240 x 320 dot matrix

Black and White Scheme

Backlight: Adjustable level and on-time

USER INTERFACE

Measurement Control: Using pushbuttons on keyboard **Setup and Display of Results:** Using stylus on touch screen or

pushbuttons on keyboard

Lock: Keyboard and touch screen can be locked and unlocked

USB INTERFACE

USB 1.1 OTG Mini B socket

MODEM INTERFACE

Hayes compatible GSM or standard analogue modems connected through the Compact Flash slot

INPUT SOCKET

Connector: Triaxial LEMO Input Impedance: $\geq 1 \text{ M}\Omega$

Direct Input: Max. input voltage: ±14.14 V_{peak}

HEADPHONE SOCKET

Connector: $3.5\,\text{mm}$ Minijack stereo socket Max. Peak Output Level: $\pm\,1.4\,\text{V}$ Output Impedance: $32\,\Omega$ in each channel

EXTERNAL DC POWER SUPPLY REQUIREMENTS

Used to charge the battery pack in the instrument **Voltage:** 8-24 V DC, ripple voltage < 20 mV

Current Requirement: min. 1.5 A

Power Consumption: $< 2.5 \, \text{W}$, without battery charging, $< 10 \, \text{W}$

when charging

Cable Connector: LEMO Type FFA.00, positive at centre pin

BATTERY PACK

Type: Li-lon rechargeable
Typical Operating Time: >8 hours

Typical Operating Time: >0 no

STORAGE SYSTEM Internal Flash-RAM (non-volatile): 20 Mbyte for user setups and

measurement data

External Secure Digital Memory Card (SD-card): For store/recall

of measurement data

External Compact Flash Memory Card (CF-card): For store/recall of measurement data

CLOCK

Back-up battery powered clock. Drift < 0.45 s per 24 hour period

WARM-UP TIME

From Power Off: <2 minutes From Standby: <10 seconds

TEMPERATURE

IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing. Cold and

Dry Heat

Operating Temperature: -10 to +50°C (14 to 122°F), <0.1 dB

Storage Temperature: -25 to +70°C (-13 to +158°F)

HUMIDITY

IEC 60068-2-78: Damp Heat: 90% RH (non-condensing at 40°C

(104°F))

Effect of Humidity: < 0.1 dB for 0% < RH < 90% (at 40°C (104°F)

and 1 kHz)

MECHANICAL

Environmental Protection: IP 44

Non-operating:

IEC 60068-2-6: Vibration: 0.3 mm, 20 m/s², 10 - 500 Hz

IEC 60068-2-27: Shock: 1000 m/s²

IEC 60068-2-29: Bump: 4000 bumps at 400 m/s²

WEIGHT AND DIMENSIONS

650 g (23 oz.) including rechargeable battery

 $300\times93\times50\,\text{mm}$ (11.8 $\times3.7\times1.9'')$ including preamplifier and microphone

LANGUAGE

User Interface in Catalan, Croatian, Czech, Danish, English, Flemish, French, German, Hungarian, Japanese, Italian, Polish, Portuguese, Romanian, Serbian, Slovenian, Spanish, Swedish and Turkish

HELP

Concise context-sensitive help in Catalan, English, French, German, Italian, Japanese, Polish, Portuguese, Romanian, Serbian, Slovenian and Spanish

Software Specifications - Sound Level Meter Software for 2250 Light BZ-7130

Conforms with the following National and International Standards:

- IEC 61672-1 (2002-05) Class 1
- IEC 60651 (1979) plus Amendment 1 (1993-02) and Amendment 2 (2000-10), Type 1
- IEC 60804 (2000-10), Type 1
- IEC 61252, Electroacoustics Specifications for Personal Sound **Exposure Meters**
- DIN 45657 (1997-07)
- ANSI S1.4-1983 plus ANSI S1.4A-1985 Amendment, Type 1
- ANSIS1.43-1997, Type 1

Note: The International IEC Standards are adopted as European standards by CENELEC. When this happens, the letters IEC are replaced with EN and the number is retained. 2250 Light also conforms to these EN Standards

CORRECTION FILTERS

For Microphone Type 4950:

Correct the frequency response to compensate for sound field and accessories:

Sound Field: Free-field or Diffuse-field Accessories: None, Windscreen UA-0237

DETECTORS

Parallel Detectors on every measurement:

A- or B-weighted (switchable) broadband detector channel with three exponential time weightings (Fast, Slow, Impulse), one linearly averaging detector and one peak detector

C- or Z-weighted (switchable) as for A- or B-weighted Overload Detector: Monitors the overload outputs of all the

frequency weighted channels

MEASUREMENTS

X = frequency weightings A or B

Y = frequency weightings C or Z

V = frequency weightings A, B, C or Z

U = time weightings F or S Q = exchange rate 4, 5 or 6 dB

N = number between 0.1 and 99.9

For Storage

Full statistics

For Display and Storage

Start Time	Stop Time	Overload %
Elapsed Time	L_{Xeq}	L_{Yeq}
L_XE	L_{YE}	L_{Ceq} - L_{Aeq}
L _{XSmax}	L_{XFmax}	L_{XImax}
L _{YSmax}	L _{YFmax}	L_{Ylmax}
L _{XSmin}	L_{XFmin}	L_{XImin}
L _{YSmin}	L_{YFmin}	L_{Ylmin}
L _{Xleq}	L_{Yleq}	L_{Aleq} - L_{Aeq}
L _{AFTeq}	L_{AFTeq} - L_{Aeq}	Time Remaining
1 .	1 .	_

L_{ep,d} L_{ep.d.v}

#VPeaks (>NNNdB) Proj. Dose% Dose%

#VPeaks (>137dB) #VPeaks (>135dB) L_{Vpeak} T_{Vpeak} TWA LavUQ

TWA., DoseUQ% Proj. DoseUQ%

Only for Display as Numbers or Quasi-analogue Bars

L _{XS}	L_{XF}	L_{XI}
L _{YS}	L_{YF}	L_{YI}
L _{XS(SPL)}	L _{XF(SPL)}	$L_{XI(SPL)}$
L _{YS(SPL)}	L _{YF(SPL)}	$L_{YI(SPL)}$
L _{Vpeak,1s}	L _{AN1} or L _{AUN1}	L _{AN2} or L _{AUN2}
L _{AN3} or L _{AUN3}	L _{AN4} or L _{AUN4}	L _{AN5} or L _{AUN5}
L _{AN6} or L _{AUN6}	L _{AN7} or L _{AUN7}	

MEASURING RANGES

Dynamic Range: From typical noise floor to max. level for a 1 kHz

pure tone signal, A-weighted: 16.4 to 140 dB

Primary Indicator Range: In accordance with IEC 60651,

A-weighted: 23.9 dB to 123 dB

Linearity Range: In accordance with IEC 60804,

A-weighted: 21.8 dB to 140 dB

Linear Operating Range: In accordance with IEC 61672,

A-weighted: 1 kHz: 25.0 dB to 140 dB

Peak C Range: In accordance with IEC 61672: 30.1 dB to 143 dB

SAMPLING FOR BROADBAND STATISTICS

- The Statistics can be based on either L_{AF} , L_{AS} or L_{Aeq} :
 Statistics L_{AFN1-7} or L_{ASN1-7} are based on sampling L_{AF} or L_{AS} , resp., every 10 ms into 0.2 dB wide classes over 130 dB
- Statistics L_{AN1-7} are based on sampling L_{Aeq} every second into 0.2 dB wide classes over 130 dB

Full distribution saved with measurement

MEASUREMENT DISPLAYS

SLM: Measurement data displayed as numbers of various sizes and one quasi-analogue bar

Measured data are displayed as dB values, housekeeping data as numbers in relevant format.

Instantaneous measurement L_{XF} is displayed as a quasi-analogue

MEASUREMENT CONTROL

Manual: Manually controlled single measurement

Automatic: Pre-set measurement time from 1s to 24 hours in 1s

Manual Controls: Reset, Start, Pause, Back-erase, Continue and Store the measurement manually

BACK-ERASE

The last 5 s of data can be erased without resetting the measurement

MEASUREMENT STATUS

On Screen: Information such as overload and running/paused are displayed on screen as icons

Traffic Lights: Red, yellow and green LEDs show measurement status and instantaneous overload as follows:

- Yellow LED flash every 5 s = stopped, ready to measure
- Green LED flashing slowly = awaiting calibration signal
- Green LED on constantly = measuring
- Yellow LED flashing slowly = paused, measurement not stored
- Red LED flashing quickly = intermittent overload, calibration failed

CALIBRATION

Initial calibration is stored for comparison with later calibrations Acoustic: Using Sound Calibrator Type 4231 or custom calibrator. The calibration process automatically detects the calibration level when Sound Calibrator Type 4231 is used

Electrical: Uses internally generated electrical signal combined with a typed-in value of microphone sensitivity

Calibration History: Up to 20 of the last calibrations made are listed and can be viewed on the instrument

SIGNAL MONITORING

The input signal can be monitored using an earphone/headphones connected to the headphone socket

Headphone Signal: Input signal can be monitored using this socket with headphones/earphones

Gain Adjustment: -60 dB to 60 dB

DATA MANAGEMENT

Project Template: Defines the display and measurement setups Project: Measurement data stored with the Project Template Job: Projects are organised in Jobs

Explorer facilities for easy management of data (copy, cut, paste, delete, rename, view data, open project, create job, set default project name)

PREFERENCES

Date, Time and Number formats can be specified

Software Specifications – 1/1-octave Frequency Analysis Software for 2250 Light BZ-7131 and 1/3-octave Frequency Analysis Software for 2250 Light BZ-7132

The specifications for BZ-7131 and BZ-7132 include the specifications for Sound Level Meter Software for Light BZ-7130. BZ-7131 and BZ-7132 add:

STANDARDS

Conforms with the following National and International Standards:

- IEC 61260 (1995–07) plus Amendment 1 (2001–09), 1/1-octave Bands, Class 0
- ANSIS1.11–1986, 1/1-octave Bands and 1/3-octave Bands, Order 3, Type 0–C
- ANSIS1.11-2004, 1/1-octave Bands, Class 0

CENTRE FREQUENCIES

1/1-octave Band Centre Frequencies (BZ-7131 only): 16 Hz to 8 kHz

1/3-octave Band Centre Frequencies (BZ-7132 only): 12 5 Hz to 16 kHz

MEASUREMENTS

X = frequency weightings A, B, C or Z

Spectra for Display and Storage

 L_Xeq $\mathsf{L}_\mathsf{XSmax}$ $\mathsf{L}_\mathsf{XFmax}$

L_{XSmin} L_{XFmin}

Spectra for Display Only

Single Values

 $\begin{array}{cccc} \text{SIL} & \text{PSIL} & \text{SIL3} \\ \text{L}_{\text{Aeq (20-200 Hz)}} & \text{(BZ-7132 only)} \end{array}$

MEASURING RANGES

Dynamic Range: From typical noise floor to max. level for a pure

tone signal at 1 kHz 1/3-octave: 1.5 to 140 dB

Linear Operating Range: In accordance with IEC 61260: ≤20.5 dB

to 140 dB

MEASUREMENT DISPLAYS

Spectrum: One or two spectra superimposed + A/B and C/Z

broadband bars

Table: One or two spectra in tabular form

Y-axis: Range: 5, 10, 20, 40, 60, 80, 100, 120, 140 or 160 dB. Auto

zoom or auto scale available **Cursor**: Readout of selected band

Software Specifications - Logging Software for 2250 Light BZ-7133

The specifications for BZ-7133 include the specifications for Sound Level Meter Software for 2250 Light BZ-7130. BZ-7133 adds:

MEASUREMENTS

Logging: Measurement data logged at pre-set periods into files on external SD- or CF-cards

Logging Period: From 1s to 24 hours with 1s resolution **Fast Logging:** L_{AF} and L_{Aeq} can be logged every 100 ms, irrespective of logging period

Broadband Data Stored at each Logging Interval: All, or up to 10 selectable broadband data

Broadband Statistics Stored at each Logging Interval: Full distribution or none

Spectrum Data Stored at each Logging Interval: All, or up to 3 selectable spectra (license for BZ-7131 or BZ-7132 required)
Logging Time: From 1 second to 31 days with 1s resolution
Measurement Total: For the logging time, in parallel with logging:
All broadband data, statistics and spectra (license for BZ-7131 or BZ-7132 required)

Automatic reboot and resume of operation in case of power failure

MARKERS

Five user-definable markers for on-line marking of noise sources or events anywhere in the profile.

Markers are set using the stylus on the touch screen, or the three marker pushbuttons

MEASUREMENT DISPLAYS

Profile: Graphical display of selectable measurement data versus time. Fast display of next or previous marker, Profile Overview of entire measurement

Y-axis: Range: 5, 10, 20, 40, 60, 80, 100, 120, 140 or 160 dB. Auto zoom or auto scale available

X-axis: Scroll facilities

Cursor: Readout of measurement data at selected time

STORAGE

Measurement data is stored on an external SD or CF memory card. For availability, please refer to the Ordering Information

Software Specifications - Utility Software for Hand-held Analyzers BZ-5503

BZ-5503 is included with 2250 Light for easy synchronisation of data between PC and 2250 Light. BZ-5503 is supplied on CD-ROM BZ-5298

ON-LINE DISPLAY OF 2250 LIGHT DATA

Measurements on 2250 Light can be controlled from the PC and displayed on-line with the PC, using the same user interface on the PC as on 2250 Light

DATA MANAGEMENT

Explorer: Facilities for easy management of Instruments, Jobs and Projects (copy, cut, paste, delete, rename, create)

Data Viewer: View measurement data (content of projects) **Synchronisation:** Projects can be synchronised between PC and 2250 Light

EXPORT FACILITIES

Excel: Projects (or user specified parts) can be exported to Microsoft[®] Excel

Type 7810/12/15/16/20/25: Projects can be exported to Predictor Type 7810, Lima Type 7812, Noise Explorer Type 7815, Acoustic Determinator Type 7816, Evaluator Type 7820 or Protector Type 7825

2250 LIGHT SOFTWARE UPGRADES AND LICENSES

The utility software controls 2250 Light software upgrades and licensing of the 2250 Light applications

INTERFACE TO 2250 LIGHT

USB ver. 1.1 or Hayes compatible GSM or standard analogue modem

PC REQUIREMENT

Operating System: Windows® 2000/Windows® XP, Microsoft®.NET Recommended PC: Pentium® III (or equivalent) processor, 128 Mbyte RAM, SVGA graphics display/adaptor, sound card, CD ROM drive, mouse, USB, Windows® XP

Ordering Information

Oracining iiii			
2250 LIGHT PA	CKAGES	KE-0441	Protective Cover for 2250 Light
	0 Hand-held Analyzer with Sound Level Meter	HT-0015	Earphones
71	Software BZ-7130	UA-1654	5 Extra Styli
Type 2250-L-20	0 Hand-held Analyzer with Sound Level Meter	Type 4231	Sound Calibrator
,,,	Software BZ-7130 and 1/1-octave Frequency	UA-1251	Lightweight Tripod
	Analysis Software BZ-7131	UL-1009	SD Memory Card
Type 2250-L-30	0 Hand-held Analyzer with Sound Level Meter	Type 7821	Evaluator Light
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Software BZ-7130, 1/1-octave Frequency Analysis	• •	•
	Software BZ-7131 and 1/3-octave Frequency		L HEALTH KIT FOR 2250 LIGHT (UA-1706)
	Analysis Software BZ-7132	FB-0691	Hinged Cover for Hand-held Analyzer
Type 2250-L-40	0 Hand-held Analyzer with Sound Level Meter	UA-0254	90 mm dia. Windscreens (6 pack of UA-0237)
,,,	Software BZ-7130 and Logging Software BZ-7133	UA-1673	Adaptor for Standard Tripod Mount
Type 2250-L-50	0 Hand-held Analyzer with Sound Level Meter	DH-0696	Wrist Strap
7 1	Software BZ-7130, 1/1-octave Frequency Analysis	KE-0441	Protective Cover for 2250 Light
	Software BZ-7131, 1/3-octave Frequency Analysis	HT-0015	Earphones
	Software BZ-7132 and Logging Software BZ-7133	UA-1654	5 Extra Styli
		Type 4231	Sound Calibrator
	DDULES AVAILABLE SEPARATELY	UA-1251	Lightweight Tripod
BZ-7131	1/1-octave Frequency Analysis Software for 2250	UL-1009	SD Memory Card
D7 7400	Light	Type 7825	Protector
BZ-7132	1/3-octave Frequency Analysis Software for 2250 Light	ACCESSORIES	AND COMPONENTS AVAILABLE SEPARATELY
BZ-7133	Logging Software for 2250 Light	ANALYZER	
COMPONENTS	•	ZG-0444	Charger for QB-0061 Battery Pack
	INCLUDED WITH TYPE 2250-L	CALIBRATION	
Type 4950	Prepolarized Free-field 1/2" Microphone	Type 4231	Sound Calibrator (fits in KE-0440)
ZC-0032	Microphone Preamplifier	2250-CAI	Accredited Initial Calibration of Type 2250
AO-1476	USB Standard A to USB Mini B Interface Cable,	2250-CAF	Accredited Calibration of Type 2250
D7 5000	1.8m (6ft)	2250-CTF	Traceable Calibration of Type 2250
BZ-5298	Environmental Software, including BZ-5503 Utility Software for Hand-held Analyzers	2250-C11 2250-TCF	Conformance Test of Type 2250, with certificate
ZG-0429	Mains Power Supply	MEASURING	
QB-0061	Battery Pack	Type 3592	Outdoor Measuring Gear (see Product Data
	Stylus		BP 1744)
BASIC KIT FOR	R 2250 LIGHT (UA-1703)	AO-0441-D-030	Microphone Extension Cable, 10-pin LEMO, 3 m
FB-0691	Hinged Cover for Hand-held Analyzer	10.0444.5.466	(10 ft)
UA-0237	90 mm dia. Windscreen	AO-0441-D-100	Microphone Extension Cable, 10-pin LEMO, 10 m
DH-0696	Wrist Strap	KE 0440	(33 ft)
KE-0441	Protective Cover for 2250 Light	KE-0440	Travel Bag
UA-1654	5 Extra Styli	UA-0587	Tripod
PLUS KIT FOR	2250 LIGHT (UA-1704)	UA-0801	Small Tripod
FB-0691	Hinged Cover for Hand-held Analyzer	UA-1317	Microphone Holder
UA-0254	90 mm dia. Windscreens (6 pack of UA-0237)	UA-1651	Tripod Extension for Hand-held Analyzer
UA-1673	Adaptor for Standard Tripod Mount	UL-1009	SD Memory Card for Hand-held Analyzers
DH-0696	Wrist Strap	UL-1013	CF Memory Card for Hand-held Analyzers
KE-0441	Protective Cover for 2250 Light	UA-1654	5 Extra Styli
HT-0015	Earphones	INTERFACING	
UA-1654	5 Extra Styli	Type 7815	Noise Explorer – data viewing software
Type 4231	Sound Calibrator	Type 7821	Evaluator Light – data viewing and calculation
UA-1251	Lightweight Tripod	• •	software
UL-1009	SD Memory Card	Type 7825	Protector – software for calculation of Personal
ADVANCED KI	T FOR 2250 LIGHT (UA-1705)		Noise Exposure
FB-0691	Hinged Cover for Hand-held Analyzer	SERVICE PROD	DUCTS
UA-0254	90 mm dia. Windscreens (6 pack of UA-0237)	2250-L-EW1	Extended Warranty, one year extension
UA-1673	Adaptor for Standard Tripod Mount	2250-L-MU1	Upgrade of 2250 Light to Type 2250, performed
DH-0696	Wrist Strap		at headquarters
			•

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PRODUCT DATA

Outdoor Microphone Unit — Type 4198 Outdoor Microphone Kit — UA-1404

Type 4198 is a weather-proof microphone and preamplifier assembly that meets IEC 61672 class 1 and ANSI S1.4 Type 2 specifications. Use it in any situation where you must make precise outdoor sound measurements.

Type 4198 is even suitable for semi-permanent, unsupervised outdoor installation.

Outdoor Microphone Kit UA-1404 includes all of the protective features of Type 4198, but without the microphone and preamplifier. It enables you to weatherproof your Falcon™ range microphones and preamplifiers. It can also protect the microphones and preamplifiers for Sound Level Meters Types 2236, 2250 and 2260. All recommended combinations fulfil IEC 61672 class 1 and ANSI S1.4 Type 2 specifications (see configuration diagram, Fig. 7).

Both the unit and the kit enable you to take measurements that are protected against the effects of wind, rain, and perching birds.



USES AND FEATURES

USES

- IEC 61672 class 1 compliant outdoor sound measurements in all weather conditions
- · Unattended, semi-permanent outdoor installations
- Noise control
- · Complaint investigations
- Research

FEATURES

- Protected against the effects of wind, rain, and perching birds
- · Easy acoustic calibration

- Detailed free-field corrections on mini CD to obtain flat response in all sound fields
- Falcon™ range product with a 3-year guarantee
- UA-1404 usable with existing Falcon[™] range microphones and preamplifiers

TYPE 4198 ALSO FEATURES

- Built-in Type 1 microphone and preamplifier
- Wide dynamic range: 15.2 dB(A) to 146 dB
- · Remote calibration monitoring using CIC
- Individual microphone calibration charts
- Easy connection to standard measurement microphone equipment

Effective Protection in Outdoor Environments

Both Outdoor Microphone Unit Type 4198 and Outdoor Microphone Kit UA-1404 use the same protective assembly.

Effective Wind Protection

The windscreen reduces wind noise by approximately 15 dB for wind speeds up to 120 km/h. It is made of a specially prepared porous polyurethane foam, which is resistant to corrosive atmospheres and immune to moisture.

Effective Rain Protection

A rain cover protects the microphone from moisture. The cover surrounds the microphone cartridge inside the wind screen (see Fig. 5). It is specially designed to minimise its effect on the frequency and directional characteristics of the assembly.

Chemical resistant

All essential components are made of stainless steel to withstand tough environments.

Support and Protection

The windscreen is supported by three stainless steel rods that also protrude as rubber-capped spikes, which prevent birds from perching on the microphone. Each of the bird spikes is capped with soft rubber to make them easier to see and to help prevent eye injuries (see Fig. 5).

Fig. 1
The wind and rain cover can be removed easily, but not accidentally. This exposes the microphone for easy calibration



Long Lasting

The unit provides excellent long-term mechanical stability. Should the frame become bent or the foam worn-out, replacements are available.

Easy Acoustic Calibration

Many all-weather microphone systems provide durability at the expense of microphone accessibility, which makes acoustical calibration difficult. With Type 4198 and UA-1404, the windscreen and rain cover assembly can easily be removed, thus exposing the microphone for easy acoustical calibration (see Fig. 5).

Fig. 2
Frequency response of
Outdoor Microphone
Unit Type 4198.
IEC 61672 class 1
tolerances are shown
above and below the
response curve

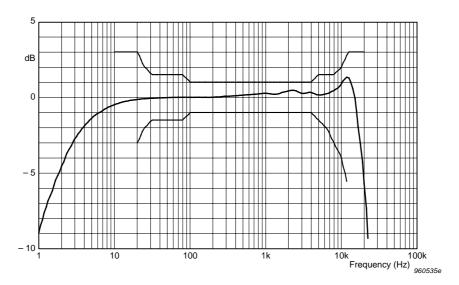


Fig. 3
Change in frequency response of Type 4188 microphone with
Outdoor Microphone
Kit UA-1404 (including the effect of the replacement grid)

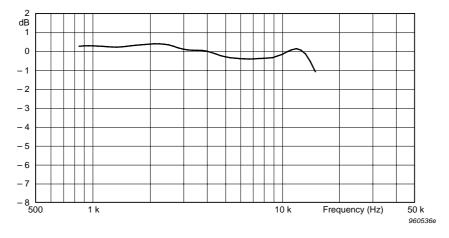
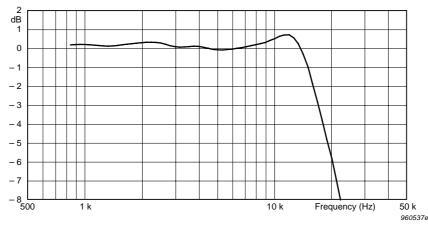
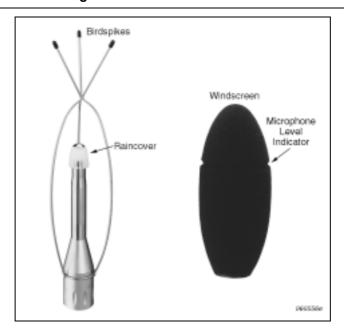


Fig. 4
Change in frequency response of Types 4189 and 4190 microphones with Outdoor Microphone Kit UA-1404 (including the effect of the replacement grid)



Unattended Outdoor Monitoring

Fig. 5
The weather protection components of Type 4198 and UA-1404



All of the features of Type 4198 and UA-1404 combine to create an assembly that can safely be installed for semi-permanent outdoor sound measurement. The assembly will maintain consistent performance even when left unattended in bad weather for several weeks.

Precise Microphone Placement

The height of the microphone inside the windscreen is clearly marked by the groove moulded into the screen (see Fig. 5).

Type 4198 — The Complete Outdoor Microphone

Precision Components

Outdoor Microphone Type 4198 includes the following components:

- Falcon Range Prepolarized Free-field 1/2" Microphone Type 4189
- Falcon Range 1/2" Microphone Preamplifier Type 2669-C
- Outdoor Microphone Kit UA-1404
- 10 meter extension cable AO-0414-D-100

Type 1 Microphone Cartridge

The Type 4198 includes a Falcon Range Prepolarized Free-field 1/2" Microphone Type 4189. Type 4189 is a rugged microphone that ensures high stability under a variety of conditions. Its stainless steel alloy diaphragm withstands even polluted industrial environments.

During manufacturing, each microphone is artificially aged at a high temperature to ensure good long-term stability.

Type 1 Preamplifier

Falcon Range Preamplifier Type 2669-C operates over a wide range of temperatures, humidity levels and other environmental conditions. Type 2669-C is especially well-suited for outdoor monitoring because of its ability to work with very long cables. It provides an extremely wide frequency and dynamic range with low noise.

Save Time and Expense with CIC

Brüel & Kjær's patented Charge Injection Calibration (CIC) facility is built into the preamplifier. It enables you to remotely monitor the microphone system for impedance changes, which can indicate a need for recalibration or repair. This will extend the period between acoustical

calibrations, thus saving you time and expense. For more information about CIC, see the Brüel & Kjær Microphone Handbook (BA 5105).

Individual Calibration

Each unit comes with individual calibration charts and a mini CD containing detailed free-field corrections to the actuator response. The corrections are supplied as comma separated ASCII text files.

Obtain Flat Response in All Fields

The information contained on the mini CD enables you to make extremely precise free-field measurements. When you are performing detailed frequency analysis, this information will enable you to adjust your readings to obtain a flat microphone response in any sound field.

Use Your Existing Equipment Outdoors with UA-1404

Outdoor Microphone Kit UA-1404 includes all of the weather protection equipment of Outdoor Microphone Type 4198 (windscreen, rain cover, bird spikes, and stainless steel enclosure). The kit is compatible with the following Brüel & Kjær equipment:

- Falcon Range Microphone Types 4188, 4189, and 4190
- Falcon Range Preamplifier Types 2671 and 2669-B/L/C
- Microphone and preamplifier from Hand-held Analyzer Type 2250
- Microphone and preamplifier from Sound Analyzer Type 2260
- Microphone and preamplifier from Sound Level Meter Type 2236 (see "Type 2236 Considerations" below)

The kit will enable you to use your existing equipment to make outdoor measurements, even unattended or in bad weather.

The kit includes two stainless steel 1/2" replacement microphone grids, which are required to obtain the correct frequency response. One is for use with microphone Type 4188 and the other for Types 4189 and 4190. They also help protect your microphone cartridge from corrosion.

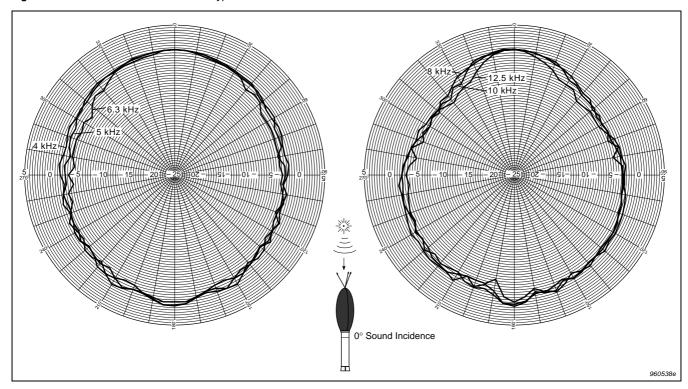
Obtain Flat Response in All Fields

Like Type 4198, UA-1404 includes a disc containing detailed free-field corrections for each microphone recommended for use with the kit. See the Type 4198 section above for more information.

Type 2236 Considerations

UA-1404 extends the distance between the microphone and the preamplifier. This causes a $2\,dB$ loss in the sound signal, which may invalidate your instrument's calibration. You must therefore check the chart that came with your Type 4188 microphone. Make sure the sensitivity is between $-30.5\,dB$ and $-28\,dB$ before using UA-1404 with your instrument. If the sensitivity lies below $-30.5\,dB$, then you must purchase a more sensitive Type 4188 microphone to use with UA-1404.

Fig. 6 Directional characteristics for both Type 4198 and UA-1404



Compliance with Standards

CE, C	CE-mark indicates compliance with: EMC Directive and Low Voltage Directive. C-Tick mark indicates compliance with the EMC requirements of Australia and New Zealand.
Safety	EN/IEC 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use. UL 61010-1: Standard for Safety - Electrical measuring and test equipment.
EMC Immunity	EN/IEC61000-6-1: Generic standards – Immunity for residential, commercial and light industrial environments. EN/IEC61000-6-2: Generic standards – Immunity for industrial environments. Note: The above is guaranteed only with extension cables AO-0414, AO-0415 and AO-0416.
Temperature	IEC 60068-2-1 & IEC 60068-2-2: Environmental Testing. Cold and Dry Heat. Operating Temperature: -20 to +60°C (-4 to +140°F), (150°C (302°F) with increase in noise) Storage Temperature: -25 to +70°C (-13 to +158°F)
Humidity	IEC 60068-2-78: Damp Heat: 95% RH (non-condensing at 40°C (104°F))
Mechanical	Non-operating: IEC 60068-2-6: Vibration: 0.3 mm, 20 m/s ² , 10-500 Hz IEC 60068-2-27: Shock: 1000 m/s ² IEC 60068-2-29: Bump: 400 bumps at 400 m/s ²
Reliability	MI-HDBK 217F, GB (Part-Stress): MTBF >40000 hours (max. 2.5% errors/1000 h)

Specifications - Outdoor Microphone Unit Type 4198

COMPLIANCE WITH STANDARDS

The unit meets IEC 61672 class 1 and ANSI S1.4 Type 2. It also complies with the EMC Directive and Low Voltage Directive (see CE box, below).

MICROPHONE CARTRIDGE

Falcon Range Prepolarized Free-field 1/2" Microphone Type 4189^a

PREAMPLIFIER

Falcon Range 1/2" Microphone Preamplifier Type 2669-C^b

SENSITIVITY (250 Hz)

 $-26 \pm 2\, dB$ re 1V/Pa, 50 mV/Pa (individually calibrated)

FREQUENCY RESPONSE

0° incidence free-field response

 $\pm 1 dB \ 10 \, Hz \ to \ 8 \, kHz$

 $\pm\,2\,dB$ 6.3 Hz to 16 kHz

In accordance with IEC 61672651 class 1

a. See separate product data sheet (BP 1380) or Microphone Handbook (BA 5105) for complete specifications for this microphone

b. See separate product data sheet (BP1422) for complete specifications for this preamplifier

LOWER LIMITING FREQUENCY (-3 dB)

2 Hz to 4 Hz

DIAPHRAGM RESONANCE FREQUENCY

14 kHz (90° phase shift)

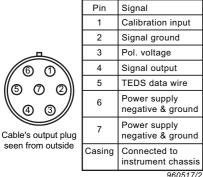
EQUIVALENT AIR VOLUME (101.3 kPa)

45 mm³

CALIBRATOR LOAD VOLUME (250Hz)

260 mm³

PIN CONNECTIONS



PISTONPHONE TYPE 4228 CORRECTION

(with DP 0776): 0.00 dB

NOISE LEVEL

15.2 dB (A), 17.4 dB (Lin.)

UPPER LIMIT OF DYNAMIC RANGE

3% distortion: >146 dB SPL

MAXIMUM SOUND PRESSURE LEVEL

158 dB (Peak)

POWER SUPPLY, DUAL

 $\pm 14 \text{ V}$ to $\pm 60 \text{ V}$

POWER SUPPLY, SINGLE

28 V to 120 V

OUTPUT DC OFFSET

 $\approx 1 \text{ V}$ for dual supply, or $\approx 1/2$ the voltage of a single supply

POLARIZATION VOLTAGE (EXTERNAL)

Environmental Specifications

INFLUENCE OF HUMIDITY

< 0.1 dB at up to 95% RH (non-condensing) and 40°C

WIND NOISE ATTENUATION

>15 dB (for wind speed up to 120 km/h)

TEMPERATURE COEFFICIENT (250 Hz)

 $-0.001\,dB/^{\circ}C$, typical (for the range -10° to $+50^{\circ}$ C (14 to 122° F)

PRESSURE COEFFICIENT (250 Hz)

-0.010 dB/kPa

VIBRATION SENSITIVITY (<1000 Hz)

62.5 dB equivalent SPL for 1 m/s² axial acceleration

MAGNETIC FIELD SENSITIVITY

6 dB SPL for 80 A/m, 50 Hz field

ESTIMATE LONG-TERM STABILITY

- >1000 years/dB (dry air at 20°C (68°F))
- >40 years/dB (air at 20°C (68°F), 90% RH)
- > 1 year/dB (air at 50°C (122°F), 90°RH)

RAIN

Rainproof to IP44

DURABILITY

Measurement in large city environment before cleaning and

drying:>4 weeks

Measurement in large city environment before microphone

system overhaul:>4 months

Physical Characteristics

DIMENSIONS

Height: 412 mm (16.2")

Diameter (at widest point): 72 mm (2.8")

WEIGHT

580 grams (1.3 lb.)

Specifications - Outdoor Microphone Kit UA-1404

Compatible Sound Meters

TYPE 2236 SOUND LEVEL METER

The Type 4188 microphone (included with Type 2236) must have a sensitivity between -30.5 dB and -28 dB (see "Type 2236 Considerations," above). Preamplifier ZC-0027 (included with Type 2236) is compatible as shipped.

TYPE 2260 SOUND ANALYZER

Preamplifier ZC-0026 and Microphone Type 4189 (both included with the Type 2260) are compatible as shipped.

TYPE 2250 SOUND ANALYZER

Preamplifier ZC-0032 and Microphone Type 4189 (both included with the Type 2250) are compatible as shipped.

Compatible Microphones

TYPES 4188, 4189 AND 4190

All microphones require a stainless steel replacement grid to meet the specified frequency characteristics. The grid also provides extra protection from corrosion. Two replacement grids are included with UA-1404: one for Microphone Type 4188, the other for Types 4189 and 4190

Compatible Preamplifiers

TYPE 2669-B/L/C

Compatible as shipped

TYPE 2671

Compatible as shipped

Standards

ALL RECOMMENDED CONFIGURATIONS

IEC 61672 class 1 and ANSI S1.4 Type 2 (See configuration chart, Fig. 7)

Windscreen

WIND NOISE ATTENUATION

>15 dB (for wind speed up to 120 km/h)

MATERIAL

Windscreen: Open-pored polyurethane foam Spikes: Stainless steel

Environmental Specifications

OPERATING TEMPERATURE RANGE

-30 to +150°C (-22 to +302°F)

The actual range will be determined by the preamplifier used.

RAIN

Rainproof to IP 44

DURABILITY

Measurement in large city environment before cleaning and drying:

Measurement in large city environment before microphone system overhaul:>4 months

Physical Characteristics

DIMENSIONS

Height: 412 mm (16.2")

Diameter (at widest point): 72 mm (2.8")

WEIGHT

540 grams (1.3 lb.) (empty)

Ordering Information

Type 4198 Includes the following accessories:

Type 4189 Falcon Range Prepolarized Free-field 1/2"

Microphone

Type 2669-C Falcon Range 1/2" Microphone Preamplifier

UA-1404 Outdoor Microphone Kit

AO-0414-D-100 10 m (32.8 ft.) LEMO 1B to LEMO 1B Cable

Spare Parts

DS-0934 Replacement windscreen UC-5360 Replacement Bird Spikes

Optional Accessories

ZG-0350 LEMO 1B to 7-pin Brüel & Kjær adaptor

UA-0587 Tripod

BNC TO BNC COAXIAL CABLES

For UA-1404 with Type 2671 Preamplifiers AO-0426-D-100 10 m Single Screened (32.8 ft.) AO-0087-D-100 10 m Double Screened (32.8 ft.) Other cable lengths on request.

LEMO 1B TO LEMO 1B CABLES

For Type 4198 and UA-1404 with Preamplifier Type 2669-C AO-0414-D-030 3 m (9.8 ft.)

Other cable lengths on request. AR-0014 Flat Cable

LEMO 0B TO LEMO 1B

For UA-1404 with Preamplifiers Type 2669-B/L without the included cable

AO-0419-D-030 3 m (9.8 ft.) (included with Preamplifier Type 2669-L) Other cable lengths on request.

LEMO 0B TO BRÜEL & KJÆR CONNECTER

For UA-1404 with Preamplifiers Type 2669-B/L without the included cable.

AO-0428-D-030 3 m (9.8 ft.) (included with Preamplifier Type 2669-B) Other cable lengths on request.

BRÜEL & KJÆR EXTENSION CABLES

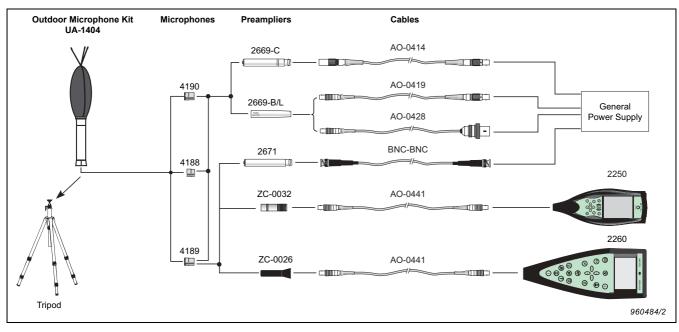
For UA-1404 with Preamplifier Type 2669-B with the included cable (AO-0428).

AO-0027-D-030 3 m (9.8 ft.) Extension Cable AO-0027-D-100 10 m (32.8 ft.) Extension Cable AO-0027-M-030 30 m (98.4 ft.) Extension Cable

FOR TYPE 2250 OR 2260 SOUND ANALYZER

AO-0441-D-030 3 m Extension Cable (9.8 ft.) AO-0441-D-100 10 m Extension Cable (32.8 ft.)

Fig. 7 Outdoor Microphone Kit UA-1404 schematic diagram including connections and cables required for use with compatible microphones and preamplifiers



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Chapter 7

Connection to PC or Mobile Phone

7.1 Introduction

You can connect to your analyzer from a PC or mobile phone in a number of different ways using a wide range of different connection types:

- Use Utility Software for Hand-held Analyzers, BZ-5503 for full control of the analyzer see section 7.2.
- Use an Internet Browser for On-line display and control of the analyzer see section 7.4

Three different methods are available for connecting to the Analyzer:

- USB: BZ-5503 connects to the analyzer through a USB cable
- Modem: BZ-5503 connects to the analyzer through modem (BZ-5503 uses two modems one modem connected to the PC for dialling up, and another modem connected to the
 analyzer)
- Network: The analyzer is connected to a network (local or internet). BZ-5503 or an
 Internet Browser will then be able to connect to the analyzer through TCP/IP using the
 analyzer's (global) IP address

In addition to connecting to the analyzer, the analyzer itself can notify you by SMS, or Email, based on various conditions – see section 8.4.

Table 7.1 gives you an overview of the different connection possibilities including links to relevant chapters with more details.

Note: The on-line help for BZ-5503 contains additional information on how to connect an instrument using the different connection types.

Table 7.1 Connection overview

Connect from	Connection Type	Settings in Preferences	Available Notifi - cations			
BZ-5503	USB	Modem = Disabled see section 8.2.	N.A.			
BZ-5503	Modem analogue (PSTN)	Modem = Auto Answer see section 8.2.	N.A.			
BZ-5503	Modem GSM	Modem = Auto Answer. see section 8.2.	SMS ^a see section 8.4			
BZ-5503 Mode	BZ-5503 Mode m Modem = $Auto Answer$. see section 8.2.					
BZ-5503 or In ternet Browser Mobile Phone with Internet Browser	Network GPRS/3G modem	Modem = GPRS/3G Dialup Settings in Dialup Networking. Network Settings. Possibly settings in DynDNS. see section 8.2 and 8.3.	E-mail see section 8.4			
BZ-5503 or In ternet Browser Mobile Phone with Internet Browser	Network Ethernet cable	Modem = Disabled Possibly settings in DynDNS. Network Settings. see section 8.2 and 8.3.	E-mail see section 8.4			
BZ-5503 or In ternet Browser Mobile Phone with Internet Browser	Network CF WLAN	Modem = Disabled Possibly settings in DynDNS. Network Settings. Settings in Wireless Network. see section 8.2 and 8.3.	E-mail see section 8.4			
BZ-5503 or In ternet Browser Mobile Phone with Internet Browser	BZ-5503 or In ternet Browser Mobile Phone with Network DSL Modem/ Router Modem = Disabled Possibly settings in DynDNS. Network S ettings.					

a. SMS is also possible for the setting Modem = Disabled.

7.2 Transferring Measurement Data to Your PC

Utility Software for Hand-held Analyzers BZ-5503 is used for communication between your PC and the analyzer. Connect the analyzer to your PC using the supplied USB Cable

AO-1476, using a modem connection, or through a LAN connection (see Chapter 8).

Use this software to:

- Transfer measurement data and templates from the analyzer to your PC, and vice versa
- View data
- Organise data on the analyzer

- Upgrade software on the analyzer
- Install software licenses on the analyzer

Using this software, measurements on the analyzer can be controlled from your PC and displayed on-line, using the same user interface on the PC as on the analyzer.

Data transferred to the PC are organised in Archives.

View the measurement data in the Archives or edit the project templates.

Data in the archives can be exported to:

- Noise Explorer Type 7815
- Evaluator Type 7820
- Protector Type 7825
- Predictor Type 7810
- Lima Type 7812
- Acoustic Determinator Type 7816
- Microsoft® Excel® for further post-processing and reporting

7.3 Post-processing and Reporting

The software modules are further enhanced by Brüel & Kjær's post-processing software suite, including Utility Software for Hand-held Analyzers BZ-5503 for data transfer, setup and remote display (included with your analyzer), Noise Explorer Type 7815 for viewing data, Evaluator Type 7820 for assessing environmental noise, Protector Type 7825 for assessing workplace noise.

For further information, please refer to the on-line help included with the relevant PC Software. This software is supplied on the Environmental Software DVD (BZ-5298), which is included with your the analyzer.

7.4 Internet Browser for On-line Display and Control of the Analyzer

When the analyzer is connected to a network (see Fig. 7.1) you can connect to the analyzer from a PC or mobile phone using an Internet Browser supporting Java scripts.

Analyzer settings:

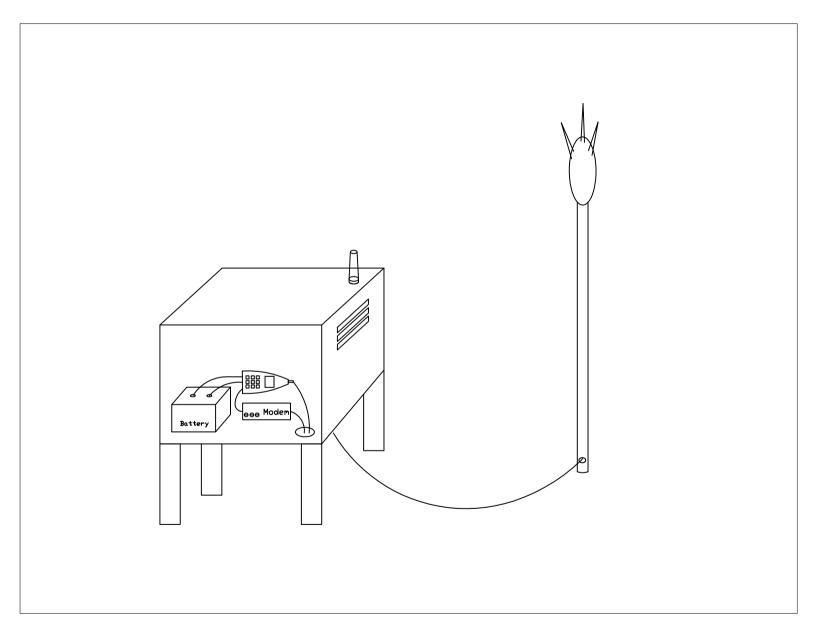
You access preferences by tapping on the Main Menu icon and selecting **Preferences** from the list of options (the screen shown in Fig. 8.1 will appear).

Tap on Web Server Settings, or select the plus icon + next to Web Server Settings and set the Web Server Parameters to Enabled. Define sets of Usernames and Passwords:

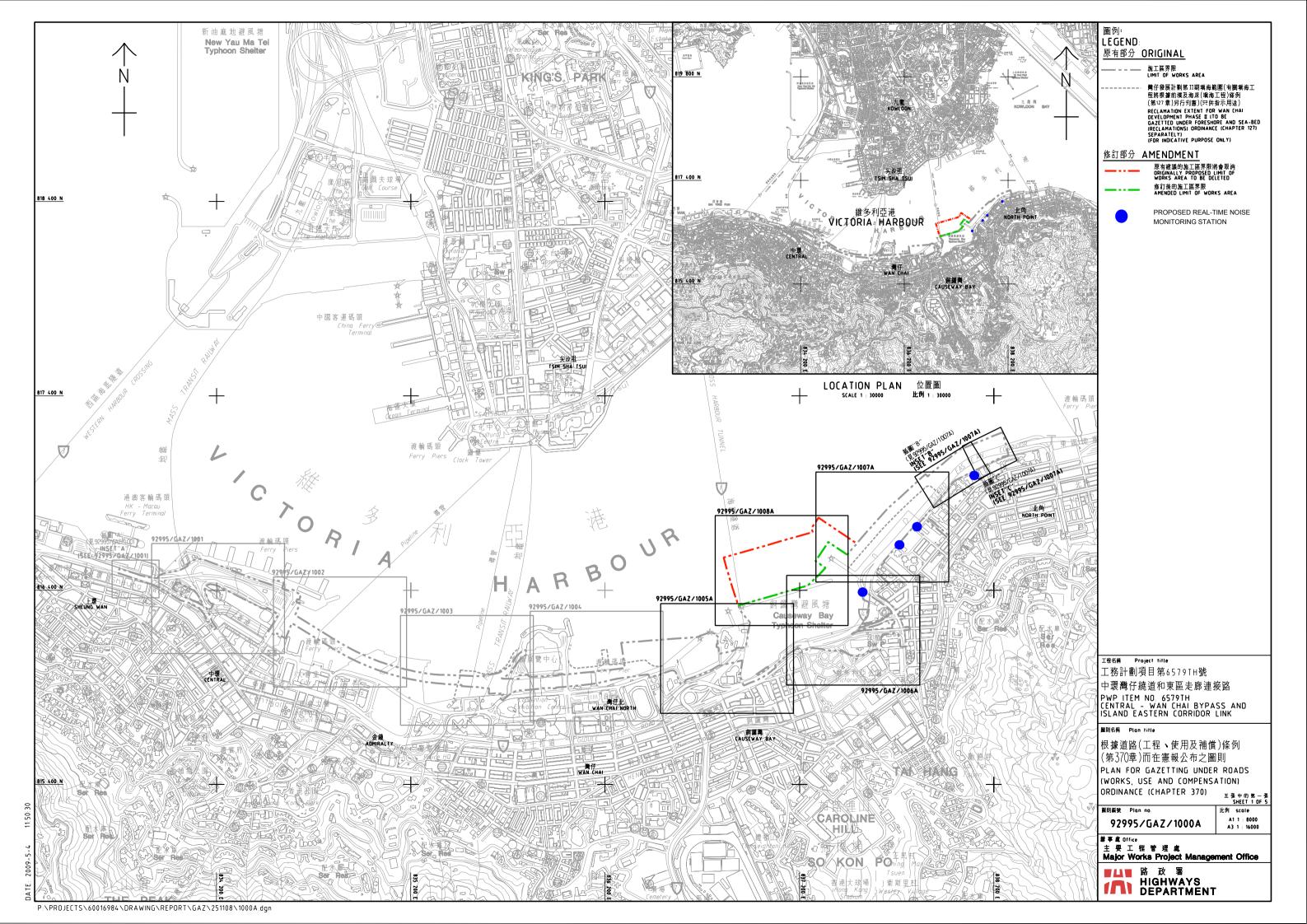
- one set for guest use (view only)
- one set for administrator use of the instrument (view and full control)

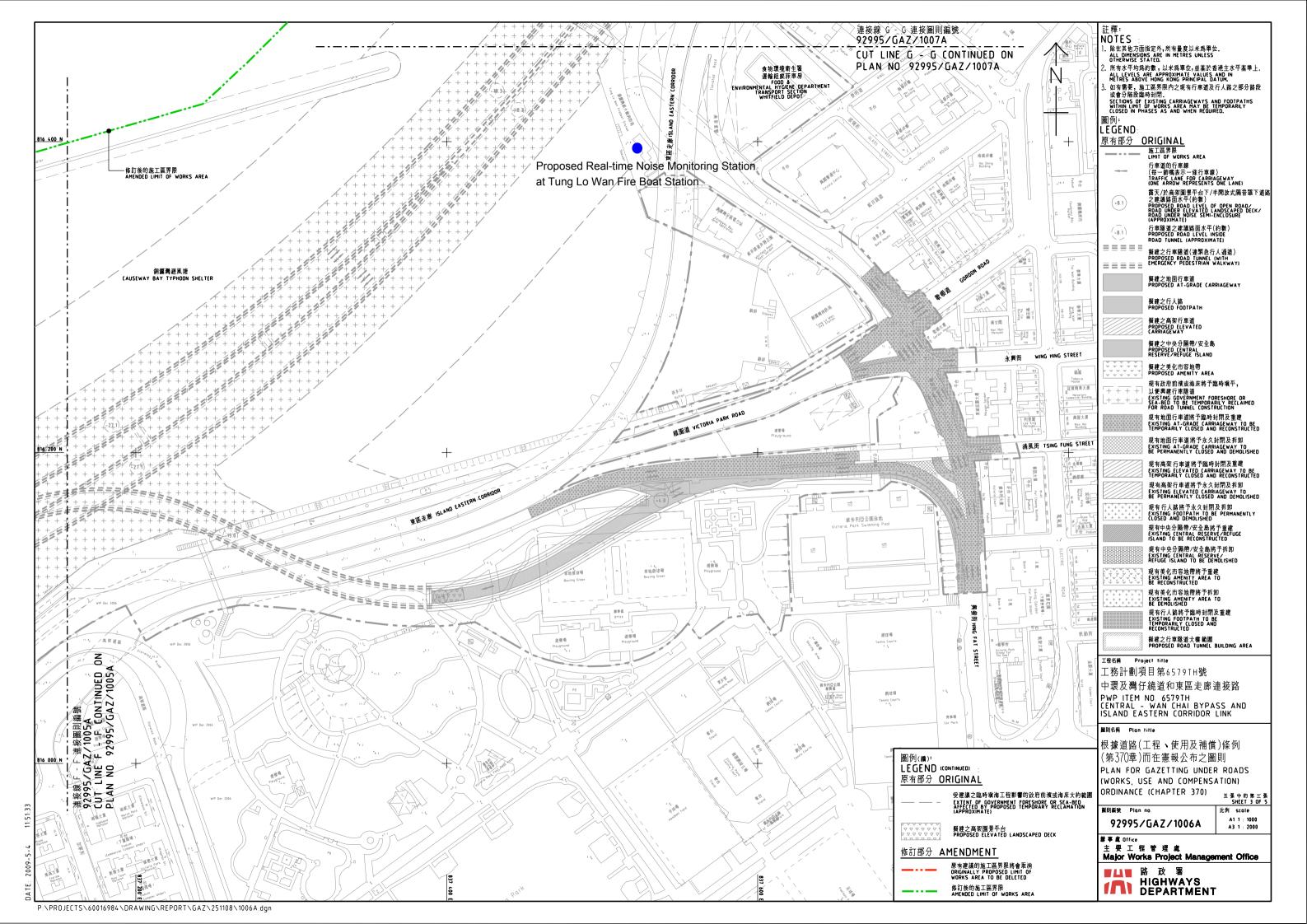
APPENDIX B

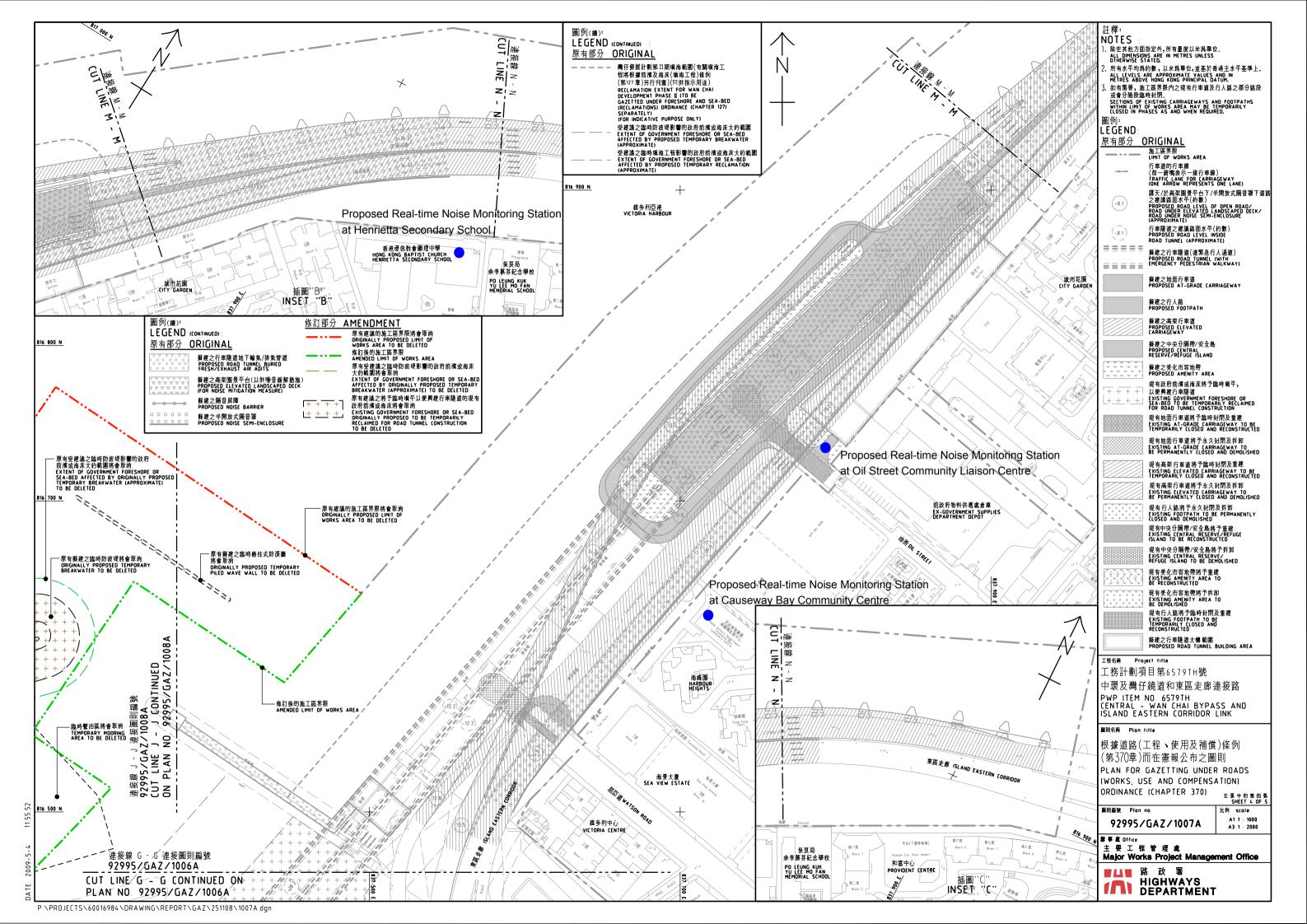
SCHEMATIC DRAWING OF THE MONITORING EQUIPMENTS



Schematic Drawing of the Monitoring Equipments







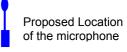
Proposed Location of Real-time Noise Monitoring Stations

Tung Lo Wan Fireboat Station





Legend

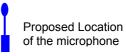








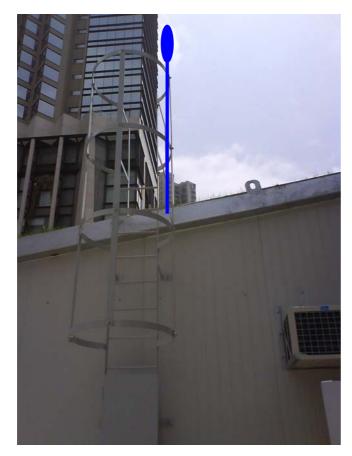
Legend



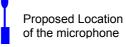


Oil Street Community Liaison Centre

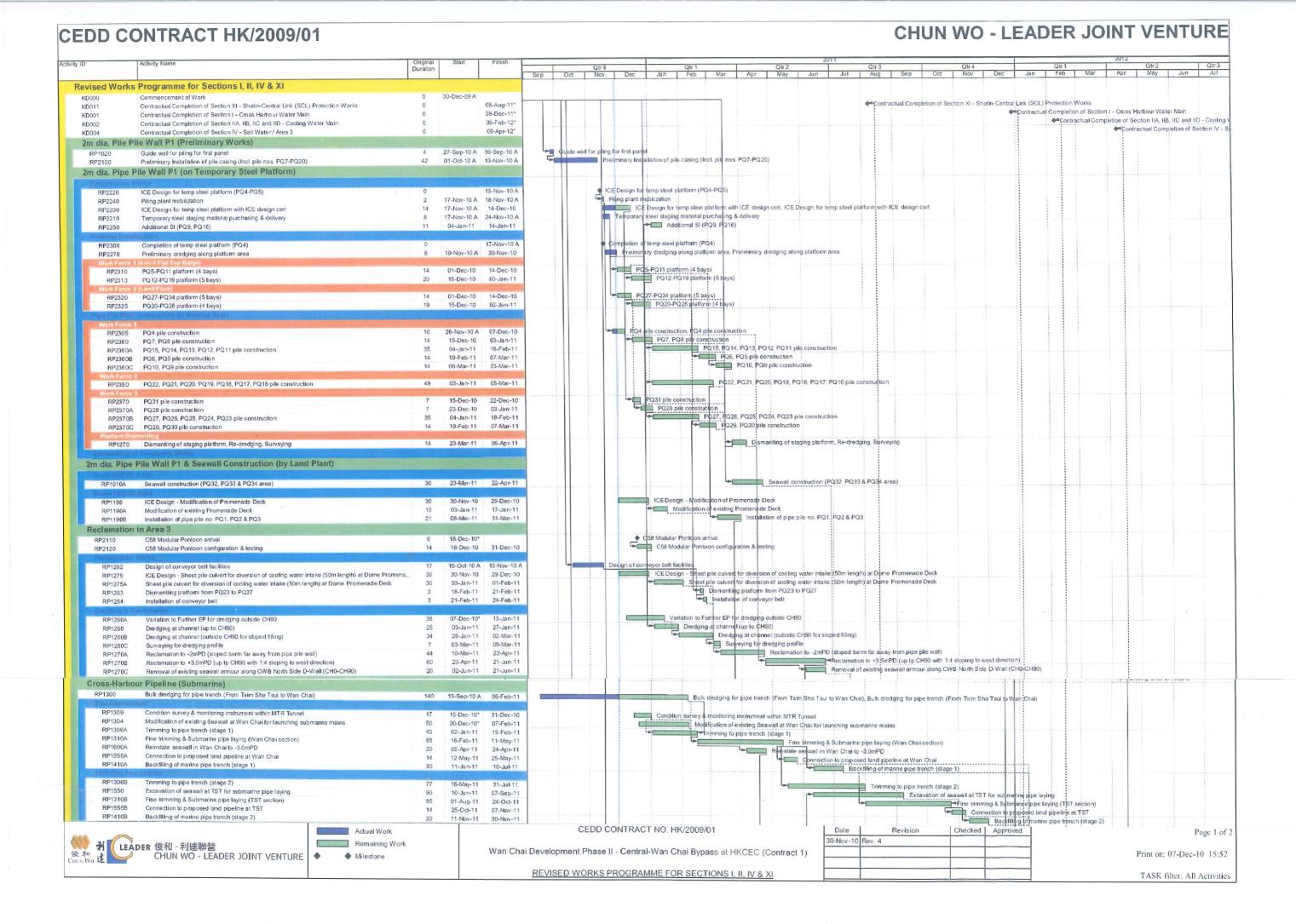


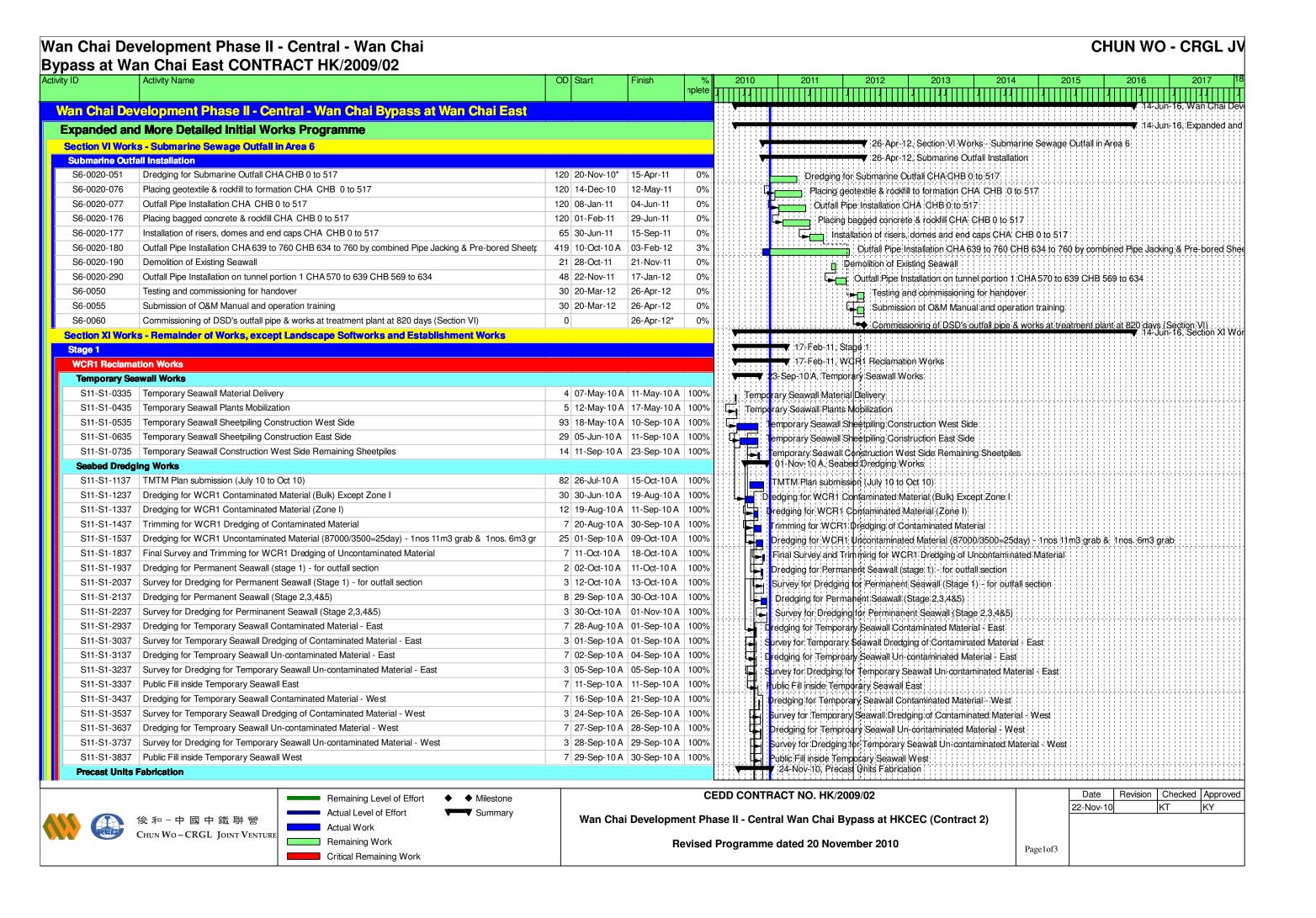


Legend



Appendix N Construction Programmes of Works Contracts





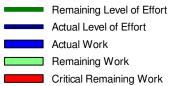
ACTIVITY ID	Activity Name	OD Start	Finish %		2010	2011 2013	2 2013 201	4 2	015 201	2	017 10
040.400		101 00 11 10 1		_111	411111		1 1 1 1 1 1 1 1 1 1		14111111411111	4111111111	41111111
S4C-160			28-Oct-10 A 100%			Precast Works of Caisson S					
S4C-360	Precast Works of Salt Water Intake Culverts (Sections in Seawall Blocks)		10-Nov-10 A 100%	\dashv		(177)	er Intake Culverts (Sections in Sea				
S4C-460	Precast Works of Box Culvert N1 (Sections in Seawall Blocks)	40 03-Oct-10 A	24-Nov-10 90%	6		Precast Works of Box Culv	vert N1 (Sections in Seawall Blocks	9): : : : : : : : : : :			
Precast Units		00 10 0-10 1	40 lan 44* 400/	, ; ;					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	TMTM Plan submission (Period Oct 10 to Jan 10)	90 16-Oct-10 A		\rightarrow : :	•	((Period Oct 10 to Jan 10)				
	Seawall Bedding - Rock Armour G400	19 24-Oct-10 A		\rightarrow 11		Seawall Bedding - Rock Ar					
	Seawall Bedding - Leveling Stone	14 17-Nov-10 A		- 11		Seawall Bedding - Levelin					
	Installation of Z-section Submarine Outfall	21 16-Oct-10 A		\rightarrow :::	Ly	Installation of Z-section Su					. ! ! ! ! ! ! ! ! !
	MDN Approval of Delivery of Precast Units	14 21-Sep-10 A				MDN Approval of Delivery of	Precast Units		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	1st Delivery of Precast Units	0 03-Dec-10*	0%	\rightarrow : :		1st Delivery of Precast Un	its				
	2nd Delivery of Precast Units	0 18-Dec-10	0%	- 11		2nd Delivery of Precast U					
S11-S1-1330	Temporary Loading of Precast Caisson no. 1R		03-Dec-10 0% 04-Dec-10 0%			Temporary Loading of Pre					
S11-S1-1332	, ,	1 04-Dec-10		\rightarrow ::		Installation of Pumping Sta					
S11-S1-1333	Installation of Pumping Station P7 & P8 Installation of Precast Caisson no. 1R	2 06-Dec-10 1 15-Dec-10	07-Dec-10 0%	— + ÷ ÷		Installation of Pumping Sta	4 - I- + -I - I- + -I - I- + -I - I- + -I - F + -I - F + -I- F + -I- F + -I - F	, , , , , , , , , , , , , , , , , , ,			
S11-S1-1400	Installation of Precast Caisson no. 1R Installation of Precast Caisson no. 2L-1			\rightarrow : :		Installation of Precast Cai					
	Installation of Precast Caisson no. 2L-1 Installation of Precast Caisson no. 2S x 2nos	1 18-Dec-10	18-Dec-10 0% 22-Dec-10 0%	- 11		Installation of Precast Cai					
						Installation of Precast Ca					
	Installation of Precast Caisson no. 2L-2		23-Dec-10 0%	\rightarrow ::		Installation of Precast Ca					
	Permanent Seawall Block Work Type 4 & Installation of Precast Intake Unit		23-Dec-10 0%	→ + +		M = 100 = = = = = = = = = = = = = = = = =	k Work Type 4 & Installation of Pre	cast intake Un	t : : : : : : : : : : : : : : : : : : :		+-
	Permanent Seawall Block Work Type 5	14 16-Dec-10	04-Jan-11 0%			Permanent Seawall Bloc					
	Permanent Seawall Block Work Type 6 & Installation Precast N1 Culverts	14 29-Jan-11	17-Feb-11 0%	\rightarrow ::] : <mark> </mark>	lock Work Type 6 & Installation Pro	ecast N1 Culve	rts		
	Water Tightness Test for P8	60 20-Nov-10	31-Jan-11 0%			Water Tightness Test fo					
	Water Tightness Test for P9	60 20-Nov-10	31-Jan-11 0%	\rightarrow ::		Water Tightness Test fo					
	Water Tightness Test for P7	60 20-Nov-10	31-Jan-11 0%	°		Water Tightness Test fo	or: P/				
Bulk Reclamat		46 00 Dec 10	01 Feb 11 00/	7							
	1st Stage Bulk Reclamation by hopper barge (from dredging level to +2.5mPd)		01-Feb-11 0%	\rightarrow ::			ation by hopper barge (from dred				
	2nd Stage Bulk Reclamation by Land Plant (from +2.5mPd to +4.2 mPd)	15 28-Jan-11	17-Feb-11 0%	°			mation by Land Plant (from: +2.5m	Poto +4:2 mPi	20)		
Stage 2 S11-S2-0010	WCD2 cooked dyadaing and tompovey cooked work	60 08-Mar-12	23-May-12 0%	7							
S11-S2-0010	WCR2 seabed dredging and temporay seawall work WCR2 bulk reclamation work		02-Aug-12 0%				NCR2 seabed dredging and temp	oray seawall w	ork : : : : : : : : : : : : : : : : : : :		
S11-S2-0025	Receive As-built Information of Bowrington Box Culvert O	0 20-Nov-10*	02-Aug-12 0%	\rightarrow : :		: : <mark> </mark> : : : : : : : : : : : : : :	WCR2 bulk reclamation work				
S11-S2-0025			29-Jun-11 0%	- 11			n of Bowrington Box Culvert O		-(
S11-S2-0040	WCR4 seabed dredging		02-Jun-12 0%			 	on of existing Bowrington Box Cul	ert O to basin;	or ex-PGVVA		
S11-S2-0040	Commencement of TWRC4 temporary reclamation (with duration of 38 months)	0 04-Jun-12	02-3011-12 078	\rightarrow ::		· · <mark>· · · · · · · · · · · · · · · · ·</mark>	WCR4 seabed dredging				
S11-S2-0060	TWCR4 seabed dredging & temporary seawall work	30 04-Jun-12	09-Jul-12 0%	— + ÷ ÷			Commencement of TWRC4 temp	orary reclamati	on (with duration of	.38_months).	
S11-S2-0060	TWCR4 bulk and temporary reclamation work	20 10-Jul-12		\rightarrow : :			TWCR4 seabed dredging & tem		work : : : : : : :		
	, ,		-	- 11			TWCR4 bulk and temporary red				
S11-S2-0080 S11-S2-0090	WCR4 bulk and temporary reclamation work	20 10-Jul-12 60 02-Aug-12	01-Aug-12 0% 11-Oct-12 0%	\rightarrow \sim		<mark> </mark>	WCR4 bulk and temporary red	: : : : : : : : : : : : 1			
S11-S2-0100	Prepare temporary at-grade road access Removal of portion 1 of box culvert O above tunnel portion 3 (area not at Hung Hing Road)	180 30-Jun-11		\rightarrow ::			Prepare temporary at-grade				
S11-S2-0110	Construct steel bridge no.1	30 18-Sep-12	03-Feb-12 0% 24-Oct-12 0%	- + -		: i i i i i i i i i i i i i i i i i i i	val of portion 1 of box culvert O ab	iove tunnel por	tion:3 (area not at F	lung Hing Roa	(d):::::::::
S11-S2-0110	Implement diversion of Hung Hing Road at-grade traffic	· ·		- 11			Construct steel bridge no.1				
S11-S2-0120	Removal of portion 2 of box culvert O above tunnel portion 3 (area at Hung Hing Road)	2 25-Oct-12 40 27-Oct-12	26-Oct-12 0% 12-Dec-12 0%	\rightarrow ::		<mark>.</mark>	Implement diversion of Hun		1-1 1 1 1 1 1 1 1 1 1 1 1 1 1		
S11-S2-0140			21-Aug-13 0%				Removal of portion 2 of b				Č Č
Stage 3	Trovision of new landing step on existing seawaii (for alea 3A halldover)	210 00-060-12	21-Aug-13 0%				Provision of n		on existing seawal	(tor area 9A h	iaridover)
S11-S3-0010	Painstate have subject O above tunnel partian 2	50 12 lun 12	21 Aug 12 09/	<u>_</u>						,	
S11-S3-0010 S11-S3-0020	Reinstate box culvert O above tunnel portion 3 Reinstate temporary outfall of box culvert O and associated seawall etc. at ex-PCWA	59 13-Jun-13 30 22-Aug-13	21-Aug-13 0% 26-Sep-13 0%	\rightarrow : :					e tunnel portion 3		
	· · ·	-	· ·	→ • •			: : : : : : : : : : : : : : : : : : : : : : :		of box culvert O an		
S11-S3-0030	Widen temporary road to area above tunnel portion 3 & box culvert "O" Implement diversion of at-grade traffic via new road above tunnel portion 3 & box culvert "O"	-	26-Sep-13 0% 23-Aug-13 0%	\rightarrow \Box			<u> </u>		rea above tunnel p		
S11-S3-0040 S11-S3-0050	Handover of Area 9 to adjacent contractor HY/2009/15 at 1340 days (Section IXA)	2 22-Aug-13 0	23-Aug-13 0% 27-Sep-13 0%	\rightarrow ::					ade traffic via new r		
311-33-0030	Transcover of Area 9 to adjacent contractor 11/2009/13 at 1340 days (Section IAA)	U	21-3ep-13 0%	0	111111			f Area 9 to adia	cent contractor HY	2009/15 at 13	40 davs (Sec
	Remaining Level of Effort	Wan Chai				TRACT NO. HK/2009/02 Intral Wan Chai Bypass a	at HKCEC (Contract 2)		Date Revisi 22-Nov-10	ion Checked KT	Approved KY
	CHUN WO – CRGL JOINT VENTURE Remaining Work Critical Remaining Work		Revise	d Pr	rogram	me dated 20 November 2	2010	Page2of3			

Activity ID Activity Name OD Start Finish % 2010 2011 2012 2013 2014 2015 2016 2017 18

Activity ID	Activity Name	OD	Start	Finish	%	2	2010		2011	2012	20	13 2014	2015	2016	2017
					nplete	7111	<u> </u>	ПШ	ПЛ		1 1 1 1 1 7	4			1 4 1 1 1 4 1 1 1 1 4
S11-S3-0060	Construct temporary steel bridge no. 2 above tunnel portion 3 & box culvert "O"	40	27-Sep-13	13-Nov-13	0%	1						Construct tem	porary steel brid	je no. 2 above tur	inel portion 3 & box du
S11-S3-0070	Diversion of existing Hung Hing Road flyover traffic via temporary road & steel bridge no. 2	2	14-Nov-13	15-Nov-13	0%							Diversion of ex	kisting Hung Hing	Road flyover traf	fic via temporary road
S11-S3-0080	Removal of approach ramp of existing Hung Hing Road flyover	30	16-Nov-13	20-Dec-13	0%							Removal of a	approach ramp c	f existing Hung Hi	ng Road flyover
Stage 4												V			un-16, Stage 4
S11-S4-0010	Reinstate original approach ramp of flyover and the associated road work of Hung Hing Road	75	13-Nov-14	11-Feb-15	0%								Reinstate	original approach	ramp of flyover and the
S11-S4-0020	Diversion of Hung Hing Road flyover traffic back to original	2	12-Feb-15	13-Feb-15	0%		11111	, , , , , , , , , , , , , , , , , , ,	-				Diversion	of Hung Hing Roa	ad flyover traffic back t
S11-S4-0030	Remove temporary steel bridge no.2 and reinstate Hung Hing Road	45	03-Jan-15	27-Feb-15	0%	1:::::									ridge no.2 and reinsta
S11-S4-0040	Diversion of Hung Hing Road at-grade traffic back to original	2	28-Feb-15	02-Mar-15	0%								Diversion	of Hung Hing Ro	ad at-grade traffic ba
S11-S4-0050	Excavate and remove top portion of diaphragm wall for permanent seawall work at WCR4	40	03-Mar-15	20-Apr-15	0%								Excav	ate and remove to	p portion of diaphragr
S11-S4-0060	Remove temporary seawall & temporary reclamation at TWCR4	40	21-Apr-15	08-Jun-15	0%								Ren	ove temporary se	awall & temporary red
S11-S4-0070	WCR4 permanent seawall work	45	09-Jun-15	01-Aug-15	0%	11111		, 						CR4 permanent	seawall work
S11-S4-0080	Completion of TWCR4 reinstatement (with duration of 38 months)	С		01-Aug-15*	0%	1:::::								ompletion of TWC	R4 reinstatement (wi
S11-S4-0090	Designated completion of TWCR4	C		02-Aug-15	0%									esignated comple	
S11-S4-0100	WCR4 backfilling behind permanent seawall	15	03-Aug-15	19-Aug-15	0%										ehind permanent sea
S11-S4-0110	WCR3 seabed dredging for permanent seawall	90	18-Mar-14	08-Jul-14	0%							wc	R3 seabed dred	ging for permane	nt seawall
S11-S4-0120	WCR3 backfilling and permanent seawall work	90	09-Jul-14	24-Oct-14	0%		11111	, , , , , , , , , , , , , , , , , , ,	-				WCR3 backfilli	ng and permanen	t seawall work
S11-S4-0130	WCR3 bulk reclamation work	60	25-Oct-14	06-Jan-15	0%	1								reclamation work	
S11-S4-0140	Carry out temporary drilling & grouting in sealing up the existing 2M pipe pile wall near Area 10	14	07-May-15	22-May-15	0%	11111									illing & grouting in sea
S11-S4-0240	Remaining Work on Land in Area 11	120	18-Jan-16	14-Jun-16	0%	1:::::									aining Work on Land







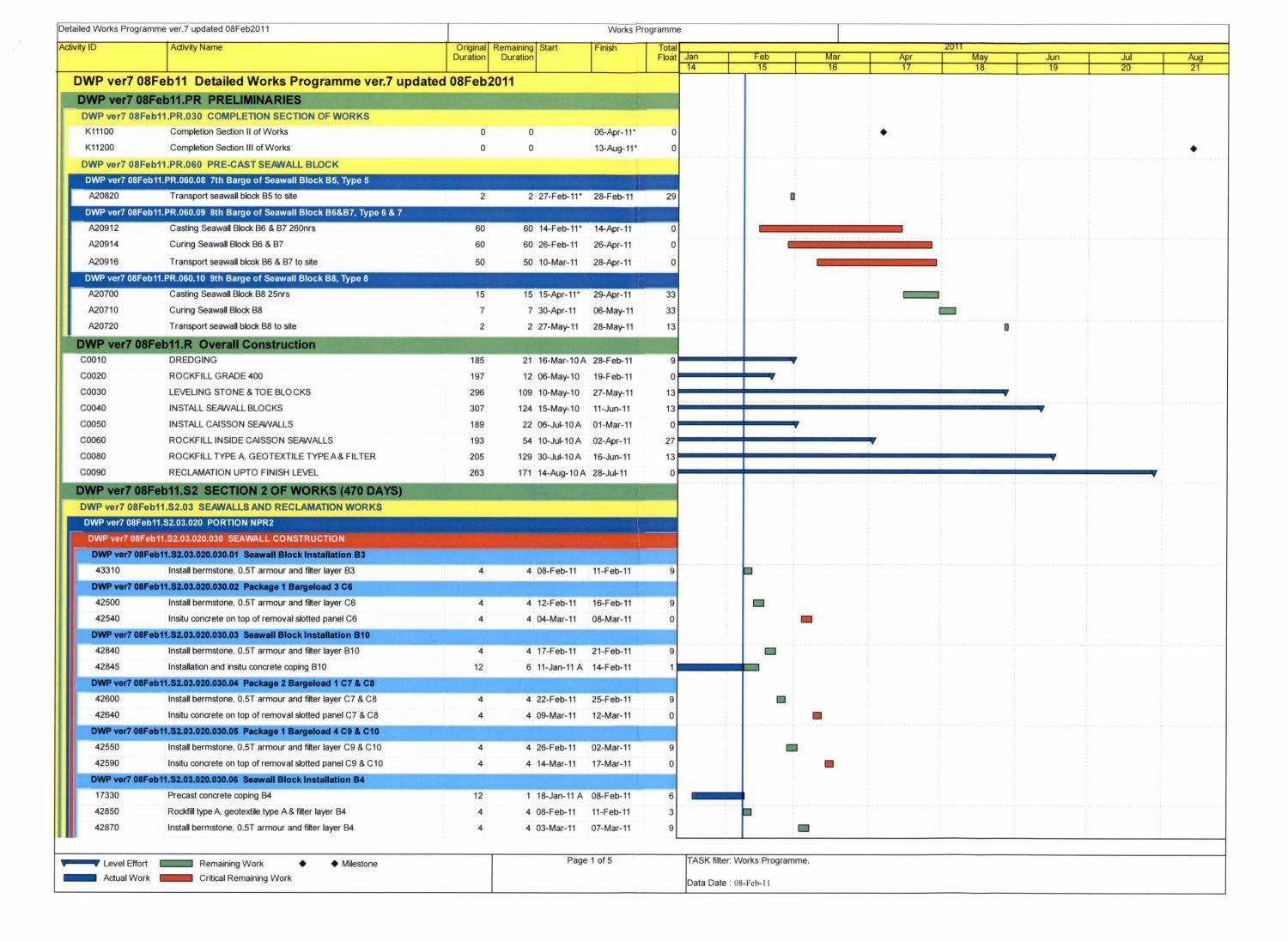
♦ Milestone Summary Summary

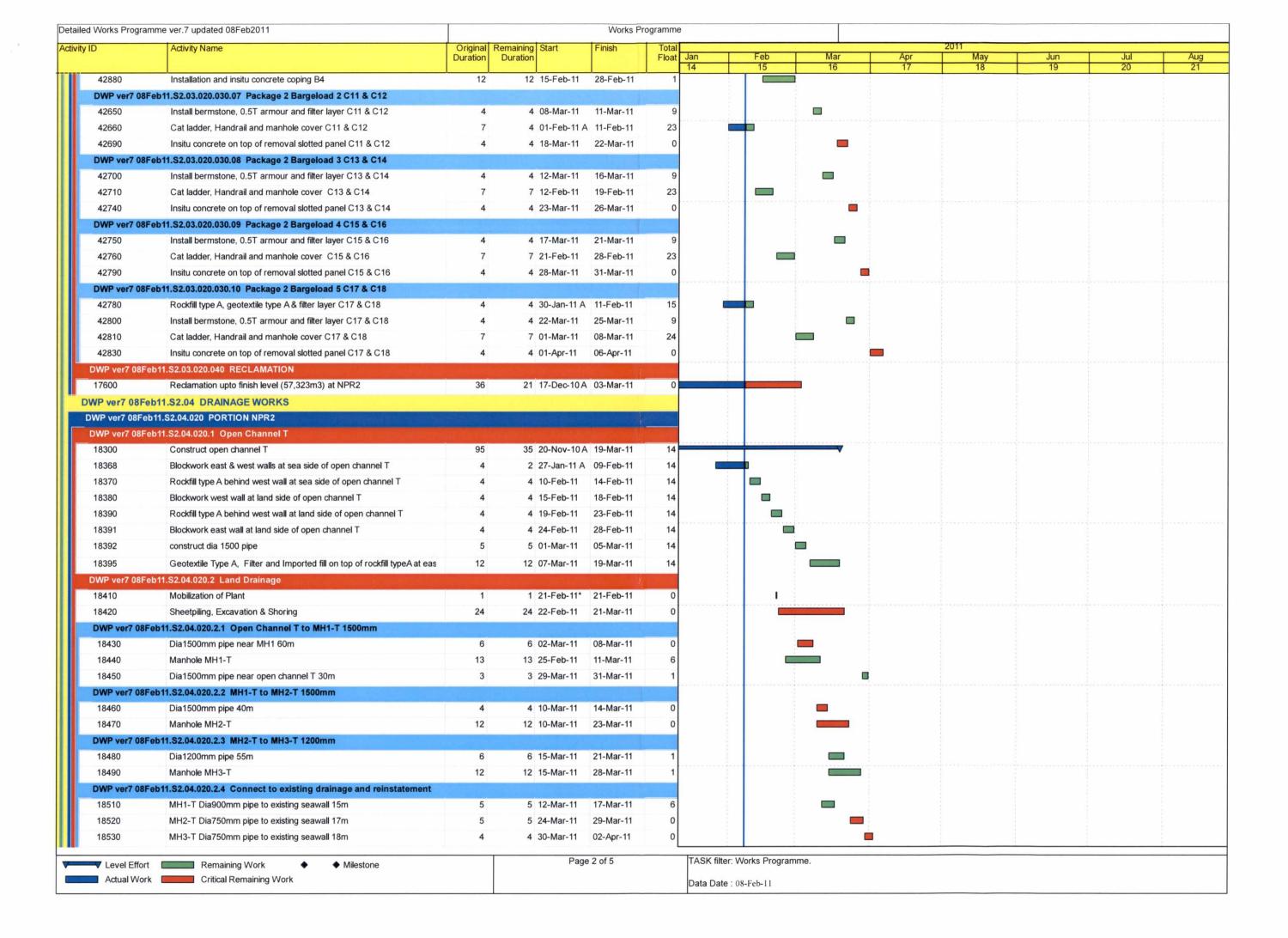
CEDD CONTRACT NO. HK/2009/02

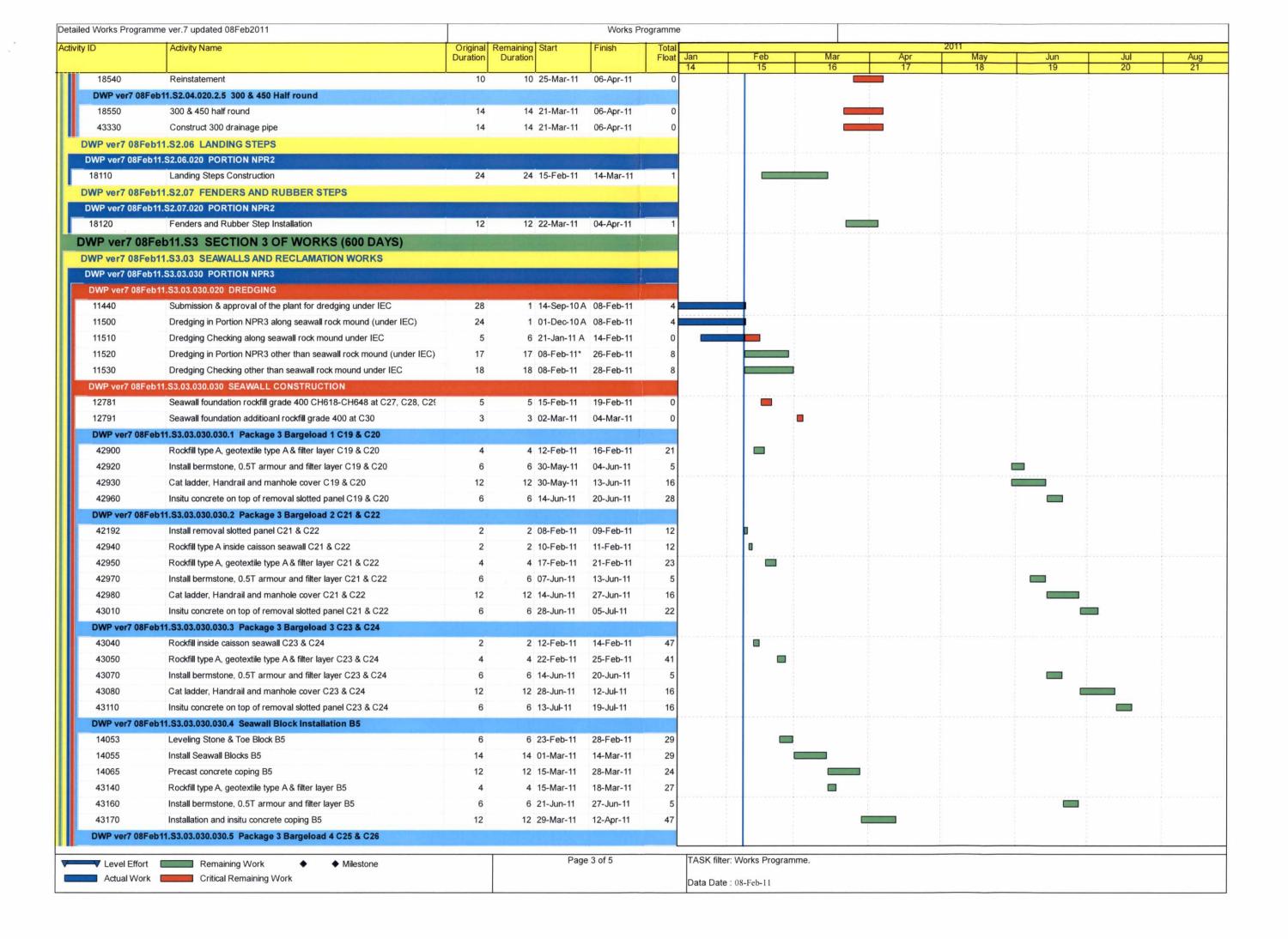
Wan Chai Development Phase II - Central Wan Chai Bypass at HKCEC (Contract 2)

	Date	Revision	Checked	Approved
	22-Nov-10		KT	KY
Page3of3				

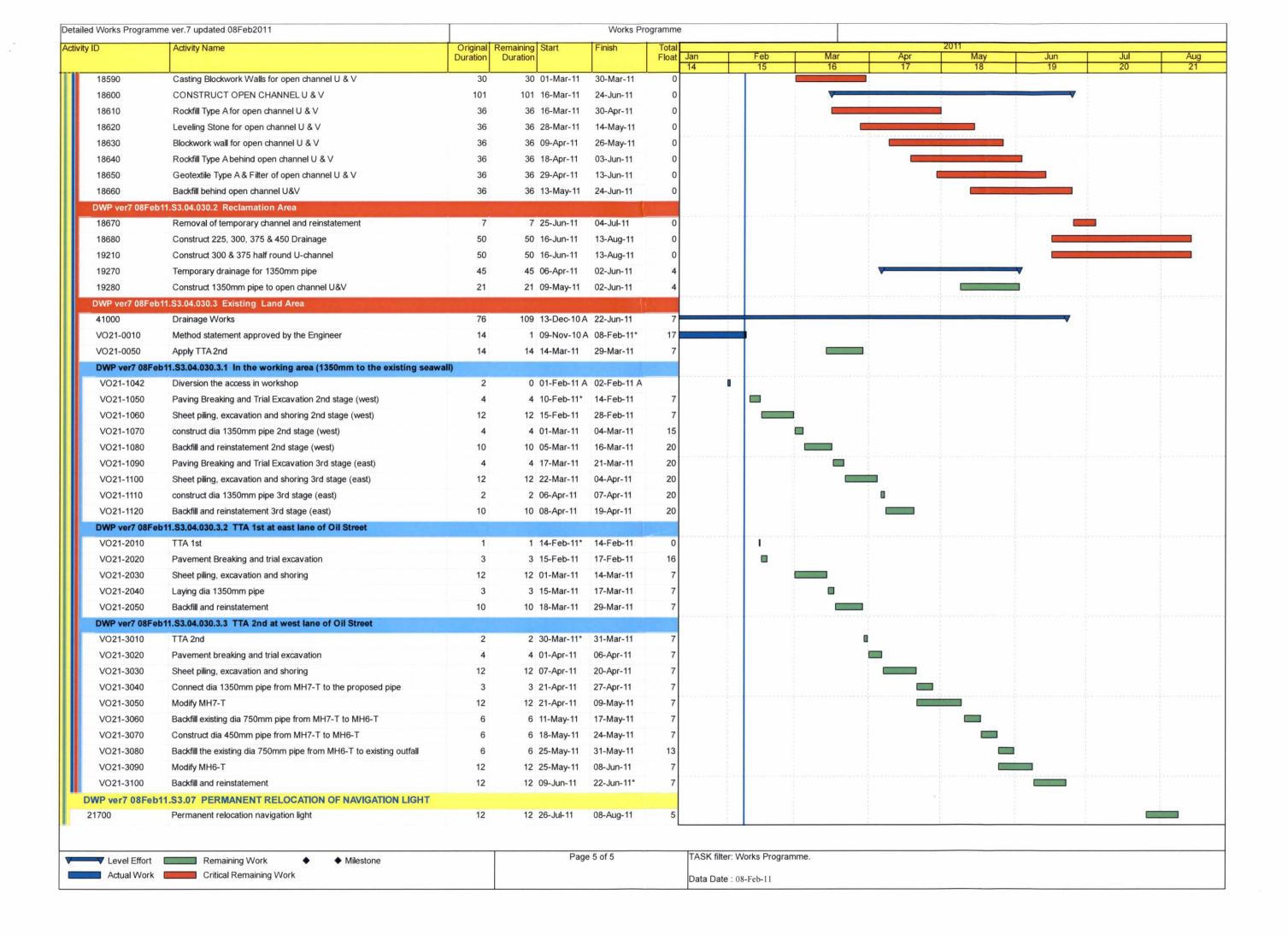
Revised Programme dated 20 November 2010











Activity ID	Activity Name		Original Duration	Start	Finish	Total Float Quantit	ty Prod Ra	tte 2011 2012 2013 2014 2015 2016
HY/2009/1	5 - Works Prog	ramme Revision B						
Commenc	ement of Works							
CD_5410	Contract Commencer	ment	0d	27-Sep-10 A				Contract Commencement
CD_5789	Commencement of R	eclamation Works (120d)	0d	25-Jan-11*		Od		Commencement of Reclamation Works (120d)
Initial Wor	ks							
CD_5560	Site Possession - Por	tion VII (7), Day 0	Od	27-Sep-10 A				Site Possession - Portion VII (7), Day 0
PG_5420	Initial Topographic(Gr	ound Condition) Survey	56d	27-Sep-10 A	02-Dec-10 A			Initial Toppgraphic(Ground Condition) Survey
PG_5675	Contractors Site Office	e - design submission	11d	27-Sep-10 A	09-Oct-10 A			Contractors Site Office - design submission
PG_5690	Arrange work boat fo	r transportation	29d	27-Sep-10 A	01-Nov-10 A			Arrange work boat for transportation
PG_5695	Arrange work boat/ba	arge for material deliveries	29d	27-Sep-10 A	01-Nov-10 A			Arrange work boat/barge for material deliveries
PG_5500	Appoint Independent	Hydrographic Surveyor	15d	27-Sep-10 A	14-Oct-10 A			Appoint Independent Hydrographic Surveyor
PG_5530	Appoint Independent	Surveyor for Condition Survey of Vessels	15d	27-Sep-10 A	14-Oct-10 A			Appoint Independent Surveyor for Condition Survey of Vessels
PG_3040	Appoint ICE + approv	al	12d	27-Sep-10 A	29-Oct-10 A			Appoint ICE + approval
PG_3050	Install tilting/settlemen	t monitors	40d	27-Sep-10 A	13-Nov-10 A			Install tilting/settlement monitors
S6_3020	Demolition of TLW Fi	reboat Station (TLFBS)	49d	01-Oct-10 A	02-Dec-10 A			Demolition of TLW Fireboat Station (TLFBS)
PG_5680	Contractors Site Office	e - review and approval	15d	11-Oct-10 A	28-Oct-10 A			Contractors Site Office - review and approval
PG_3730	Condition Survey of the	ne existing vessels	23d	19-Nov-10 A	20-Nov-10 A			Condition Survey of the existing vessels
PG_5685	Contractors Site Office	e - construction	60d	03-Dec-10 A	17-Dec-10*	66d		Contractors Site Office - construction
PG_5460	Structural Condition S	Survey - POC & RHKYC	28d	17-Dec-10	21-Jan-11	108d		Structural Condition Survey - POC & RHKYC
Permits ar	nd Licenses							
PG_5430	Preparation and Appl	ication of MDN Marine Dept.	3d	27-Sep-10 A	26-Oct-10 A			Preparation and Application of MDN Marine Dept.
PG_5775	Preparation and Appl	ication of FEP to EPD	5d	27-Sep-10 A	26-Oct-10 A			Preparation and Application of FEP to EPD
PG_5450	Preparation and Appl	ication DASO Dumping Permit	3d	01-Oct-10 A	08-Oct-10 A			Preparation and Application DASO Dumping Permit
PG_5780	EPD review and appr	oval of FEP	23d	09-Oct-10 A	22-Nov-10 A			EPD review and approval of FEP
Submissio	ons: Method Stat	ement and/or Particulars						
Method Stat	tements/Particulars							
A1040	Method Statement - 1	ransporting and placing of concrete	1d	17-Dec-10	17-Dec-10	135d		Method Statement - Transporting and placing of concrete
A1045	Tidal and underwater	concreting proposals in respect of tidal works	1d	17-Dec-10	17-Dec-10	135d		Tidal and underwater concreting proposals in respect of tidal works
A1050	Method statement for structures	watertightness of permanent interface	1d	17-Dec-10	17-Dec-10	135d		Method statement for watertightness of permanent interface structures
Remain	ning Work	1 of 53						Prepared by William Caluza
Critical	Remaining Work	China Sta	te Constru	ction Engineering	g (Hong Kona) L	td	<u> </u>	Pate Revision Checked Approved Feb Date prepared ST KL
◆ ◆ Milestor	ne							(progress updated 中國建築工程(香港)有限公司
		Contract No. HY/2009/15 - Central V	wan Chai B	y Pass - Tunnel (Causeway Bay	rypnoon Shelter Se	ection)	to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
			WORKS I	PROGRAMME	REV. B		<u> </u>	
		l						

Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		2011		2012	2013		2014	20	15	2016
Major Mater	ials								$-\!$		11114111	1441111	19117199	111111111	1997111	1911119	47111	1911
PG_1261	Submit Concrete Mix	Particulars	48d	27-Sep-10 A	17-Feb-11	52d				Submit Co	ncrete Mix Pa	articulars						
PG_1263	Submit Steel Reinford	cement Supplier Particulars	24d	17-Dec-10	17-Jan-11	112d				Submit Stee		ent Supplier I	Particulars					
PG_1262	Concrete Trial Mix		36d	18-Feb-11	31-Mar-11	52d				Concret	e Trial Mix							
PG_1264	Submit Structural Ste	eel Particulars	24d	24-Feb-11	23-Mar-11	126d				Submit S	Structural Ste	el Particulars						
Procureme	ent/Fabrication				'													
Fabrication	Works						_											
FB_1000	Seawall block - design	n+ shopdrawing- preparation +submission	48d	09-Oct-10 A	04-Dec-10 A					Seawall block -	design+ sho	pdrawing- pr	eparation +sı	ubmission				
FB_1010	Seawall block - design	n+ shopdrawing- Engrs review and approval	28d	06-Dec-10 A	10-Jan-11 A					Seawall bloc	k - design+ sl	hopdrawing-	Engrs review	and approval			. !	
FB_1020	Seawall block - start f	fabrication	0d	14-Dec-10 A					\dashv ,	Seawall block	+ start fabrica	ition						
FB_1060	OHVD Precast Slab -	- design+ shopdrawing- preparation	48d	09-Oct-12*	04-Dec-12	166d							OHVD Pred	ast Slab - design	n+ shopdraw	ving- prepar	ation +sut	omissid
FB_1070	+submission	- design+ shopdrawing- Engrs review and	36d	05-Dec-12	18-Jan-13	166d								ecast Slab - de				
	approval				10-3411-13							· · · · ·					i s i eview	ariu a
FB_1080	OHVD Precast Slab -		Od	23-Jan-13*		203d							◆ OHVD;Pi	ecast Slab - sta	rt fabrication		1 1	
KD1 - Phas	se 1 Marine Wor	ks Re-Arrangement																
Submission	s						_											
PG_1000	Method Statement - I	Phase 1 Mooring Re-Arrangement -	12d	04-Oct-10 A	21-Oct-10 A				ı	Method Statemer	nt - Phase 1 I	Mooring Re-A	rrangement	- preparation ar	d submissio	n		
PG_1010	Method Statement - I	Phase 1 Mooring Re-Arrangement: Engineers	12d	06-Oct-10 A	18-Nov-10 A					Method Stateme	ent - Phase 1	Mooring Re	-Arrangemer	t: Engineers rev	iew and app	roval	. !	
TDS_1007	Phase 1 Mooring Cor	mponents - manufacture/delivery to HK	14d	19-Oct-10 A	01-Nov-10 A					Phase 1 Mooring	Component	s - manufactı	re/delivery to	нк				
TDS_1000	Design of Phase 1&2 (PS 1.117) - prepara	Mooring Re-arrangements + Components	12d	21-Oct-10 A	11-Nov-10 A					Design of Phase	1&2 Mooring	g Re-arrange	ments + Con	nponents (PS 1.	117) - prepa	ration and	submissior	n
TDS_1005	Design of Phase 1&2	Mooring Re-arrangements + Components ers review and approval	12d	01-Nov-10 A	17-Nov-10 A					Design of Phase	e 1&2 Moorin	g Re-arrange	ments + Cor	mponents (PS 1	117) - Engir	neers review	v and appr	roval
Sequence 1	, 3									1 1								
CD_5565	Site Possession - Por	rtion VIII (8), Day 0	0d	27-Sep-10 A					Si	te Possession - F	ortion VIII (8), Day 0						
ST1_5800	Application and Issue	of MDN for removal of existing moorings	24d	27-Sep-10 A	27-Oct-10 A				-	Application and Is	ssue of MDN	for removal of	of existing mo	orings				
ST1_5805	Application and Issue	of MDN for dredging works	24d	27-Sep-10 A	26-Oct-10 A					Application and Is								
		mission to EPD DASO Type 1 & 2	12d	27-Sep-10 A	11-Oct-10 A					reparation and s								
ST1_5810												EPD DASO	Type T & Z					
ST1_5815	EPD Issue DASO Per	rmit	28d	12-Oct-10 A	08-Nov-10 A					EPD Issue DAS								
ST1_5795	Hydrographic survey	of seabed	4d	18-Oct-10 A	27-Oct-10 A				'	Hydrographic sur	vey of seabe	d						
ST1_5850	Removal of existing n	noorings (PMA)	5d	28-Oct-10 A	02-Nov-10 A					Removal of exist	ing moorings	(PMA)						
ST1_5820	Installation of silt curta	ain	4d	02-Nov-10 A	05-Nov-10 A					nstallation of silt	curtain							
Remain	ing Work	2 of 53				1				Prepared by Will				<u> </u>	1 1			
Critical I	Remaining Work	China Sta	te Constru	uction Engineering	g (Hong Kong) L	_td		Date 15-Feb	Date nr	Revision epared	Che ST	cked Approv	ved					
◆ Mileston	ne	Contract No. HY/2009/15 - Central N					Shalter Section	, (progres	ss updated		I VE	eSCEe	中國建				
						турноон з	onener section	'' t	o 17 De	ecember 2010)			10010	CHINA STATE CO	NSTRUCTION E	VGINEERING ()	HONG KON	ii) LTD.
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		2011	2012	2013	2014	2015	2016
ST1_58	B25 Dredging works (in	ncl. echo sounding to determine depth)	4d	10-Nov-10 A	13-Nov-10 A				Dredgi	ng works (incl. ech	no sounding to	determine depth);	 	
ST1_58	Delivery of mooring	g buoys	0d	12-Nov-10 A					◆ Deliver	y of mooring buoy	s				
ST1_58	Installation of new	mooring for 59 RHKYC vessels	2d	16-Nov-10 A	23-Nov-10 A				Installa	ation of new mooring	ng for 59 RHK	YC vessels			
ST1_58	Installation of new	mooring for 23 commercial vessels	2d	19-Nov-10 A	23-Nov-10 A				Installa	ation of new mooring	ng for 23 com	mercial vessels			
ST1_58	Relocate 23 comm	nercial vessels to new moorings	1d	21-Nov-10 A	21-Nov-10 A				Reloca	ate 23 commercial	vessels to new	v moorings			
ST1_58	Relocate 59 RHKY	C vessels	2d	22-Nov-10 A	23-Nov-10 A				Reloca	ate 59 RHKYC ves	sels				
ST1_58	Remove existing b	uoys in PMA and RHKYC area	2d	24-Nov-10 A	25-Nov-10 A				Remp	ve existing buoys in	n PMA and RH	HKYC area			
Sequer	nce 2														
ST1_58	Change passagew	ay alignment	0d		25-Nov-10 A				◆ Chang	ge passageway alig	gnment				
ST1_58	Dredging for RHK determine depth)	YC re-provisioned mooring(incl. echo sounding to	2d	26-Nov-10 A	27-Nov-10 A				Dredg	ing for RHKYC re-	-provisioned m	nooring(incl. echo	spunding to determine d	epth)	
ST1_58	875 Install re-provision	ed moorings for RHKYC vessels (53 nos)	2d	29-Nov-10 A	29-Nov-10 A				Install	re-provisioned mo	orings for RH	KYC vessels (53	nos)		
ST1_58	Relocate RHKYC	vessels to re-provisioned moorings	2d	29-Nov-10 A	30-Nov-10 A				Reloc	ate RHKYC vessel	ls to re-provision	oned moorings			
Sequer	nce 3							,							
ST1_58	Change passagew	ay alignment	0d		25-Nov-10 A				◆ Chang	ge passageway alig	gnment				
ST1_58	890 Install re-provision	ed moorings to RHKYC vessels in PMA	2d	29-Nov-10 A	01-Dec-10 A				Install	re-provisioned mo	orings to RHK	(YC vessels in PI	МА		
ST1_58	Relocate RHKYC	vessels to re-provisioned moorings	1d	30-Nov-10 A	02-Dec-10 A				Reloc	ate RHKYC vessel	ls to re-provisi	oned moorings			
Anchor	rage Area Re-Arranger	ment													
ST1_34	Achievement of KD	01 - Stage 1	0d		04-Dec-10 A				◆ Achie	vement of KD1 - S	tage 1				
Works	in East Ventilation	n Adit													
CCT at	Portion 1, 2, 4, 6, 22														
Submi	ssions														
S1_11	05 Submit MS for tree	e transplanting	24d	27-Oct-10 A	23-Nov-10 A				Submi	t MS for tree trans	splanting				
S1_11	Prepare and subm	nit design of temporary works	24d	30-Oct-10 A	27-Nov-10 A				Prepa	re and submit desi	ign of tempora	ary works			
S1_10	000 Initial tree survey a	and submit report	24d	24-Nov-10 A	17-Dec-10	78d			Initial	tree survey and si	ubmit report				
S1_11	10 Engineer review a	nd approval - MS for tree transplanting	24d	24-Nov-10 A	17-Dec-10	78d			Engir	neer review and ap	oproval - MS fo	or tree transplant	ing		
S1_11	20 Engineer review a	nd approval design of temporary works	48d	27-Nov-10 A	17-Feb-11	38d				ngineer review and	d approval des	sign of temporary	v works		
S1_11	38 Interface coordinate	tion with HY/2009/17 Contract for ELS works	0d	18-Jan-11		38d			◆ Inte	erface coordination	with HY/2009	9/17 Contract for	ELS works		
S1_11	25 Prepare and subm	nit MS for hoarding	24d	11-Feb-11	10-Mar-11	70d				Prepare and subm	nit MS for hoar	ding			
S1_11	Engineer review a	nd approval MS for hoarding	24d	11-Mar-11	08-Apr-11	70d				Engineer review	and approval	MS for hoarding			
Re Re	emaining Work	3 of 53				·		D.t.		ed by William Calu				•	
	ritical Remaining Work	China Stat	te Constr	uction Engineering	g (Hong Kong) L	td		Date 15-Feb D	Rev ate prepared		Checked App ST KL	proved		/== *** \ =	
→ → M	lilestone	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	(1	orogress upda			-SDE-	中國建築工程 CHINA STATE CONSTRUCTION		The State of the State of the
				PROGRAMME		•		- 100	17 Decembe	1 2010)			CANAL CONSTRUCTION	L. TOINLEMING STONE	o north Lib.
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	rod Rate 2011 2012 2013 2014 2015 2016
S1_1152	Design submission for temp access shaft	24d	05-Sep-11	06-Oct-11	45d		Design submission for temp access shaft
S1_1148	Interface coordination with HY/2009/19 for temp. access shaft	Od	06-Oct-11		45d		◆ Interface coordination with HY/2009/19 for temp. access shaft
	<u> </u>			01 Dec 11			
S26135	Engineer review and approval design submission for temp access shaft	48d	06-Oct-11	01-Dec-11	45d		Engineer review and approval design submission for temp access shaft
CCT TS1 at	Portion 1,2,4,6, and 22						
CD_5650	Site Possession - Portion XXII (22), Day 0	0d	27-Sep-10 A				Site Possession - Portion XXII (22), Day 0
CD_5535	Site Possession - Portion II (2), Day 28	Od	25-Oct-10 A				♦ Site Possession - Portion II (2), Day 28
CD_5555	Site Possession - Portion VI (6), Day 28	Od	25-Oct-10 A				♦ Site Possession - Portion VI (6), Day 28
S1_2095	Tree Transplanting	50d	22-Dec-10 A	19-Feb-11	78d		Tree Transplanting
CD_5530	Site Possession - Portion I (1), Day 129	0d	03-Feb-11*		0d		♦ Site Possession - Portion I (1), Day 129
S1_2100	Install/ Construct temp works	24d	18-Feb-11*	17-Mar-11	38d		■ Install/ Construct temp works
S1_2103	Remove Existing Breakwater (on the landside only)	24d	18-Mar-11	15-Apr-11	38d		Remove Existing Breakwater (on the landside only)
S1_2180	Installation of Hoarding	16d	09-Apr-11	30-Apr-11*	70d		■ Installation of Hoarding
S1_2108	Portion 1,2,6 & 22 - Backfill area with general fill	23d	16-Apr-11	18-May-11	38d		Portion 1,2,6 & 22 - Backfill area with general fill
S1_5850	Construct temporary access shaft (3mx2m, PS1.140D)	24d	01-Dec-11	31-Dec-11	45d		Construct temporary access shaft (3mx2m, PS1.140D)
S1_2150	Construction of TS1 Tunnel + bulkhead completed	Od		31-Dec-11	33d		Construction of TS1 Tunnel + bulkhead completed
S1_5855	Make good temporary access shaft	48d	04-Mar-14	03-May-14	8d		Make good temporary access shaft
EV Adit at F	Portion 1,2 6, 22						
Submission	ns						
S1_1135	Prepare and submit formwork/falsework design	24d	27-Sep-11	27-Oct-11	33d		■ Prepare and submit formwork/falsework design
S1_1140	Engineer review and approval - formwork/falsework design	48d	27-Oct-11	22-Dec-11	33d		Engineer, review and approval - formwork/falsework design
S1_1145	Prepare and submit method statement	24d	27-Oct-11	24-Nov-11	33d		Prepare and submit method statement
S1_1150	Engineer review and approval on method statement	24d	24-Nov-11	22-Dec-11	33d		■ Engineer review and approval on method statement
EV Adit Tur	nnel Construction at Portion 1,2,6,22						
S1_5100	EVA Tunnel base slab	8d	22-Dec-11	04-Jan-12	33d	1 bay	■ EVA Tunnel base şlab
S1_2160	EVA Tunnel backfilling to ground level	10d	04-Jan-12	16-Jan-12	33d		■ EVA Tunnel backfilling to ground level
S1_5000	EVA Tunnel wall and roof	Od	04-Jan-12	04-Jan-12	33d	1 bay	EVA Tunnel wall and roof
S1_2220	Completion of Section 1 (Portion 1 & 2)	Od		16-Jan-12	41d	•	Completion of Section 1 (Portion 1 & 2)
	Portion 4- Advance Works				1		
Submissio							
Remai	ning Work 4 of 53						Prepared by William Caluza
	Remaining Work China Sta	ate Constru	ction Engineering	g (Hong Kong) L	.td		Date Revision Checked Approved 15-Feb Date prepared ST KL
◆ Milesto	ne						(progress updated 中国建築工程(香港)有限公司
	Contract No. HY/2009/15 - Central	Wan Chai E	By Pass - Tunnel (Causeway Bay	Typhoon S	helter Section)	to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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ctivity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	П	2011	J	2012	20 J A .	13	JIII	2014]] 	 J	2015	2016
S26140	Submit temp. work design for temp. access road at East. Vent Adit breakwater	24d	08-Nov-10 A	04-Dec-10 A					Submit temp.		for temp.;ac	cess road at	East. Ver	t Adit bre	akwater		17711	11111
S3_1155	Submit MS for forming of temp. access	24d	06-Dec-10 A	17-Jan-11	38d				Submit MS	for forming	of temp. acce	ess						
S26145	Engineer review and approval on temp. work design for temp. access	48d	17-Dec-10	17-Feb-11	38d				Engineer	review and	approval on t	emp. work d	esign for	emp. acc	ess			
S3_1160	Engineer review and approval of temp. access	24d	18-Jan-11	17-Feb-11	38d				■ Engineer	review and	approval of te	mp. access						
S3_1165	Submit MS for bored pile works	24d	02-Sep-11	30-Sep-11	0d					Submit N	//S for bored	oile works						
S3_1170	Engineer review and approval of bore pile works	24d	03-Oct-11	31-Oct-11	0d					■ Engine	er review and	l approval of	bore pile	works				
Temporary A	Access																	
CD_5550	Site Possession - Portion V (5), Day 0	0d	27-Sep-10 A					Site	e Possession -	Portion V (5), Day 0							
CD_5545	Site Possession - Portion IV(4), Day 129	0d	03-Feb-11*		0d				♦ Site Posse	ssion - Porti	on IV(4), Day	129						
S3_2170	Form Temporary access - install mass concrete blocks	24d	18-Feb-11	17-Mar-11	38d				Form T	emporary ac	ccess - install	mass concre	te blocks					
S2_2173	Form Temporary access - backfill and lay temporary paving	18d	18-Mar-11	08-Apr-11	38d				■ Form	Temporary a	access - back	ill and lay te	nporary p	aving				
CD_5540	Site Possession - Portion III (3), Day 194	0d	09-Apr-11*		0d				♦ Site Po	ssession - F	Portion III (3),	Day 194						
S3_2175	Barging point and temp access at existing EVA available for TS1/TS2 WORKS	0d	09-Apr-11		38d				♦ Bargin	g point and	temp access	at existing E	/A availat	le for TS	1/TS2 W.C	RKS		
Bored Pile C																		
S3_2620	Construct piling platform & carry out site investigation	18d	01-Nov-11*	21-Nov-11	0d					Const	truct piling pla	tform & carr	y out site	nvestigat	on			
S3_2623	Submit GI Reports	18d	22-Nov-11	12-Dec-11	514d					Subr	mit GI Report	s						
S3_2625	Bored pile construction (8 nos, at 6d/pile)	48d	13-Dec-11	13-Feb-12	514d						Bored pile cor	struction (8	nos, at 6d	/pile)				
S3_2630	Pile Test	18d	14-Feb-12	05-Mar-12	514d						Pile Test							
EV Adit - bas	sed on Conforming Design										1 1							
Submissions	s																	
S3_6275	Preparation and submission of CMC model	24d	19-Sep-11	19-Oct-11	401d					Prepara	ation and sub	mission of C	MC mode					
S3_6255	Preparation and submission - temp work design	48d	19-Oct-11	14-Dec-11	401d					Prep	paration and	submission -	temp	kdesign				
S3_6265	Preparation and submission - MS for construction	48d	19-Oct-11	14-Dec-11	401d					Prep	paration and	submission -	MS for co	nstructio	ı			
S3_6260	Engineers review and approval - temp works design	48d	14-Dec-11	15-Feb-12	401d						Engineers rev	iew and app	oval - ter	np works	design			
S3_6270	Engineer review and approval - MS for construction	48d	14-Dec-11	15-Feb-12	401d						Engineer revi	and appr	val - MS	for const	uction			
S3_6295	EVA formwork and falsework design submission	24d	26-May-12	26-Jun-12	401d						EVA fo	ormwork and	falsewor	design	submissio	n		
S3_6300	Engineers review and approval - EVA formwork and falsework design submission	24d	26-Jun-12	25-Jul-12	401d						Engi	neers review	and app	oval - EV	A formwo	k and fals	ework de	esign sub
EV Adit Tunr	nel Works																	
S3_6230	Erect working platform	10d	15-Feb-12*	27-Feb-12	401d						Erect working	platform						
Remain	sing Work 5 of 53							F	Prepared by W					<u>'</u>		1 1		
	Remaining Work China Stat	te Constru	uction Engineering	յ (Hong Kong) L	td		Date 15-Feb	Date pre	Revision	Ch ST	necked Appr						_	
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	Contract No. HY/2009/15 - Central V	van Chai	Dy Pass - Tunnel (Causeway Bay	ypnoon S	oneiter Section	' 	to 17 De	cember 2010)			COUL	CHINA	STATE CON	STRUCTION	ENGINEERIN	G (HONG K	(ONG) LTD.
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
62 6225	Install town works and	I remove armour rock (east then west)	60d	27-Feb-12	12-May-12	401d	200	3piles/week/rig,	Install temp works and remove armour rock (east then west)
S3_6235	install temp works and	remove armour rock (east then west)	600	27-Feb-12	12-May-12	4010		use 2 rigs	install temp works and remove armour rock (east then west)
S3_6280	Excavation and lateral	support	60d	12-May-12	25-Jul-12	401d	20,000 m3 2	2000m3/d	Excavation and lateral support
S3_6240	Construct base slab		30d	25-Jul-12	29-Aug-12	401d	12 bays ຢູ່	5d/bay/formwork, use 2 formwrork	Construct base slab
S3_6225	Construct wall and roo	of	48d	22-Aug-12	19-Oct-12	401d	12 bays 8	8d/bay/formwork	Construct wall and roof
S3_6245	Removal of ELS and E	Backfilling with armour rock	60d	19-Oct-12	02-Jan-13	401d			Removal of ELS and Backfilling with armour rock
S3_6250	Section 3 Achieved		0d		02-Jan-13	498d			Section 3 Achieved
Works in T	S1 Area (Portior	1 13A, 13B)							
TS1 - Initial V	Vorks						_		
ST2_1000	Initial hydrographic su	rvey (echo sounding)	6d	27-Sep-10 A	04-Oct-10 A				Initial hydrographic survey (echo spunding)
CD_5590	Site Possession - Port	ion XIIIA (13A), Day 0	0d	27-Sep-10 A					Site Possession - Portion XIIIA (13A), Day 0
CD_5595	Site Possession - Port	ion XIIIB (13B), Day 0	0d	27-Sep-10 A					Site Possession - Portion XIIIB (13B), Day 0
ST2_1010	Detailed survey and re	ecord photo- existing seawall	6d	05-Oct-10 A	02-Nov-10 A				Detailed survey and record photo- existing seawall
ST2_2000	CEDD Agreement - D seawall	etailed survey and record photo- existing	6d	17-Dec-10	23-Dec-10	83d			CEDD Agreement - Detailed survey and record photo- existing seawall
ST2_2005	Submit reinstatement works)	plan prior to demolition (45d prior to start of	6d	08-Feb-11	15-Feb-11	8d			Submit reinstatement plan prior to demolition (45d prior to start of works)
TS1 - Tempo	rary Reclamation								
Submission	Deadline								
ST2_1013	Prepare and Submit N	//S for dredging works at TS1	24d	14-Oct-10 A	21-Oct-10 A				Prepare and Submit MS for dredging works at TS1
ST2_1015	Engr review and appr	oval MS for dredging works at TS1	24d	22-Oct-10 A	30-Dec-10	9d			Engr review and approval MS for dredging works at T\$1
ST2_1027	Prepare and Submit N general fill) - TS1	//S for temporary reclamation (seawall block &	24d	27-Oct-10 A	03-Nov-10 A				Prepare and Submit MS for temporary reclamation (seawall block & general fill) - TS1
ST2_1033	,	mit Silt curtain proposal for TS1 works	18d	01-Nov-10 A	08-Nov-10 A				Prepare and and submit Silt curtain proposal for TS1 works
ST2_1017	Prepare and Submit D	Oredging plan for TS1	24d	02-Nov-10 A	17-Nov-10 A				Prepare and Submit Dredging plan for TS1
ST2_1030	Engr review and approblock & general fill) - T	oval - MS for temporary reclamation (seawall	24d	04-Nov-10 A	25-Jan-11	7d			■ Engr review and approval - MS for temporary reclamation (seawall block & general fill) - TS1
ST2_1023	Prepare and Submit S	Seawall block design for TS1	24d	04-Nov-10 A	16-Dec-10 A				Prepare and Submit Seawall block design for TS1
ST2_1035	Engr Review and App	roval Silt curtain proposal for TS1 works	24d	09-Nov-10 A	03-Dec-10 A				Engr Review and Approval Silt curtain proposal for TS1 works
ST2_1020	Engr review and appr	oval - Dredging plan for TS1	24d	17-Nov-10 A	06-Dec-10 A				Engr review and approval - Dredging plan for TS1
ST2_1043	Submit particulars of r	ockfill material	24d	22-Nov-10 A	29-Nov-10 A				Submit particulars of rockfill material
ST2_1045	Engr review and appr	oval - particulars of rockfill material	24d	30-Nov-10 A	25-Jan-11	7d			Engr review and approval - particulars of rockfill material
ST2_1037	Submit particulars of s	seawall block	24d	14-Dec-10 A	28-Dec-10	7d			Submit particulars of seawall block
ST2_1025	Engr review and appr	oval - Seawall block design for TS1	48d	17-Dec-10 A	17-Jan-11	14d			Engr review and approval - Seawall block design for TS1
Remaini	ing Work	6 of 53							Prepared by William Caluza
Critical F	Remaining Work	China Stat	te Constri	uction Engineerinເ	ı (Hona Kona) L	_td		Date 15-Feb Dat	Revision Checked Approved te prepared ST KL
◆ ◆ Mileston								(pro	re prepared
		Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon	Shelter Section)	\ "	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	e 2011 2012 2013 2014 2015 ²⁰¹⁶
ST2_1028	Preparation of CMC model for temporary reclamation - TS1	24d	17-Dec-10	17-Jan-11	28d			Preparation of CMC model for temporary reclamation - TS1
ST2_1040	Engr review and approval - particulars of seawall block	24d	28-Dec-10	25-Jan-11	7d			Engr review and approval - particulars of seawall block
ST2_1047	Submit particulars of general fill material	24d	24-Jan-11	24-Feb-11	8d			Submit particulars of general filt material
ST2_1050	Engr review and approval - particulars of general fill material	24d	24-Feb-11	24-Mar-11	8d			■ Engr review and approval - particulars of general fill material
ST2_1053	Submit Geotechnical Instrumentation Plan - TS1	24d	19-May-11	17-Jun-11	18d			■ Submit Geotechnical Instrumentation Plan - TS1
ST2_1055	Engr review and approval - Geotechnical Instrumentation Plan - TS1	24d	17-Jun-11	16-Jul-11	18d			Engr review and approval - Geotechnical Instrumentation Plan - TS1
Permits and	/or Licenses							
ST2_5915	Apply for DASO Permit- TS1	41d	01-Oct-10 A	08-Oct-10 A				Apply for DASO Permit-TS1
ST2_5920	EPD approval of DASO for TS1	28d	09-Oct-10 A	04-Nov-10 A				EPD approval of DASO for TS1
Marine Site	Investigation							
ST2_3062	MDN application for marine investigation	12d	18-Nov-10 A	25-Nov-10 A				MDN application for marine investigation
ST2_3064	Issue of MDN for marine investigation works	18d	26-Nov-10 A	17-Dec-10	15d			Issue of MDN for marine investigation works
ST2_3066	Marine site investigation - CPPT and vibrocore works at TS1 (13 nos).	7d	22-Dec-10 A	22-Dec-10	16d	13 nos.	2nos./d	Marine site investigation - CPPT and vibrocore works at TS1 (13 nos).
ST2_3084	Marine site investigation - submissions of reports	4d	22-Dec-10	28-Dec-10	16d			Marine site investigation - submissions of reports
Dredging, R	ockfill and Seawall Block			<u> </u>				
ST2_3400	MDN application for dredging works TS1W	12d	18-Nov-10 A	25-Nov-10 A				MDN application for dredging works TS1W
ST2_5910	Issue of MDN for dredging works	18d	26-Nov-10 A	28-Dec-10	14d			I Issue of MDN for dredging works
ST2_5925	Install silt curtain	2d	28-Dec-10	29-Dec-10	16d			I Install silt curtain
West Section	on near North Breakwater							
ST2_3480	TS1(W) - West side (north breakwater) dredge to remove all marine mud(incl. echo sounding to determine depth)	7d	30-Dec-10	06-Jan-11	14d	11,000 m3	1800m3/d	TS1(W) - West side (north breakwater) dredge to remove all marine mud(incl. echo sounding to determine
ST2_3492	Survey after dredging works complete	2d	05-Jan-11	07-Jan-11	14d			Survey after dredging works complete
ST2_3490	TS1(W) - northwest corner, place rockfill underneath temporary seawall below seabed	6d	07-Jan-11	11-Jan-11	14d	5,200 m3	1000m3/d	l T\$1(W) - northwest corner, place rockfill underneath temporary seawall below seabed
ST2_3545	TS1(W) - levelling and erect toe block for NW corner (approx. 60m)	14d	11-Jan-11	23-Jan-11	14d			■ TS1(W) - levelling and erect toe block for NW corner (approx. 60m)
ST2_5930	Erect sea wall block for survey platform	1d	25-Jan-11*	25-Jan-11	11d			I Erect sea wall block for survey platform
ST2_3550	TS1(W) - West side place seawall block to +4, incl survey check	6d	26-Jan-11	30-Jan-11	11d	44 nos	7 nos/d	I TS1(W) - West side place seawall block to +4, incl survey check
Remaining	West Section and South Section						<u> </u>	
ST2_3540	TS1(W) - West side (remaining) dredge to remove all marine mud remaining area(incl. echo sounding to determine depth)	10d	31-Jan-11	11-Feb-11	11d	13,000 m3	1800m3/d	TS1(W) - West side (remaining) dredge to remove all marine mud remaining area(incl. echo sounding to
S2_3540	TS1(SW) - Remaining West & South side, dredge to remove all marine mud(incl. echo sounding to determine depth)	9d	11-Feb-11	18-Feb-11	11d	7511 m3	1000m3/d	d TS1(SW) + Remaining West & South side, dredge to remove all marine mud(incl. echo sounding to deten
ST2_3530	Achievement of Stage 2	0d		15-Feb-11*	0d			◆ Achievement of Stage 2
Remain	ing Work 7 of 53							Prepared by William Caluza
	Pomaining Work	te Constr	uction Engineering	(Hona Kona) I	td		Dat	
◆ ◆ Milestor	ne							Date prepared ST KL
	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Sectio	on)	(progress updated 中国建築工程(春港)有限公司 to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Ac	tivity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		2011	2012	2013	20	014	2015	2016
	S2_3550	TS1(SW) - Remaining West & South side, Place rockfill underneath		18-Feb-11	23-Feb-11	11d	10,000 m3	2000m3/d		1999 Rem	aining West &	South side, Place	rockfill underneath	temporary sea	awall below	w seabed
Ш	S2 3560	temporary seawall below seabed TS1(SW) - Remaining West & South side, Place seawall block to	17d	23-Feb-11	09-Mar-11	11d	824 nos.	48nos/d					seawall block to +			
Ш	_	+4, incl survey check	170	23-Feb-11	09-IVIAI - I I	110	624 1105.	40110S/U		51(5W); - Reli	naining vvest &	South side, Place	seawaii block to +	4, incr survey c	леск	
	North Secti	on and Inside the Seawall Area														
I	ST2_3541	TS1(N) - North side & remaining areas, dredge to remove all marine mud(incl. echo sounding to determine depth)	12d	09-Mar-11	19-Mar-11	11d	21,000 m3	1750m3/d	0	ΓS1(N) - North	side & remain	ing areas, dredge	to remove all mari	ne mud(incl. e	cho soundi	ng to determ
	ST2_3510	TS1(N) - North side, Place rockfill underneath temporary seawall below seabed	6d	19-Mar-11	24-Mar-11	11d	7,600 m3	1500m3/d	I,	TS1(N) - North	n side, Place ro	ckfill underneath to	mporary seawall b	elow seabed		
	General Fill	Works														
	S2_3570	General fill to +2 within the seawall	11d	24-Mar-11	02-Apr-11	11d	48,500m3	4000m3/d		General fill to	+2 within the se	awall				
	S2_2010	Remove breakwater at TS1 (sea side)	6d	28-Mar-11	02-Apr-11	11d				Remove break	water at TS1 (sea side)				
	S2_3526	TS1(N) - North side, complete seawall block to +4, of the 33m opening to allow barge filling material	12d	02-Apr-11	13-Apr-11	11d	483nos	40 nos/d		T\$1(N) - Nor	th side, comple	te seawall block to	+4, of the 33m op	ening to allow	barge fillin	g material
	S2_3575	General fill to +4 within the seawall	25d	13-Apr-11	08-May-11	11d	41,000m3	3000 m3/d		General fill to	o +4 within the	seawall				
	TS1 - Diaphr	agm Wall														
П	Submission	Deadline														
	S2_1003	Submit Diaphragm Wall Trench Stability and Guide Wall Design	24d	12-Feb-11	12-Mar-11	16d				Submit Diaphra	gm Wall Trend	h Stability and Gui	de Wall Design			
	S2_1012	Prepare and submit CMC model for diaphragm wall construction - TS1	24d	28-Feb-11	26-Mar-11	8d				Prepare and s	ubmit CMC mo	del for diaphragm	wall construction -	TS1		
	S2_1097	Submit MS for D Wall site investigation	24d	08-Mar-11	04-Apr-11	8d				Submit MS for	D Wall site inv	estigation				
	S2_1098	Submit MS & particulars of soil pretreatment prior to D Wall	24d	08-Mar-11	04-Apr-11	17d				Submit MS &	particulars of so	il pretreatment pr	or to D Wall			
	S2_1005	Engineers review and approval -Diaphragm Wall Trench Stability and Guide Wall Design	48d	12-Mar-11	14-May-11	16d				l Engineers r	eview and appr	oval -Diaphragm \	Vall Trench \$tabili	ty and Guide V	Wall Desigr	1
	S2_1013	Submit MS for diaphragm wall construction - TS1	24d	28-Mar-11	28-Apr-11	8d				Submit MS fo	or diaphragm w	vall construction - 7	S1			
	S2_1100	Engineers review and approval - MS for D Wall site investigation	24d	06-Apr-11	07-May-11	8d				Engineers re	eview and appr	oval - MS for D W	all site investigation			
	S2_1113	Engineers review and approval - MS & particulars of soil pretreatment prior to D Wall	24d	06-Apr-11	07-May-11	17d				Engineers re	eview and appr	pval - MS & partic	llars of soil pretrea	tment prior to	D Wall	
	S2_1000	Submit design for dewatering system	24d	15-Apr-11	18-May-11	7d				Submit desi	gn for dewater	ng system				
	S2_1015	Engineers review and approval - MS for diaphragm wall construction - TS1	24d	29-Apr-11	28-May-11	8d				■ Engineers	review and app	roval - MS for dia	hragm wall constr	uction - TS1		
П	S2_1103	Submit MS for D Wall pile tests (interface coring/integrity test)	24d	04-May-11	01-Jun-11	13d				Submit MS	for D Wall pile	tests (interface co	ring/integrity test)			
	S2_1002	Engineers review and approval - design for dewatering system	48d	19-May-11	15-Jul-11	7d				Enginee	rs review and a	pproval - design f	or dewatering syst	em		
	S2_1105	Engineers review and approval - MS for D Wall pile tests (interface coring/integrity test)	24d	02-Jun-11	30-Jun-11	13d				■ Engineer	s review and a	pproval - MS for D	Wall pile tests (int	erface coring/i	integrity tes	st)
	Diaphragm \	Wall Construction														
	S2_1110	Set up bentonite silo/plants and equipments (at Portion 3 and 4)	24d	26-Apr-11	25-May-11	11d			- 1	Set up bent	tonite silo/plant	and equipments	(at Portion 3 and 4)		
	S2_1115	Site investigation for DW & barettes	32d	09-May-11	05-Jun-11	11d	32 nos	3d/no/rig, u	se 3 SI	Site investi	gation for DW	& barettes				
	S2_1120	Curtain grout (soil pre treatment) along diaphragm wall	48d	09-May-11	19-Jun-11	23d	260 nos	3 grout holes/d/rig,	use 2	Curtain gr	out (soil pre tre	eatment) along dia	phragm wall			
-	Remain	ing Work 8 of 53		1	<u> </u>				Prepare	d by William Ca			' '		1 1	
		Demociais a Manta	ta Canet	ruction Engineering	(Hong Kong) !	td		Date		sion	Checked A					
4	◆ Mileston	ne Cililla Sta	te const	raction Engineering	(Hong Rong) L	···		15-Feb	Date prepared (progress updat	-d	ST KL	DDC	中國建築	工程(事	港)有1	瓜公司
		Contract No. HY/2009/15 - Central V	Wan Cha	i By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	on)	to 17 December		+ +	caute	CHINA STATE CONST			
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Ra	ite		2011		2012		2013	20	14	201	5 201
S2_3610	TS1 DIAPHRAGM WALL SUMMARY	94d	09-May-11	10-Aug-11	16d					7 1444	TS1 DIA	PHRAGM \	MALL \$UMMAI	RY :	1141111		4 1 1 1 4	11111111
S2_1125	Construct guidewall	24d	14-May-11	03-Jun-11	23d	192m	10m/d/r	iq		■ Co	nstruct gu	ıidewall						
S2_1130	Construct diaphragm wall (by panel nos)	80d	29-May-11	05-Aug-11	11d	53 nos	6 days r	anel/3					n wall (by pane	Inns)				
			•				days cyc	de/ no/rig,										
S2_1135	Construct barette piles (by panel nos)	9d	29-May-11	07-Jun-11	81d	6 nos	3 days o	se 2 rigs					(by panel nos)					
S2_1155	Diaphragm Wall & Barette pile tests (interface coring & integrity test)	48d	02-Jul-11	10-Aug-11	20d						Diaphra	gm;Wall;& E	Barette pile test	s (interfac	e coring & int	tegrity test)		
TS1 - ELS W	orks (
Submission	Deadline															1 1		
S2_1022	Prepare and submit CMC model ELS at TS1	24d	20-Jan-11	21-Feb-11	8d					Prepare	and subm	nit CMC mo	del ELS at TS1					
S2_1017	Submit ELS design TS1 (4 month for GEO comments&resolution)	24d	21-Feb-11	21-Mar-11	8d					Submit	ELS desi	gn TS1 (4 r	month for GEO	comments	&resolution)			
S2_1023	Submit MS for ELS at TS1 (4 month for GEO comments&resolution)	24d	21-Feb-11	21-Mar-11	8d					Submit	MS for E	LS at TS1	(4 month for GI	EO comme	ents&resolution	n)		
S2_1018	Engineers review and approval - ELS design TS1	24d	21-Mar-11	19-Apr-11	8d					Engin	eers revie	ew and app	roval - ELS des	sign TS1		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
S2_1024	Engineers review and approval - MS for ELS at TS1	24d	21-Mar-11	19-Apr-11	8d					Engin	eers revie	ew and app	roval - MS for I	ELS at TS	1			
S2_1020	GEO review and approval - ELS design TS1 (4 months for GEO comments&resolution)	96d	19-Apr-11	17-Aug-11	8d						GEO rev	view and ap	proval - ELS d	esign TS1	(4 months fo	r GEO con	nments&res	olution)
S2_1025	GEO review and approval - MS for ELS at TS1 (4 month for GEO comments&resolution)	96d	19-Apr-11	17-Aug-11	8d						GEO rev	view and ap	proval - MS fo	r ELS at T	S1 (4 month	for GEO α	mments&re	esolution)
S2_1168	Submit instrumentation particulars (inclinometer/ strain gauges)	24d	19-May-11	17-Jun-11	18d					■ Su	bmit instr	umentation	particulars (inc	linometer/	strain gauge	s)		
S2_1173	Submit MS for instrumentation	24d	19-May-11	17-Jun-11	18d					■ Su	bmit MS	for instrume	entation			1 1 1 1 1 1 1 1		
S2_1170	Engineers review and approval - instrumentation particulars (inclinometer/ strain gauges)	24d	17-Jun-11	16-Jul-11	18d					Ė E	gineers	review and	l approval - inst	rumentatio	on particulars	(inclinome	ter/ strain g	auges)
S2_1175	Engineers review and approval - MS for instrumentation	24d	17-Jun-11	16-Jul-11	18d					₽ E	gineers	review and	l approval - MS	for instrur	mentation	1 1 1 1 1 1 1 1		
S2_1163	Submit welding procedures & welders test ceritifcates for ELS (welding)	24d	23-Jun-11	22-Jul-11	7d					•	Submit w	elding proc	edures & welde	ers test cer	itifcates for E	LS (weldin	g)	
S2_1158	Submit particulars of ELS materials (structural steel)	24d	23-Jun-11	22-Jul-11	7d					.	Submit pa	articulars of	ELS materials ((structural	steel)	! ! ! ! ! !		
S2_1160	Engineers review and approval - particulars of ELS materials (structural steel)	24d	22-Jul-11	19-Aug-11	7d						Enginee	rs review a	nd approval - p	articulars o	of ELS mater	ials (structu	ıral steel)	
S2_1165	Engineers review and approval - welding procedures & welders test ceritifcates for ELS (welding)	24d	22-Jul-11	19-Aug-11	7d						Enginee	rs review a	nd approval - w	elding pro	cedures & we	elders test	ceritificates f	or ELS (weldi
S2_1010	Submit pumping test report	1d	16-Aug-11	17-Aug-11	8d					1	Submit	oumping tes	st report			! ! ! ! ! !		
Excavation a	and Lateral Support Works									1						1 1 1 1 1 1		1
S2_1145	Install dewatering wells and install piezometers for pumping test	24d	16-Jul-11	04-Aug-11	11d						Install de	watering w	ells and install p	iezometer	s for pumping	test		
S2_3643	Install inclinometers inside D Wall	24d	16-Jul-11	05-Aug-11	26d						Install inc	dinometers	inside D Wall					
S2_1148	Carry out pumping test	14d	04-Aug-11	16-Aug-11	11d					•	Carry ou	ut pumping	test					
S2_3640	TS1 ELS SUMMARY	77d	17-Aug-11	22-Oct-11	11d						TS1	ELS SUMM	MARY					
S2_3645	1st Layer - set up + Soft Excavation	5d	17-Aug-11	21-Aug-11	11d	8,948 m3	2,000/d			1	1st Laye	er - set up +	Soft Excavation	n				
Remain	ing Work 9 of 53		1	J					Prepar	red by W	illiam Cal			1 1	1		<u> </u>	1
	Damaining Maule	e Consti	ruction Engineering	(Hona Kona) I	td			ate Date		vision		Checked						
◆ Milestor	ne								prepared ress upda			ST	KL []	타	國建築	工程(香港)角	阻公司
	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	ion)	``	Decembe				651					ONG KONG) LTD
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
S2_3646	1st Layer - install latera	I supports + VWS (T1-SG3)	10d	19-Aug-11	27-Aug-11	11d			■ 1st Layer - install lateral supports + VWS (T1-\$G3)
S2_3655	2nd Layer - Soft Excava		7d	27-Aug-11	01-Sep-11	11d	13,450 m3	2.000/d	I 2nd Layer - Soft Excavation
	·						13,430 1113	2,000/u	
S2_3657	2nd Layer - install later	al supports	10d	29-Aug-11	06-Sep-11	11d			■ 2nd Layer - install lateral supports
S2_3660	3rd Layer - Soft Excava	ation	7d	05-Sep-11	10-Sep-11	11d	13,450 m3	2,000/d	I 3rd Layer - Soft Excavation
S2_3662	3rd Layer -install lateral	Supports	10d	07-Sep-11	16-Sep-11	11d			3rd Layer -install lateral supports
S2_3665	4th Layer - Soft Excava	ition	9d	15-Sep-11	22-Sep-11	11d	15,700 m3	1,800/d	1 4th Layer - Soft Excavation
S2_3667	4th Layer - install latera	ll supports	10d	17-Sep-11	25-Sep-11	11d			4th Layer - install lateral supports
S2_3670	5th Layer - Soft Excava	ition	9d	24-Sep-11	02-Oct-11	11d	15,700 m3	1,800/d	■ 5th Layer - Soft Excavation
S2_3672	5th Layer - install latera	ll supports	10d	27-Sep-11	07-Oct-11	11d			5th Layer - install lateral supports
S2_3675	6th Layer - Soft Excava	ition	9d	06-Oct-11	13-Oct-11	11d	15,700 m3	1,800/d	1 6th Layer - Soft Excavation
S2_3677	6th Layer - install latera	ll supports	10d	08-Oct-11	17-Oct-11	11d			6th Layer - install lateral supports
S2_3685	7th Layer - Excavation t	to formation of CCT base slab	8d	16-Oct-11	22-Oct-11	11d	11,200 m3	1,500/d	■ 7th Layer - Excavation to formation of CCT base slab
TS1- CCT R	RC Structure							'	
Submissio	n Deadline								
S2_1027	Submit formwork and fa	alsework design for CCT - TS1	24d	27-Jul-11	24-Aug-11	7d			Submit formwork and falsework design for CCT - T\$1
S2_1032	Prepare and submit CN	//C model for CCT-TS1 construction	24d	27-Jul-11	24-Aug-11	7d			Prepare and submit CMC model for CCT+TS1 construction
S2_1030	Engineers review and a CCT - TS1	approval - formwork and falsework design for	48d	24-Aug-11	22-Oct-11	7d			Engineers review and approval - formwork and falsework design for CCT - TS1
S2_1033	Submit MS for CCT-TS	S1 construction	24d	24-Aug-11	22-Sep-11	7d			Submit MS for CCT-TS1 construction
S2_1035	Engineers review and a	approval -MS for CCT-TS1 construction	24d	22-Sep-11	22-Oct-11	7d			Engineers review and approval -MS for CCT-TS1 construction
CCT RC Sti	ructure Works								
S2_3650	TS1 CCT - SUMMARY	,	73d	22-Oct-11	03-Jan-12	9d			TS1 CCT - SUMMARY
S2_1180	TS1 - base slab (24 bay	ys)	60d	22-Oct-11	11-Dec-11	11d	24 bays	5d/bay/formwork	
S2_1185	TS1 - wall and roof slab	o (bays)	68d	03-Nov-11	31-Dec-11	11d	24 bays	8d/bay/formwork	
S2_1190	TS1 - external waterpro	pofing on top of completed CCT box (incl.	30d	07-Dec-11	03-Jan-12	11d			TS1 - external waterproofing on top of completed CCT box (incl. screeding)
S2_1195	TS1- backfilling above (CCT up to sea bed level	32d	08-Dec-11	07-Jan-12	11d	23,000m3	3,000m3/day	TS1- backfilling above CCT up to sea bed level
TS1 - Remo	oval of Temp. Reclama	tion			1				
Submission	n Deadline								
S2_1037	Submit design of bulkhe	ead at TZ1	24d	16-Sep-11	15-Oct-11	36d			Submit design of bulkhead at TZ1
S2_1042	Prepare and submit CN and TZ1 construction	IC model for removal of temp reclamation	24d	16-Sep-11	15-Oct-11	36d			Prepare and submit CMC model for removal of temp reclamation and TZ1 construction
Remai		0 of 53							Prepared by William Caluza
	I Remaining Work	China Sta	te Constru	uction Engineering	ı (Hong Kong) L	.td		Date 15-Feb	Revision Checked Approved Date prepared ST KL
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	ľ	Contract No. HY/2009/15 - Central V				rypnoon S	oneiter Sectio	to	D 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
S2_1040	Engineers review and approval - design of bulkhead at TZ1	48d	17-Oct-11	10-Dec-11	36d			Engineers review and approval - design of bulkhead at TZ1
	11 1							
S2_1043	Submit MS for removal of temp reclamation and TZ1 construction	24d	17-Oct-11	12-Nov-11	36d			Submit MS for removal of temp reclamation and TZ1 construction
S2+1047	Submit MS for removal of D Wall	24d	08-Nov-11	06-Dec-11	8d			Submit MS for removal of D Wall
S2_1045	Engineers review and approval - MS for removal of temp reclamation and TZ1 construction	24d	14-Nov-11	10-Dec-11	36d			Engineers review and approval - MS for removal of temp reclamation and TZ1 construct
S2_1050	Engineers review and approval - MS for removal of D Wall	24d	06-Dec-11	06-Jan-12	8d			Engineers review and approval - MS for removal of D Wall
Removal of	Temp. Reclamation							
S2_6135	DURATION OF TEMP. RECLAMATION TS1W (MAX=391D)	367d	25-Jan-11	26-Jan-12	9d			DURATION OF TEMP. RECLAMATION T\$1W (MAX=391D)
S2_6150	DURATION OF TEMP. RECLAMATION TZ1 (MAX 990D)	973d	25-Jan-11	23-Sep-13	10d			DURATION OF TEMP. RECLAMATION TZ1 (MA)
S2_6140	DURATION OF TEMP. RECLAMATION TS1E (EXCLUDING TS1W) (MAX=361D)	337d	23-Feb-11	26-Jan-12	9d			DURATION OF TEMP. RECLAMATION TS1E (EXCLUDING TS1W) (MAX=361D)
S2_3700	TS1 - REMOVAL OF TEMP RECLAMATION SUMMARY	49d	08-Dec-11	26-Jan-12	9d			TS1 - REMOVAL OF TEMP RECLAMATION SUMMARY
S2_1197	Remove ELS inside cofferdam	36d	08-Dec-11	10-Jan-12	11d	8 layers	6d/layer	Remove ELS inside cofferdam
S2_1200	Remove general fill (bet. D Wall & seawall block)	9d	09-Dec-11	16-Dec-11	29d	26,028m3	3000m3/d	Remove general fill (bet. D Wall & seawall block)
S2_1205	Remove seawall block	10d	11-Dec-11	19-Dec-11	29d	642 nos	64/d	Remove seawall block
S2_1210	Form seawall block for TZ1	5d	11-Dec-11	15-Dec-11	53d	400 nos	64/d	I Form seawall block for TZ1
S2_1215	General fill for TZ1	2d	15-Dec-11	17-Dec-11	53d	4,440 m3	3000m3/d	I General fill for TZ1
S2_1220	Saw cut diaphragm wall (nos)	21d	06-Jan-12	26-Jan-12	11d	32 panels	2d/panel/rig, use 3	B Saw cut diaphragm wall (ngs)
S2_1230	Reinstate breakwater/ seawall	21d	06-Jan-12	26-Jan-12	25d			Reinstate breakwater//seawall
S2_1235	Reinstate seabed	10d	15-Jan-12	26-Jan-12*	11d			■ Reinstate seabed
Phase 2 Mar	rine Traffic Re-Arrangements							
PG_1120	Method Statement - Phase 2 Mooring Re-Arrangement - preparation and submission	24d	04-Jun-11	04-Jul-11	167d			Method Statement - Phase 2 Mooring Re-Arrangement - preparation and submission
PG_1130	Method Statement - Phase 2 Mooring Re-Arrangement: Engineers review and approval	18d	05-Jul-11	25-Jul-11	167d			■ Method Statement - Phase 2 Mooring Re-Arrangement: Engineers review and approval
TDS_1009	Phase 2 Mooring Components - manufacture/delivery to HK	48d	05-Sep-11	02-Nov-11	84d			Phase 2 Mooring Components - manufacture/delivery to HK
ST4_3750	Phase 2 - Marine traffic arrangements	12d	26-Jan-12	05-Feb-12	25d			■ Phase 2 - Marine traffic arrangements
ST4_3740	Achievement of Stage 4	0d		25-Feb-12	0d			◆ Achievement of Stage 4
TS1 - OHVD	Slab and Cable Trough							
OHVD Slab a	and Cable Trough Construction							
S3_6215	TS1 W&E, OHVD Slab (access through temp. opening at CCT in	76d	18-Dec-13	03-Mar-14	9d	156 nos.	7 panels/d	TS1,W&E, OHVD Slab (access through te
S3_6220	Portion 6&22) TS1 W&E, Cable Trough (access through temp. opening at CCT in	70d	24-Dec-13	03-Mar-14	9d			TS1;W&E, Cable Trough (access through
Works in T	Portion 6822) [S2 Area (Portion 13A, 13B)							
	ning Work 11 of 53							Prepared by William Caluza
	Remaining Work	to Carat	uotion Englissesis	и /Цари Иста\ I	4.4		Date	Revision Checked Approved
♦ Mileston	cnina Sta	te Constru	uction Engineering	g (Hong Kong) L	.ta		15-Feb Da	te prepared ST KL 中國建築工程(春港)有限公司
	Contract No. HY/2009/15 - Central N	Wan Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	^n\ 	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	od Rate	J	2011	1	20 ⁻	12		13 JAIII	JIII	2014 J J A		201:	5 A	2016 J
TS2 - Initial	Works							Ш	11111			<u> </u>							1111	
S2_1085	Initial hydrographic survey (echo sounding)	6d	17-Dec-10	23-Dec-10	328d			,	nitial hydro	ographic	survey (ec	ho soundi	ing)							
S2_1090	Detailed survey and record photo	6d	17-Dec-10	23-Dec-10	328d			1	Detailed su	urvėy and	d record ph	oto								
TS2 - Temp	orary Reclamation																+			
Submission	n Deadline										1 1						+			
S2_6205	Prepare and Submit Seawall block design for TS2	24d	07-Nov-11	03-Dec-11	47d						Prepare a	nd Submi	t Seawall b	lock desigi	for TS2	2				
S2_6219	Prepare and Submit CMC model for temporary reclamation - TS2	24d	07-Nov-11	03-Dec-11	47d					•	Prepare a	nd Submi	t CMC mod	lel for tem	porary re	eclamatic	ın - TS:	2		
S2_6210	Prepare and Submit MS for dredging works at TS2	24d	26-Nov-11	24-Dec-11	7d					•	Prepare	and \$ubn	nit MS for d	redging w	orks at T	S2				
S2_6215	Prepare and Submit Dredging plan for TS2	24d	26-Nov-11	24-Dec-11	7d					•	Prepare	and \$ubn	nit Dredgino	plan for	rS2					
S2_6200	Prepare and and submit Silt curtain proposal for TS2 works	18d	01-Dec-11	22-Dec-11	8d						Prepare	and and s	ubmit Silt c	urtain prop	posal for	T\$2 wor	rks			
S2_6165	Engr review and approval - Seawall block design for TS2	48d	05-Dec-11	04-Feb-12	47d						■ Engr	eview and	approval -	Seawall b	lock des	ign for T	S2			
S2_6220	Prepare and Submit MS for temporary reclamation (seawall block & general fill) - TS2	24d	05-Dec-11	04-Jan-12	47d						l Prepare	and Subr	mit M\$ for t	emporary	reclama	tion (sea	wall bloc	ck & gen	eral fill) -	TS2
S2_6225	Submit particulars of seawall block	24d	05-Dec-11	04-Jan-12	47d					-	Submit p	articµlars	of seawall	block						
S2_6175	Engr Review and Approval Silt curtain proposal for TS2 works	24d	22-Dec-11	26-Jan-12	8d						■ Engr R	eview and	d Approval	Silt curtain	proposa	al for TS2	2 works			
S2_6155	Engr review and approval MS for dredging works at TS2	24d	24-Dec-11	28-Jan-12	7d						■ Engr re	eview and	approval I	MS for dre	dging w	orks at T	S2			
S2_6160	Engr review and approval - Dredging plan for TS2	24d	24-Dec-11	28-Jan-12	7d						■ Engr re	eview and	approval -	Dredging	plan for	TS2			1	
S2_6170	Engr review and approval - MS for temporary reclamation (seawall	24d	05-Jan-12	04-Feb-12	47d						■ Engr	eview and	approval -	MS for te	mporary	reclama	tion (sea	awall bloo	ck & gene	eral fil
S2_6185	block & general fill) - TS2 Engr review and approval - particulars of seawall block	24d	05-Jan-12	04-Feb-12	47d						■ Engr	eview and	approval -	particular	s of seav	vall block	:		 	
S2_6230	Submit particulars of rockfill material	24d	17-Jan-12	17-Feb-12	7d						Subm	it particula	ars of rockf	ll material						
S2_6190	Engr review and approval - particulars of rockfill material	24d	17-Feb-12	16-Mar-12	7d						■ Eng	review a	ind approva	ıl - particu	ars of ro	ckfill mat	erial			
S2_6235	Submit particulars of general fill material	24d	12-Mar-12	13-Apr-12	7d						■ Su	bmit parti	culars of ge	neral fill m	naterial					
S2_6195	Engr review and approval - particulars of general fill material	24d	13-Apr-12	12-May-12	7d							ngr revie	w and appr	oval ÷ par	ticulars c	f genera	l fill mat	erial		
S2_6240	Submit Geotechnical Instrumentation Plan - TS2	24d	13-Jul-12	10-Aug-12	23d							■ \$ubm	nit Geotech	nical Instru	ımentatic	n Plan -	TS2			
S2_6180	Engr review and approval - Geotechnical Instrumentation Plan -	24d	10-Aug-12	07-Sep-12	23d							■ Eng	r review ar	id approva	al - Geotr	echnical I	nstrume	entation I	Plan - TS	2
Permits and	TS2 d/or Licenses																+		1	
S2_1111	Apply for DASO Permit- TS2	41d	17-Dec-10	09-Feb-11	272d				Apply fo	or DASO	Permit- TS	2		1						
S2_1116	EPD approval of DASO for TS2	28d	09-Feb-11	09-Mar-11	334d						of DASO fo			1						
	Investigation							+			1 1	 		1			+			
S2_1216	MDN application for marine investigation	12d	23-Sep-11	08-Oct-11	49d					. M□	ON applicat	ion for ma	arine invest	gation						
Remair	ning Work 12 of 53			J					pared by	William C		<u> </u>		i	<u> </u>	<u>, i</u>		<u>, i</u>	<u> i </u>	=
		e Constr	uction Engineering	(Hong Kong) L	.td		Date 15-Feb Date		Revision red		Checke ST	d Approv			100 740 4	a =	a /=	** \ >		
◆ Milesto	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section)	<u> </u>		pdated nber 2010	0)			:SDE:	- V-2-03-199				港)有 EERING (HO		1 -1 - 1 - 1 - 1 - 1 - 1 - 1
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Ac	tivity ID	Activity Name		Original	Start	Finish	Total Float	Quantity P	rod Rate		201	11	2012	2013	2014	2015	2016
				Duration							JAJ	JA	JJ	J A J J A	JJA	JJJA	J
	S2_1221	Issue of MDN for marine	e investigation works	18d	09-Oct-11	26-Oct-11	58d					■ Issue	of MDN for mar	ine investigation w	orks		
	S2_1156	Marine site investigation nos).	- CPPT and vibrocore works at TS2 (21	7d	27-Oct-11	02-Nov-11	58d	21 nos 3	nos/d			I Marin	e site investigat	ion - CPPT and vib	procore works at TS2 (21 nos).	
	S2_1161	Marine site investigation	- submissions of reports	4d	03-Nov-11	06-Nov-11	58d					I Marin	e site investigat	ion - submissions o	of reports		
ı	Dredging, R	Rockfill and Seawall Bloo	ck														
П	S2_1101	MDN application for dre	dging works TS2	12d	23-Dec-11	10-Jan-12	8d					• м	DN application	for dredging works	sTS2		
I	S2_1106	Issue of MDN for dredgi	ing works	18d	10-Jan-12	28-Jan-12	9d					I	ssue of MDN fo	r dredging works			
ı	S2_5975	Install silt curtain		2d	26-Jan-12	28-Jan-12	9d					1 1	nstall silt curtain				
П	S2_3600	TS2 - south side, dredge	e to remove all marine mud(advance works)	40d	28-Jan-12	08-Mar-12	9d	71,065 m3 1	,800/d			-	TS2 - south si	de, dredge to rem	ove all marine mud(ad	vance works)	
ı	S2_3615	TS2 - south side, place s	seawall block to +4, incl survey check	17d	05-Feb-12	22-Feb-12	54d	896 nos 5	0/d				TS2 - south sic	de, place seawall b	lock to +4, incl survey o	heck	
П	S2_3760	TS2 - remaining areas, sounding to determine d	dredge to remove all marine mud(incl. echo depth)	21d	08-Mar-12	29-Mar-12	9d	37,507 m3 1	800/d				TS2 - remain	ning areas, dredge	to remove all marine r	nud(incl. echo so	ounding to d
	S2_3605	TS2 - south side, place i seabed	rockfill underneath temporary seawall below	13d	16-Mar-12	29-Mar-12	9d	25,505 m3 2	000/d				TS2 - south	side, place rockfill u	underneath temporary	seawall below se	eabed
	S2_3770	TS2 - remaining areas, below sea bed	place rockfill underneath temporary seawall	9d	29-Mar-12	07-Apr-12	9d	15,695 m3 2	000/d				TS2 - remai	ning areas, place r	ockfill underneath temp	porary seawall be	elow sea be
	S2_3780	TS2 - remaining areas,	place seawall blocks to +4, incl survey check	34d	07-Apr-12	12-May-12	9d	1,701 nos 5	0/d				TS2 - rem	aining areas, place	e seawall blocks to +4,	ind survey check	
П	General Fill	Works															
ı	S2_3790	General fill to +4 within t	he seawall	55d	12-May-12	06-Jul-12	9d	166,923 m3 3	000/d				Genera	al fill to +4 within th	e seawall		
П	TS2 - Diaph	ragm Wall															
ı	Submission	n Deadline															
ı	S2_6635	Submit Diaphragm Wall	Trench Stability and Guide Wall Design	24d	05-Apr-12	08-May-12	25d						Submit Dia	aphragm Wall Trer	nch Stability and Guide	Wall Design	
	S2_6605	Engineers review and a and Guide Wall Design	pproval -Diaphragm Wall Trench Stability	48d	08-May-12	06-Jul-12	25d						Engine	ers review and app	proval -Diaphragm Wa	ll Trench Stability	y and Guide
ı	S2_6640	Submit MS for D Wall si	te investigation	24d	08-May-12	06-Jun-12	8d						Submit N	/IS for D Wall site i	nvestigation		
П	S2_6645	Submit MS & particulars	s of soil pretreatment prior to D Wall	24d	08-May-12	06-Jun-12	8d						Submit N	/IS & particulars of	soil pretreatment prior	to D Wall	
ı	S2_6654	Prepare and submit CM TS2	IC model for diaphragm wall construction -	24d	08-May-12	06-Jun-12	7d						■ Prepare	and submit CMC r	model for diaphragm w	all construction -	TS2
Ш	S2_6620	Engineers review and a	pproval - MS for D Wall site investigation	24d	06-Jun-12	06-Jul-12	8d						■ Engine	ers review and app	proval - MS for D Wall	site investigation	
	S2_6630	Engineers review and a pretreatment prior to D	pproval - MS & particulars of soil Wall	24d	06-Jun-12	06-Jul-12	8d						■ Engine	ers review and app	proval - MS & particula	rs of soil pretrea	tment prior t
	S2_6655	Submit MS for diaphrag	m wall construction - TS2	24d	06-Jun-12	06-Jul-12	7d						Submit	MS for diaphragm	n wall construction - TS	2	
	S2_6615	Engineers review and a construction - TS2	pproval - MS for diaphragm wall	24d	06-Jul-12	03-Aug-12	7d						■ Engin	eers review and a	pproval - MS for diaphi	agm wall constr	uction - TS2
П	S2_6660	Submit MS for D Wall pi	ile tests (interface coring/integrity test)	24d	19-Jul-12	16-Aug-12	9d						Subr	mit MS for D Wall p	oile tests (interface cori	ng/integrity test)	
	S2_6625	Engineers review and a coring/integrity test)	pproval - MS for D Wall pile tests (interface	24d	16-Aug-12	13-Sep-12	9d						■ Eng	gineers review and	l approval - MS for D V	Vall pile tests (int	erface corin
	Diaphragm	Wall Construction															
-	Remain	ning Work 1:	3 of 53								Prepared by	William Caluz					
•		Remaining Work	China Stat	a Canatu	tian Fusinaasias	· /!!ann Kann\ !	4.4		Date		Revision		hecked Appro	ved			
4	◆ Milestor	, I	China Sta	e constri	uction Engineering	(Hong Kong) L	.เฉ		15-Feb		-	S ⁻	T KL	nor E	'國建禁工程(基洪)和B	原 公司
		C	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section)			s updated cember 201	0)			INA STATE CONSTRUCTION I		
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
S2_3810	Curtain grout along (soil pre treatment) proposed diaphragm wall	54d	06-Jul-12	29-Aug-12	10d	310 nos	3holes/d/rig, use 2	Curtain grout along (soil pre treatment) proposed diaphragm wall
							rigs	
S2_3830	TS2 - DIAPHRAGM WALL SUMMARY	117d	06-Jul-12	31-Oct-12	11d			TS2 - DIAPHRAĞM WALL SUMMARY
S2_1122	Site investigation for DW & barettes	54d	06-Jul-12	29-Aug-12	10d		3d/no, use 4 SI rigs	Site investigation for DW & barettes
S2_1132	Construct guidewall	21d	06-Jul-12	27-Jul-12	30d		10m/d/crew, use 2 crew	.■ Construct guidewall
S2_1121	Set up bentonite silo/plants and equipments	24d	06-Jul-12	03-Aug-12	7d			Set up bentonite silo/plants and equipments
S2_1137	Construct diaphragm wall	71d	03-Aug-12	13-Oct-12	8d		3 days / no, use 3 rigs	Construct diaphragm wall
S2_1157	Diaphragm Wall & Barette pile tests (interface coring & integrity test)	48d	13-Sep-12	31-Oct-12	11d			Diaphragm Wall & Barette pile tests (interface coring & integrity test)
S2_1142	Construct barette piles	12d	13-Oct-12	25-Oct-12	11d		3 days / no, use 3 rigs	■ Construct barette piles
TS2 - ELS W	/orks							
Submission	Deadline							
S2_6600	Submit design for dewatering system	24d	05-Apr-12	08-May-12	51d			Submit design for dewatering system
S2_6544	Prepare and submit CMC model for ELS at TS2	24d	13-Apr-12	11-May-12	7d			■ Prepare and submit CMC model for ELS at TS2
S2_6650	Engineers review and approval - design for dewatering system	48d	08-May-12	06-Jul-12	51d			Engineers review and approval - design for dewatering system
S2_6530	Submit ELS design TS2 (4 month for GEO comments&resolution)	24d	12-May-12	09-Jun-12	7d			■ Submit ELS design TS2 (4 month for GEO comments&resolution)
S2_6545	Submit MS for ELS at TS2 (4 month for GEO comments&resolution)	24d	12-May-12	09-Jun-12	7d			Submit MS for ELS at T\$2 (4 month for GEO comments&resolution)
S2_6532	Engineers review and approval - ELS design TS2	24d	11-Jun-12	10-Jul-12	7d			■ Engineers review and approval - ELS design TS2
S2_6547	Engineers review and approval - MS for ELS at TS2	24d	11-Jun-12	10-Jul-12	7d			■ Engineers review and approval - MS for ELS at TS2
S2_6500	GEO review and approval - ELS design TS2 (4 months for GEO comments&resolution)	96d	11-Jul-12	02-Nov-12	7d			GEO review and approval - ELS design TS2 (4 months for GEO com
S2_6505	GEO review and approval - MS for ELS at TS2 (4 month for GEO comments&resolution)	96d	11-Jul-12	02-Nov-12	7d			GEO review and approval - MS for ELS at TS2 (4 month for GEO co
S2_6535	Submit instrumentation particulars (inclinometer/ strain gauges)	24d	13-Jul-12	10-Aug-12	23d			\$ubmit instrumentation particulars (inclinometer/ strain gauges)
S2_6540	Submit MS for instrumentation	24d	13-Jul-12	10-Aug-12	23d			■ Submit MS for instrumentation
S2_6520	Engineers review and approval - instrumentation particulars (inclinometer/ strain gauges)	24d	10-Aug-12	07-Sep-12	23d			Engineers review and approval - instrumentation particulars (inclinometer
S2_6525	Engineers review and approval - MS for instrumentation	24d	10-Aug-12	07-Sep-12	23d			Engineers review and approval - M\$ for instrumentation
S2_6550	Submit welding procedures & welders test ceritifcates for ELS (welding)	24d	07-Sep-12	06-Oct-12	8d			Submit welding procedures & welders test ceritificates for ELS (welding
S2_6555	Submit particulars of ELS materials (structural steel)	24d	07-Sep-12	06-Oct-12	8d			Submit particulars of ELS materials (structural steel)
S2_6510	Engineers review and approval - particulars of ELS materials (structural steel)	24d	08-Oct-12	05-Nov-12	8d			■ Engineers review and approval - particulars of ELS materials (structu
S2_6515	Engineers review and approval - welding procedures & welders test ceritifcates for ELS (welding)	24d	08-Oct-12	05-Nov-12	8d			■ Engineers review and approval - welding procedures & welders test of
S2_6610	Submit pumping test report	1d	02-Nov-12	02-Nov-12	7d			I Submit pumping test report
Excavation a	and Lateral Support Works							
Pemain	ning Work 14 of 53							Prepared by William Caluza
	Romaining Work						Date	Revision Checked Approved
◆ Milestor	Cnina Stat	te Constri	uction Engineering	(Hong Kong) L	.td		15-Feb Date	
	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	\ 	pgress updated 中国建築工程(香港)有限公司 CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name		Original	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
62 1117	Install dougtoring walls and piggorestors	for nump toot	Duration	06 hd 42	22 Aug 12	604			
S2_1147	Install dewatering wells and piezometers	ioi puilip (est	48d	06-Jul-12	23-Aug-12	60d			Install dewatering wells and piezometers for pump test
S2_2030	Install inclinometers inside D Wall		36d	07-Sep-12	13-Oct-12	29d			Install inclinometers inside D Wall
S2_1149	Carry out pump test		18d	15-Oct-12	01-Nov-12	8d			■ Carry out pump test
S2_1138	TS2 ELS SUMMARY		128d	03-Nov-12	10-Mar-13	9d			TS2 ELS SUMMARY
S2_2035	1st Layer - Soft Excavation		7d	03-Nov-12	09-Nov-12	9d	13,600 m3	2000/d	■ 1st Layer - Soft Excavation
S2_2040	1st Layer - install lateral supports		18d	06-Nov-12	23-Nov-12	9d			■ 1st Layer - install lateral supports
S2_2045	Install vibrating wire strain gauge		6d	24-Nov-12	29-Nov-12	9d			I Install vibrating wire strain gauge
S2_2050	2nd Layer - Soft Excavation		11d	30-Nov-12	10-Dec-12	9d	20,400 m3	2000/d	■ 2nd Layer - Soft Excavation
S2_2055	2nd Layer - install lateral supports		18d	03-Dec-12	20-Dec-12	9d			■ 2nd Layer - install lateral supports
S2_2060	3rd Layer - Soft Excavation		11d	19-Dec-12	29-Dec-12	9d	20,400 m3	2000/d	■ 3rd Layer - Soft Excavation
S2_2065	3rd Layer -install lateral supports		18d	22-Dec-12	08-Jan-13	9d			■ 3rd Layer -install lateral supports
S2_2070	4th Layer - Soft Excavation		12d	07-Jan-13	18-Jan-13	9d	21,600 m3	1800/d	■ 4th Layer - Soft Excavation
S2_2075	4th Layer - install lateral supports		18d	10-Jan-13	27-Jan-13	9d			■ 4th Layer - install lateral supports
S2_2080	5th Layer - Soft Excavation		12d	26-Jan-13	06-Feb-13	9d	21,600 m3	1800/d	■ 5th Layer - Soft Excavation
S2_2085	5th Layer - install lateral supports		18d	29-Jan-13	15-Feb-13	9d			■ 5th Layer - install lateral supports
S2_2090	6th Layer - Soft Excavation		7d	14-Feb-13	20-Feb-13	9d	10,500m3	1,500/d	■ 6th Layer - Soft Excavation
S2_2095	6th Layer - install lateral supports		18d	17-Feb-13	06-Mar-13	9d			■ 6th Layer - install lateral supports
S2_2100	7th Layer - Excavation to formation of C	CT base slab	6d	05-Mar-13	10-Mar-13	9d	9,000 m3	1,500/d	■ 7th Layer - Excavation to formation of CCT base slab
TS2 - CCT R	C Structure								
Submission	Deadline								
S2_6710	Submit formwork and falsework design f	or CCT - TS2	24d	10-Dec-12	09-Jan-13	8d			■ Submit formwork and falsework design for CCT - TS2
S2_6700	Engineers review and approval - formwo	ork and falsework design for	48d	10-Jan-13	09-Mar-13	8d			Engineers review and approval - formwork and falsework desi
S2_6714	Prepare and submit CMC model for CC	T-TS2 construction	24d	10-Jan-13	06-Feb-13	8d			■ Prepare and submit CMC model for CCT-TS2 construction
S2_6715	Submit MS for CCT-TS2 construction		24d	07-Feb-13	09-Mar-13	8d			Submit MS for CCT-TS2 construction
S2_6705	Engineers review and approval -MS for	CCT-TS2 construction	24d	28-Jan-16	24-Feb-16	0d			
CCT RC Str	ucture Works								
S3_3880	TS2 - CCT SUMMARY		153d	11-Mar-13	10-Aug-13	10d			TS2 - CCT SUMMARY
S2_2200	TS2 - base slab (32 bays)		80d	11-Mar-13	30-May-13	9d	32 bays	5d/ bay	TS2 - base slab (32 bays)
S2_2205	TS2 - wall and roof slab (bays)		128d	29-Mar-13	04-Aug-13	9d	32 bays	8d/bay	TS2 - wall and roof slab (bays)
	ing Work 15 of 53							<u> </u>	Prepared by William Caluza
	ing Work Remaining Work	Ohina Ota	to Compte	otion Englished	и (Цари Иста) !	4.4		Date	Revision Checked Approved
♦ ♦ Milestor	·	China Stat	e Constru	ıction Engineerinç	у (Hong Kong) L	.τα		15-Feb.	b Date prepared ST KL 中國建築工程(香港)有限公司
	Contract No.	HY/2009/15 - Central V	Van Chai I	By Pass - Tunnel (Causeway Bay	Typhoon S	helter Section	on)	(progress updated to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name		Original	Start	Finish	Total Float	Quantity	Prod Rate		201	1	2012		2013		2014		2015	2016
			Duration						$-\parallel$	JAJ	J	JJ	J	4 1114	J	JJA	J	JJA	J
S2_2210	screeding)	roofing on top of completed CCT box (incl.	48d	24-Jun-13	10-Aug-13	9d										rnal waterpr			
S2_2215	TS2- backfilling above	CCT up to sea bed M	54d	29-Jun-13	21-Aug-13	9d	16,380m3	3000m3/day							ΓS2- back	filling above	CCT up to	sea bed	M
TS2 - Remo	val of Temp. Reclama	ation	,															1	
Submission	n Deadline																	1	
S2_6818	Prepare and submit Cl	MC model for removal of temp reclamation	24d	03-Apr-13	02-May-13	7d								■ Prepar	e and sub	omit CMC in	nodel for re	emoval of	temp recla
S2_6815	Submit design of bulkh	ead at TZ2	24d	05-Apr-13	03-May-13	65d								■ Submit	design of	f bulkhead a	at TZ2		
S2_6820	Submit MS for remova	of temp reclamation and TZ2 construction	24d	03-May-13	31-May-13	7d								Subn	nit MS for	removal of	emp reclai	mation ar	id TZ2 con
S2_6800	Engineers review and	approval - design of bulkhead at TZ2	48d	04-May-13	02-Jul-13	65d								Eng	jineers re	view and ap	proval - de	sign of bu	ılkhead at
S2_6805	Engineers review and reclamation and TZ2 of	approval - MS for removal of temp	24d	01-Jun-13	29-Jun-13	7d								■ Eng	jineers re	view and ap	proval - M	S for rem	oval of tem
S2_6825	Submit MS for remova	l of D Wall	24d	24-Jun-13	22-Jul-13	8d								■ St	ıbmit MS	for removal	of D Wall	 	
S2_6810	Engineers review and	approval - MS for removal of D Wall	24d	23-Jul-13	19-Aug-13	8d									Engineers	review and	approval -	MS for re	emoval of D
Removal of	Temp. Reclamation							1					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				1	1	
S2_6145	DURATION OF TEMP	P. RECLAMATION TS2 (596D)	596d	05-Feb-12	23-Sep-13	10d									DURAT	ON OF TE	MP. RECL	AMATION	TS2 (596
S2_6141	Remove ELS inside co	fferdam	54d	01-Jul-13	23-Aug-13	9d	8 layers	6d/layer							Remove E	LS inside o	offerdam	1	
S2_3900	TS2 -REMOVAL OF T	EMP. RECLAMATION SUMMARY	85d	01-Jul-13	23-Sep-13	10d									TS2 -RE	MOVAL OF	TEMP. R	ECLAMA	TION SUM
S2_6143	Remove General Fill		20d	02-Jul-13	21-Jul-13	33d	58,000 m3	3000/d						■ R	emove Ge	eneral Fill			
S2_2315	Remove seawall block		24d	03-Jul-13	26-Jul-13	33d	1505 nos	64/d						■ R	emove se	awall block			
S2_2320	Form seawall block for	TZ2	8d	03-Jul-13	10-Jul-13	76d	400 nos	50/d						I Fo	rm seawa	all block for	ΓZ2		
S2_2325	General fill for TZ2		4d	10-Jul-13	13-Jul-13	76d	4,440 m3	1,500/d						l Ge	neral fill fo	r TZ2			
S2_2330	Saw cut diaphragm wa	all (nos)	30d	20-Aug-13	18-Sep-13	9d	59 nos	2d/no/rig, use rigs	4						Saw cut	diaphragm	wall (nos)		
S2_2335	Reinstate breakwater/	seawall	24d	20-Aug-13	12-Sep-13	70d									Reinstate	e breakwate	r/ seawall		
S2_2340	Reinstate seabed		12d	12-Sep-13	23-Sep-13*	9d									Reinstat	e seabed			
TS2 - OHVD	Slab and Cable Trou	gh						<u>'</u>											
OHVD Slab	and Cable Trough Con	struction											1					1	
S3_5080	TS2 - OHVD slab (acc 6&22)	ess through temp. opening at CCT in Portion	150d	05-Aug-13	01-Jan-14	9d	284 panels	7 panels/d							TS	32 - OHVD s	lab (acces	s through	temp. ope
S3_6210	TS2 - cable trough (ac Portion 6&22)	ccess through temp. opening at CCT in	150d	05-Aug-13	01-Jan-14	9d									TS	32 - cable tro	ough (acce	ss throug	h temp. op
TS2 Key Da	ites																		
S2_3935	Completion of Section	2	0d		21-Nov-13*	0d									◆ Com	pletion of Se	ection 2	! ! ! !	
Works in 1	ΓS4 Area (Portion	14A, 14B, 15, 23)																! ! !	
Remain	ning Work	16 of 53								Prepared by	William Cal						<u> </u>	·	
	Remaining Work	China Sta	to Constr	uction Engineering	, (Hong Kong) I	4 d		Date		Revision		Checked A							
◆ ◆ Milestor	ne	China Sta	ie constr	uction Engineering	, (Hong Kong) L	-tu		15-Feb	<u> </u>	epared ss updated		ST K	L	DDC F	で国連	建架工 和	[(春港	()有所	1公司
		Contract No. HY/2009/15 - Central \	Wan Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Sectio	n)		ecember 201	0)					CONSTRUCTIO			
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		2011		2012	2013	2014	4	2015	2016
TC4 Dormit	ts and/or Licenses		Duration									4	14 144	111111111111111111111111111111111111111		11111111	
134 - Perilli							_										
S2_5935	Apply for DASO Pern	mit for Type 3	24d	12-Nov-10 A	19-Nov-10 A				Ar	oply for DASC	Permit for	Type 3					
S2_5942	Field Trials		24d	17-Dec-10	17-Jan-11	8d			1	Field Trials							
S2_5945	EPD approval of DAS	SO Permit for type 3	24d	17-Dec-10	17-Jan-11	8d				EPD approv	al of DASO	Permit for typ	ne 3				
TS4 - Initial \	Works																
CD_5655	Site Possession - Por	rtion XXIII (23), Day 0	0d	27-Sep-10 A					Site F	Possession - F	ortion XXIII	(23), Day 0					
CD_5600	Site Possession - Por	rtion XIVA (14A), Day 0	0d	27-Sep-10 A					Site F	Possession - F	Portion XIVA	A (14A), Day 0					
CD_5605	Site Possession - Por	rtion XIVB (14B), Day 0	0d	27-Sep-10 A					Site F	Possession - F	Portion XIVE	3 (14B), Day 0					
S2_7005	Initial hydrographic su	urvey (echo sounding)	6d	27-Sep-10 A	04-Oct-10 A				In <mark>i</mark> tia	l hydrographi	survey (ed	ho spunding)					
S2_7010	Detailed survey and r	record photo- existing seawall	6d	05-Oct-10 A	30-Oct-10 A				Def	tailed survey a	and record	photo- existing	seawall				
S2_7015	CEDD Agreement - I seawall	Detailed survey and record photo- existing	6d	17-Dec-10	23-Dec-10	837d				CEDD Agree	ment - Deta	illed survey an	record photo	p- existing seawall			
S2_7055	Submit reinstatement works)	t plan prior to demolition (45d prior to start of	6d	17-Dec-10	23-Dec-10	837d				Submit reinst	atement pla	n prior to dem	olition (45d pri	or to start of works)			
TS4 - Marine	Site Investigation																
S2_7000	MDN application for r	marine investigation	12d	22-Nov-10 A	25-Nov-10 A				М	IDN applicatio	n for marine	e investigation					
S2_7020	Issue of MDN for ma	rine investigation works	18d	26-Nov-10 A	17-Dec-10	22d			_ '	Issue of MDN	for marine	investigation v	vorks				
S2_7025	Marine site investigati	ion - CPPT and vibrocore works at TS4	10d	17-Dec-10	30-Dec-10	22d				Marine site in	vestigation	- CPPT and v	ibrocore works	at TS4			
S2_7030	Marine site investigati	ion - submissions of reports	4d	31-Dec-10	05-Jan-11	40d				Marine site ir	vestigation	- submissions	of reports				
TS4 - Re-pro	vision of Floating P	ontoon				· · · · · · · · · · · · · · · · · · ·	,										
Submission	Deadline																
PG_1180	Method Statement - I preparation and subn	Re-provision of Temp. Floating Pontoon: mission	24d	09-Oct-10 A	12-Nov-10 A				Me	ethod Stateme	nt - Re-pro	vision of Tem	p Floating Por	ntoon: preparation a	nd submiss	ion	
S2_7035	Prepare and Submit	MS for construction of floating pontoon	24d	13-Nov-10 A	20-Nov-10 A				Pr	repare and Su	bmit MS fo	r construction	of floating pon	toon			
S2_7050	Engr Review and App	proval- design of floating pontoon	24d	20-Nov-10 A	26-Nov-10 A				E	ngr Review a	nd Approval	- design of flo	ating pontoon				
S2_7045	Engr review and app	roval MS for construction of floating pontoon	24d	21-Nov-10 A	08-Jan-11	9d			 	Engr review	and approv	al MS for con	struction of floa	ating pontoon			
S2_7040	Prepare and and sub	omit design of floating pontoon	18d	17-Dec-10	10-Jan-11	8d			│	Prepare and	and submit	design of floa	ating pontoon				
Re-Provisio	n of Floating Pontoo	n															
S2_5930	MDN Application for f	for dredging works	24d	23-Oct-10 A	26-Oct-10 A				MD	N Application	for for dred	lging works					
PG_1190	Method Statement - I Engineers review and	Re-provision of Temp. Floating Pontoon:	18d	13-Nov-10 A	27-Nov-10 A				M	Method Statem	nent - Re-pr	ovision of Ten	np. Floating Po	ontpon: Engineers re	eview and a	pproval	
S2_5940	Issue of MDN		14d	27-Nov-10 A	10-Dec-10 A				- Is	ssue of MDN							
S2_5950	Install silt curtain		2d	13-Dec-10 A	13-Dec-10 A				_ I	nstall silt curta	in						
Remain	ing Work	17 of 53							Pre	epared by Wil	liam Caluza	1 1		1 1 1	1		
	Remaining Work	China Sta	to Conotro	etion Engineering	· /Hana Kana) I	4.4		Date		Revision		ecked Appro	oved				
◆ ◆ Mileston	· ·	Cnina Sta	ile Constit	uction Engineering	(Hong Kong) L	.tu		15-Feb Da	ate prepa rogress u		ST	KL	nnr	中國建築之	に程(華	港)看1	夏公司
		Contract No. HY/2009/15 - Central V	Wan Chai I	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section)	<u> </u>		mber 2010)			cSDEc.	CHINA STATE CONSTRU			
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	rod Rate	2011 2012 2013 2014 2015 2016
CO 4400	Due de in a constant la	the releasing province and rest to		42 Dec 40 A	47 Dec 40	204			
S2_4100	determine depth)	etty relocation area(incl. echo sounding to	3d	13-Dec-10 A	17-Dec-10	26d			Dredging works at Jetty relocation area(incl. echo sounding to determine depth)
S2_4030	Dredging works at podetermine depth)	ontoon relocation area(incl. echo sounding to	3d	13-Dec-10 A	17-Dec-10	26d			Dredging works at pontoon relocation area(incl. echo sounding to determine depth)
S2_4050	Relocation of existing	wood pontoon	6d	11-Jan-11	17-Jan-11	8d			Relocation of existing wood pontoon
S2_4065	Relocation of existing	concrete pontoon CFP-1 to 1a	8d	26-Feb-11*	07-Mar-11	46d			Relocation of existing concrete pontoon CFP-1 to 1a
S2_10155	Remove floating pont	toon WFP-1a, 1b & 2a	3d	08-Mar-11	10-Mar-11	46d			I Remove floating pontoon WFP-1a, 1b & 2a
S2_10160	Construct new concre	ete floating pontoon NFP-1, 2	17d	11-Mar-11	30-Mar-11*	46d			■ Construct new concrete floating pontoon NFP-1, 2
TS4 - Re-pro	vision of Temporar	y Jetty							
Submission	Deadline								
PG_1160	Method Statement - I submission	Re-provision of Temp. Jetty: preparation and	24d	17-Dec-10	17-Jan-11	116d			Method Statement - Re-provision of Temp. Jetty: preparation and submission
S2_7065	Prepare and Submit	design particulars of crawler crane	24d	13-Jan-11	12-Feb-11	36d			Prepare and Submit design particulars of crawler crane
PG_1170	Method Statement - I and approval	Re-provision of Temp. Jetty: Engineers review	18d	18-Jan-11	10-Feb-11	116d			■ Method Statement - Re-provision of Temp. Jetty: Engineers review and approval
S2_7080	Engr review and app	roval - crawler crane as alternative to jetty	24d	14-Feb-11	12-Mar-11	36d			■ Engr review and approval - crawler crane as alternative to jetty
S2_7060	Prepare and Submit	MS for construction of temp jetty	24d	25-Mar-11	26-Apr-11	32d			■ Prepare and Submit MS for construction of temp jetty
S2_7070	Prepare and and sub	omit design of temporary jetty	18d	01-Apr-11	26-Apr-11	32d			Prepare and and submit design of temporary jetty
S2_7075	Engr review and app corner)	roval MS for construction of temp jetty (NW	24d	27-Apr-11	26-May-11	32d			■ Engr review and approval MS for construction of temp jetty (NW corner)
S2_7085	Engr Review and App	proval- design of temp jetty	24d	27-Apr-11	26-May-11	32d			■ Engr Review and Approval- design of temp jetty
Re-provisior	n of Temporary Jetty								
S2_4155	Provide Crawler Cra	ne (5.5 months)	157d	06-Mar-11	09-Aug-11	21d			Provide Crawler Crane (5.5 months)
S2_4130	Temporary jetty at No	W corner of TS4 (new design)- install seawall completed	0d		26-May-11	32d			◆ Temporary jetty at NW corner of TS4 (new design)- install seawall block to form the pit completed
S2_4135		W corner of TS4 (new design)- mass concrete	12d	27-May-11	10-Jun-11	32d			■ Temporary jetty at NW corner of T\$4 (new design)- mass concrete on top of seawall block
S2_4145	· ·	W corner of TS4 (new design)- prebored	18d	28-Jun-11	19-Jul-11	18d			■ Temporary jetty at NW corner of TS4 (new design)- prebored h-piles for foundation
S2_4147	Temporary jetty at N	W corner of TS4 (new design)- install beams	12d	20-Jul-11	02-Aug-11	18d			■ Temporary jetty at NW corner of TS4 (new design)- install beams
S2_4158	Temporary jetty at No for travel hoist	W corner of TS4 (new design)- form access	6d	03-Aug-11	09-Aug-11	18d			■ Temporary jetty at NW corner of TS4 (new design)- form access for travel hoist
S2_4162	Temporary jetty at No (demobilize crawler of	W corner of TS4 (new design)- ready for use rane)	0d	10-Aug-11	10-Aug-11*	18d			I Temporary jetty at NW corner of TS4 (new design)- ready for use (demobilize crawler crane)
TS4 - Tempo	rary Reclamation								
Submission	Deadline								
S2_7125	Prepare and and sub	omit Silt curtain proposal for TS4 works	18d	01-Nov-10 A	08-Nov-10 A				Prepare and and submit Sitt curtain proposal for TS4 works
S2_7110	Prepare and Submit	Dredging plan for TS4	24d	16-Nov-10 A	24-Nov-10 A				Prepare and Submit Dredging plan for TS4
S2_7145	Engr Review and App	proval Silt curtain proposal for TS4 works	24d	20-Nov-10 A	23-Dec-10	26d			I Engr Review and Approval Silt curtain proposal for TS4 works
Remaini	ing Work	18 of 53						<u> </u>	Prepared by William Caluza
	Remaining Work	China Stat	e Constr	uction Engineering	ı (Hona Kona) I	td		Date 15 Feb Dec	Revision Checked Approved
◆ ◆ Mileston	e							15-Feb Da	ate prepared ST KL rogress updated 中国建築工程(春港)有限公司 CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
		Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section)	- "	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
CO 7120	Four review and approval MC for dradging works at TCA	Duration	25 Nov 10 A	06 Dec 10 A				
S2_7130	Engr review and approval MS for dredging works at TS4	24d	25-Nov-10 A	06-Dec-10 A				Engr review and approval MS for dredging works at TS4
S2_7135	Engr review and approval - Dredging plan for TS4	24d	25-Nov-10 A	06-Dec-10 A				Engr review and approval - Dredging plan for TS4
S2_7090	Prepare and Submit Seawall block design for TS4	24d	02-Dec-10 A	24-Dec-10	66d			Prepare and Submit Seawall block design for TS4
S2_7105	Prepare and Submit MS for dredging works at TS4	24d	17-Dec-10	17-Jan-11	8d			Prepare and Submit MS for dredging works at TS4
S2_7100	Engr review and approval - Seawall block design for TS4	24d	28-Dec-10	25-Jan-11	66d			Engr review and approval - Seawall block design for TS4
S2_7095	Prepare and Submit CMC model for temporary reclamation - TS4	24d	13-Jan-11	12-Feb-11	5d			Prepare and Submit CMC model for temporary reclamation - TS4
S2_7115	Prepare and Submit MS for temporary reclamation (seawall block & general fill) - TS4	24d	14-Feb-11	12-Mar-11	5d			■ Prepare and Submit MS for temporary reclamation (seawall block & general fill) - TS4
S2_7140	Engr review and approval - MS for temporary reclamation (seawall block & general fill) - TS4	24d	14-Mar-11	11-Apr-11	5d			Engr review and approval - MS for temporary reclamation (seawall block & general fill) - TS4
S2_7120	Submit Geotechnical Instrumentation Plan - TS4	24d	13-Aug-11	09-Sep-11	4d			■ Submit Geotechnical Instrumentation Plan - T\$4
S2_7150	Engr review and approval - Geotechnical Instrumentation Plan - TS4	24d	10-Sep-11	11-Oct-11	4d			Engr review and approval - Geotechnical Instrumentation Plan - TS4
Temporary I	Reclamation	<u> </u>						
S2_3955	TS4- dredge South side Type 3 sediments (Area 1)	26d	21-Jan-11*	18-Feb-11	6d	2,800 m3	600m3/trip @	TS4-dredge South side Type 3 sediments (Area 1)
S2_3970	TS4 - dredge South side, Type 1 & Type 2 sediments (Area 1&2)	14d	19-Feb-11	04-Mar-11	6d	14,778 m3	4d/trip 1,850 m3/d	■ TS4 - dredge South side, Type 1 & Type 2 sediments (Area 1&2)
S2_3960	TS4 - place rockfill South side (Area 1),underneath temporary	1d	05-Mar-11	05-Mar-11	6d	330 m3	1,500 m3/d	I TS4 - place rockfill South side (Area 1), underneath temporary seawall below seabed
S2_3972	seawall below seabed TS4 - dredge East side, Type 1 (Area 3)	8d	05-Mar-11	12-Mar-11	6d	14,880 m3	1,850 m3/d	■ TS4 - dredge East side, Type 1 (Area 3)
S2_3962	TS4 - place levelling stone South side (Area 1 & 2)	14d	13-Mar-11	26-Mar-11	6d		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	TS4 - place levelling stome South side (Area 1 & 2)
S2_4150	Demolish existing jetty	6d	13-Mar-11	18-Mar-11	47d			■ Demolish existing jetty
	<i>0, 1</i>							
S2_3967	TS4 - place rockfill at East side	2d	27-Mar-11	28-Mar-11	6d	1,600m3	1,500 m3/d	t TS4 - place rockfill at East side
S26125	TS4 - Place levelling stone at East side	14d	29-Mar-11	11-Apr-11	6d			T\$4 - Place levelling stone at East side
S2_3965	TS4 - place seawall block to +4 at South side	11d	12-Apr-11	22-Apr-11	6d	700	50 nos/d	TS4 - place seawall block to +4 at South side
S26130	TS4 - place seawall block to +4 at East side, leave opening at north east corner to allow barge for filling inside	6d	23-Apr-11	28-Apr-11	6d	393	50 nos/d	■ TS4 - place seawall block to +4 at East side, leave opening at north east corner to allow barge for filling
S2_3973	TS4 - dredge North side(Area 4) and remaining areas (middle area)	4d	29-Apr-11	03-May-11	6d	7,390 m3	1,850 m3/d	I TS4 - dredge North side(Area 4) and remaining areas (middle area)
S2_3980	TS4 - place rockfill North side underneath temporary seawall below seabed	2d	03-May-11	04-May-11	6d	121 m3	1,500 m3/d	I TS4 - place rockfill North side underneath temporary seawall below seabed
S2_3982	TS4 - place levelling stone North side	14d	05-May-11	18-May-11	6d			■ TS4 - place levelling stone North side
S2_3990	TS4 - place seawall blocks to +4 North side but leave temporary opening at NE corner to allow barge for filling	8d	19-May-11	26-May-11	6d	459	50 nos/d	TS4 - place seawall blocks to +4 North side but leave temporary opening at NE corner to allow barg
S26120	TS4 - General fill to +2 within the seawall	17d	27-May-11	12-Jun-11	6d	51,500	3,000 m3/d	■ TS4 - General fill to +2 within the seawall
S26115	TS4 - place seawall blocks to +4 at the temporary opening at NE corner	4d	13-Jun-11	16-Jun-11	6d	200	50 nos/d	I TS4 - place seawall blocks to +4 at the temporary opening at NE corner
S2_4000	TS4 - Remaining General fill to +4 within the seawall	11d	17-Jun-11	27-Jun-11	6d	33,000	3,000 m3/d	TS4 - Remaining General fill to +4 within the seawall
TS4 - Diaphi	ragm Wall							
Pomoin	ling Work 19 of 53							Prepared by William Caluza
	Romaining Work						Date	Revision Checked Approved
◆ Milestor	cnina Sta	ite Constru	uction Engineering	g (Hong Kong) L	td		15-Feb	Date prepared ST KL 中央連載工程(基準)多限公司
· · · · · · · · · · · · · · · · · · ·	Contract No. HY/2009/15 - Central	Wan Chai I	By Pass - Tunnel (Causeway Bav	Typhoon S	Shelter Section	on) —	(progress updated 中國建築工程(香港)有限公司 to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
							´	to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2 ⁰¹⁶
Submi	ssion Deadline								
S2_71	90 Submit ELS design T	S4 (4 month for GEO comments&resolution)	12d	21-Feb-11	05-Mar-11	4d			■ Submit ELS design TS4 (4 month for GEO comments&resolution)
S2_71	92 Engineers review an	d approval - ELS design TS4	18d	07-Mar-11	26-Mar-11	4d			Engineers review and approval - ELS design TS4
S2_72	00 GEO review and app	oroval - ELS design TS4 (4 months for GEO	96d	28-Mar-11	26-Jul-11	4d			GEO review and approval - ELS design TS4 (4 months for GEO comments&resolution)
S2_71		Vall Trench Stability and Guide Wall Design	24d	04-Apr-11	06-May-11	10d			Submit Diaphragm Wall Trench Stability and Guide Wall Design
S2_71	65 Prepare and submit TS4	CMC model for diaphragm wall construction -	24d	04-Apr-11	06-May-11	10d			Prepare and submit CMC model for diaphragm wall construction - TS4
S2_71	70 Engineers review an and Guide Wall Desi	d approval -Diaphragm Wall Trench Stability	48d	07-May-11	05-Jul-11	10d			Engineers review and approval -Diaphragm Wall Trench Stability and Guide Wall Design
S2_71	75 Submit MS for diaph	ragm wall construction - TS4	24d	07-May-11	04-Jun-11	10d			Submit MS for diaphragm wall construction - TS4
S2_71	80 Engineers review and construction - TS4	d approval - MS for diaphragm wall	24d	07-Jun-11	05-Jul-11	10d			Engineers review and approval - MS for diaphragm wall construction - TS4
Diaphr	agm Wall								
S2_40	20 Curtain grout along p	proposed diaphragm wall	21d	28-Jun-11	22-Jul-11	10d	324 holes	3holes/d/rig, use 2	Curtain grout along proposed diaphragm wall
S2_40	40 DIAPHRAGM WALL	SUMMARY	117d	28-Jun-11	15-Nov-11	10d			DIAPHRAGM WALL SUMMARY
S2_40	22 Install king posts		32d	28-Jun-11	04-Aug-11	95d	16 nos	3nos/week/rig	■ Install king posts
S2_40	33 Site investigation		54d	28-Jun-11	30-Aug-11	4d	54 nos	3d/no/rig, use 3 rigs	Site investigation
S2_40	31 Set up bentonite silo	/plants and equipments	24d	28-Jun-11	26-Jul-11	4d		-	Set up bentonite silo/plants and equipments
S2_40	25 Install guide wall		33d	06-Jul-11	12-Aug-11	10d	324m	10m/d	Install guide walt
S2_40	35 Diaphragm wall cons	struction	81d	27-Jul-11	01-Nov-11	4d	54 panels	6d/panel @ 3d cycle	Diaphragm wall construction
S2_40	37 Install shear pins on	diaphragm wall	82d	16-Aug-11	22-Nov-11	4d	136 nos	5nos/week/rig	Install shear pins on diaphragm wall
S2_40	43 Diaphragm Wall Pile	test	48d	19-Sep-11	15-Nov-11	10d			Diaphragm Walt Pile test
S2_40	46 Carry out contact/fiss	sure grouting	21d	29-Oct-11	22-Nov-11	126d	216 holes	10holes/d	■ Carry out contact/fissure grouting
TS4 - E	LS Works & Soft Excava	ation			'				
Submi	ssion Deadline								
S2_71	85 Prepare and submit	CMC model for ELS at TS4	24d	26-May-11	23-Jun-11	4d			■ Prepare and submit CMC model for ELS at TS4
S2_71	95 Submit MS for ELS comments&resolution	at TS4 (4 month for GEO n)	12d	24-Jun-11	08-Jul-11	4d			Submit MS for ELS at TS4 (4 month for GEO comments&resolution)
S5_71	97 Engineers review and	d approval - MS for ELS at TS4	18d	09-Jul-11	29-Jul-11	4d			■ Engineers review and approval - MS for ELS at TS4
S2_72	05 GEO review and approximents&resolution	oroval - MS for ELS at TS4 (4 month for GEOn)	96d	30-Jul-11	22-Nov-11	4d			GEO review and approval - MS for ELS at TS4 (4 month for GEO comments&resolution)
S2_72		·	24d	06-Aug-11	02-Sep-11	4d			Submit design for dewatering system
S2_72	15 Engineers review and	d approval - design for dewatering system	48d	03-Sep-11	01-Nov-11	4d			Engineers review and approval - design for dewatering system
S2_72	20 Submit pumping test	report	1d	22-Nov-11	22-Nov-11	4d			I Submit pumping test report
R	emaining Work	20 of 53							Prepared by William Caluza
	ritical Remaining Work	China Sta	te Constru	ction Engineering	a (Hona Kona) L	.td		Date 15-Feb Da	Revision Checked Approved te prepared ST KL
◆	ilestone							(pr	ogress updated 中國建築工程(春港)有限公司
		Contract No. HY/2009/15 - Central	Wan Chai E	By Pass - Tunnel	Causeway Bay	Typhoon S	inelter Section	>n\ 	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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ctivity ID	Activity Name	Original	Start	Finish	Total Float	Quantity	Prod Rate	2011	2012	2013	2014	2015	; 2016
		Duration						7 4 774	4 4	1 1 4 1 1 4 1	JJJA	JJJ	4 1 1 4 1
TS4 - ELS W	Vorks & Soft Excavation												
S2_4038	Install dewatering wells and piezometers	48d	28-Jun-11	23-Aug-11	61d			i in	nstall dewatering wells	and piezometers			
S2_4041	Install inclinometers inside D-wall	36d	12-Oct-11	22-Nov-11	4d				■ Install inclinomete	rs inside D-wall			
S2_4045	Carry out pumping tests	18d	02-Nov-11	22-Nov-11	4d				Carry out pumpin	g tests			
S2_4081	1st Layer - Soft Excavation	14d	23-Nov-11	08-Dec-11	4d	15,258m3	2,000m3/d		■ 1st Layer - Soft	Excavation			
S2_4080	TS4- ELS SUMMARY (EXCEPT ROCK EXCAVATION)	154d	23-Nov-11	24-Apr-12	4d				TS4- EL	S SUMMARY (EXCEF	T ROCK EXCAVAT	TON)	
S2_4082	1st Layer - install lateral support	14d	28-Nov-11	13-Dec-11	4d				1st Layer - insta	l lateral support			
S2_4083	Install vibrating wire strain gauge	6d	02-Dec-11	08-Dec-11	4d				I Install vibrating v	vire strain gauge			
S2_4084	2nd Layer - Soft Excavation	14d	09-Dec-11	24-Dec-11	4d	15,258m3	2,000m3/d		2nd Layer - Spf	t Excavation			
S2_4085	2nd Layer - install lateral support	14d	14-Dec-11	31-Dec-11	4d				2nd Layer - ins	all lateral support			
S2_4086	3rd Layer - Soft Excavation	14d	03-Jan-12	18-Jan-12	4d	15,258m3	2,000m3/d		■ 3rd Layer - S	oft Excavation			
S2_4087	3rd Layer - install lateral support	14d	07-Jan-12	26-Jan-12	4d				3rd Layer - in	stall lateral support			
S2_4088	4th Layer - Soft Excavation	14d	27-Jan-12	11-Feb-12	4d	15,258m3	1,800m3/d		4th Layer - S	oft Excavation			
S2_4089	4th Layer - install lateral support	14d	01-Feb-12	16-Feb-12	4d				4th Layer - i	nstall lateral support			
S2_4091	5th Layer - Soft Excavation	14d	17-Feb-12	03-Mar-12	4d	15,258m3	1,800m3/d		■ 5th Layer -	Soft Excavation			
S2_4092	5th Layer - install lateral support	14d	22-Feb-12	08-Mar-12	4d				■ 5th Layer -	install lateral support			
S2_4093	6th Layer - Soft Excavation	14d	09-Mar-12	24-Mar-12	4d	20,343m3	1,500m3/d		■ 6th Layer	- Soft Excavation			
S2_4094	6th Layer - install lateral support	14d	14-Mar-12	29-Mar-12	4d				■ 6th Layer	- install lateral support			
S2_4095	Special ELS (pipe pile)prior to installation of rock anchor at SE corner of TS4	36d	26-Mar-12	11-May-12	57d				Special Special	EL\$ (pipe pile)prior to	installation of rock a	anchor at SE co	ner of TS4
S2_4096	7th Layer - Soft Excavation	14d	30-Mar-12	19-Apr-12	4d	12,714m3	1,500m3/d		■ 7th Laye	- Soft Excavation			
S2_4098	7th Layer - install lateral support	14d	05-Apr-12	24-Apr-12	4d				■ 7th Laye	r - install lateral suppo	t		
TS4 - Rock I	Excavation			·									
S2_4180	Rock excavation west side (area near tunnel portal) (no rock anchor to be installed)	130d	25-Apr-12	27-Sep-12	4d	52,000 m3	400 m3/d			Rock excavation west	side (area near tun	nel portal) (no re	ock anchor to
S2_4185	Install tie back anchor to D- Walls (TS4+ area on east side)	63d	12-May-12	27-Jul-12	57d	63 nos	3nos/week/rig		Inst	all tie back anchor to [)- Walls (TS4+ area	on east side)	
S2_4190	Rock excavation east side (remainder)	65d	28-Sep-12	15-Dec-12	4d	26,000 m3	400 m3/d			Rock excavation	east side (remainde	r)	
TS4 - AS LO	GISTICS AREA FOR MINED TUNNELING WORKS												
S2_4210	DURATION FOR USE OF TS4 AS ACCESS FOR MINED TUNNEL WORKS	208d	01-Jun-12	07-Feb-13	16d					DURATION F	OR USE OF TS4 A	S ACCESS FOR	MINED TUN
S2_4215	Commencement of MT works at SR8	0d	01-Jun-12		21d				◆ Comm	encement of MT work	s at SR8		
S2_4225	Commencement of MT works at E/B	0d	30-Jul-12		22d				◆ Co	mmencement of MT w	orks at E/B		
Remain	ning Work 21 of 53							Prepared by Willia	ım Caluza	1 1 1	<u> </u>	<u> </u>	
	Pomoining Work	to Const	uotion Engineerine	n (Hone Kana) !	4 d		Date	Revision	Checked App	roved			
♦ Milestor	China Sta	ile Constr	uction Engineering	y (mong Kong) L	-iu		15-Feb Date		ST KL	nor sta	國建禁工程	(英漢)为	陶公司
	Contract No. HY/2009/15 - Central	Wan Chai	By Pass - Tunnel (Causewav Bav	Typhoon S	helter Section	· · · · · · · · · · · · · · · · · · ·	gress updated		R M I I M M	A STATE CONSTRUCTION		
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011	2012	2013	2014	2015	2016
S2_4220	Commencement of MT works at W/B	Od	16-Aug-12		22d				□ J J J Comr	nencement of MT works	at W/B	<u> </u>	
		- Ou	10-Aug-12		220				↓ John	Terrocinient of Wir Works	2007.5		
TS4 - CCT I	RC Structure												
Submissio	n Deadline												
S2_7225	Submit formwork and falsework design for CCT - TS4	24d	20-Sep-12	19-Oct-12	4d				■ St	ubmit formwork and false	work design for C	CT - TS4	
S2_7230	Prepare and submit CMC model for CCT-TS4 construction	24d	20-Sep-12	19-Oct-12	4d				□ Pr	epare and submit CMC r	nodel for CCT-T	64 construction	
S2_7235	Engineers review and approval - formwork and falsework design CCT - TS4	for 48d	20-Oct-12	15-Dec-12	4d					Engineers review and a	pproval - formwor	k and falsework	k design fo
S2_7240	Submit MS for CCT-TS4 construction	24d	20-Oct-12	17-Nov-12	4d					Submit MS for CCT-TS4	construction		
S2_7245	Engineers review and approval MS for CCT-TS4 construction	24d	19-Nov-12	15-Dec-12	4d					Engineers review and a	pproval MS for Co	CT-TS4 constru	ıction
TS4 - CCT	(Half- East Side)												
S2_4175	TS4 Construct tunnel base slab	20d	17-Dec-12	11-Jan-13	4d	8 bays	5d/bay/formwork	(T\$4 Construct tunnel	pase slab		
S2_4178	TS4 - CCT SUMMARY (EAST SIDE)	65d	17-Dec-12	19-Feb-13	51d					TS4 - CCT SUMMA	RY (EAST SIDE)		
S2_4182	TS4 Construct tunnel wall & roof slab	32d	03-Jan-13	08-Feb-13	4d	8 bays	8d/bay/formwork	(TS4 Construct tunne	wall & roof slab		
S2_4187	TS4 fill to underside of SCL tunnel	6d	09-Feb-13	19-Feb-13	40d					TS4 fill to underside	of SCL tunnel		
TS4 - CCT	(Remaining Half - near Mined Tunnel)			<u> </u>								1 1 1	
S2_4205	TS4 Construct tunnel base slab	23d	12-Jan-13	07-Feb-13	16d	9 bays	5d/bay/formwork	(TS4 Construct tunne	l base slab		
S2_4200	TS4 - CCT SUMMARY (WEST SIDE)	85d	12-Jan-13	06-Apr-13	5d					TS4 - CCT SUMI	MARY (WEST SI	DE)	
S2_4212	TS4 Construct tunnel wall & roof slab	36d	09-Feb-13	26-Mar-13	4d	9 bays	8d/bay/formwork	<u> </u>		TS4 Construct tun	nel wall & roof sla	ab	
S2_4217	TS4 fill to underside of SCL tunnel	6d	27-Mar-13	06-Apr-13	4d					TS4 fill to undersi	de of SCL tunnel		
ME1-SCL	Entrusted Works												
Submissio	n Deadline											1 1 1	
S26110	Prepare and submit CMC model for CCT-ME1 construction	24d	06-Nov-12	03-Dec-12	53d			-		Prepare and submit CM0	model for CCT	ME1 construction	on
S26100	Submit formwork and falsework design for CCT - ME1	24d	04-Dec-12	03-Jan-13	53d					Submit formwork and f	alsework design f	or CCT - ME1	
S26065	Engineers review and approval - formwork and falsework design CCT - ME1	for 48d	04-Jan-13	04-Mar-13	53d					Engineers review a	nd approval - for	nwork and false	work desig
S26105	Submit MS for CCT-ME1 construction	24d	04-Jan-13	31-Jan-13	53d					Submit MS for CCT-I	ME1 construction		
S26095	Engineers review and approval MS for CCT-ME1 construction	24d	01-Feb-13	04-Mar-13	53d					■ Engineers review a	nd approval MS fo	or CCT-ME1 cor	nstruction
ME1 - CCT													
CD_5765	Engineer Instruction Section 7A (660d)	Od	18-Jul-12		297d				◆ Engine	er Instruction Section 7A	(660d)		
S7A_3050	Engineer Instruction on ME1 (subject to excision, 660d)	0d	18-Jul-12	18-Jul-12	241d			- 	I Engine	er Instruction on ME1 (su	bject to excision, (660d)	
S7A_3090	ME1- SCL CCT SUMMARY	66d	05-Mar-13	09-May-13	65d					ME1-SCL CCT	SUMMARY		
Dom:	ning Work 22 of 53				1			Prepared by Willia	am Caluza		1 1 1	<u> </u>	
	I Domaining Work	Stata Canata	uotion Engineerine	· /Lana Kana\ I	4 d		Date	Revision	Checked Approv	red			
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	Contract No. HY/2009/15 - Centra	al Wan Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	\ 	o 17 December 2010)			CONSTRUCTION ENC		
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Activity ID		Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 ²⁰¹⁶
074	0055	NAC4 been alab			05 May 40	00 Am 40	504	40 h a ca	5 d /h a a /f a mana a da	
S/A_	3055	ME1 - base slab		25d	05-Mar-13	06-Apr-13	53d	10 bays	5d/bay/formwork	■ MĖ1 - base slab
S7A_3	3060	ME1 - walls and roof	slab	40d	19-Mar-13	09-May-13	53d	10 bays	8d/bay/formwork	ME1 - walls and roof slab
S7A_;	3065	TS4 & ME1 backfilling	above CCT up to seabed level	24d	10-May-13	07-Jun-13	53d			TS4 & ME1 backfilling above CCT up to seabed level
With N	ME1, Re	moval of Temporary	Reclamation							
S2_72	273	Remove ELS layers		54d	10-May-13	15-Jul-13	53d	9 layers	6days/layer	Remove EL\$ layers
S2_72		Remove general fill (b	petween D Wall & seawall block)	7d	13-May-13	21-May-13	89d	21,244	4,000m3/d	Remove general fill (between D Wall & seawall block)
S2_72	280	Remove seawall block	(14d	15-May-13	31-May-13	89d	887 nos.	75nos/d	■ Remove seawall block
S2_72	285	Install seawall block for	or TZ3	8d	15-May-13	24-May-13	92d	493 nos.	64nos/d	■ Install seawall block for TZ3
S2_72		General fill for TZ3		3d	25-May-13	28-May-13	92d		1,500m3/d	I General fill for TZ3
S2_72		Saw cut diaphragm w	rall (non)	36d	16-Jul-13	26-Aug-13	53d		2d/panel/rig, use 3	
			` ,			_		54 prideis	rigs	
S2_73		Reinstate vertical sea	wall	24d	30-Jul-13	26-Aug-13	72d			Reinstate vertical seawall
S2_73	305	Reinstate seabed		22d	15-Aug-13	09-Sep-13	53d			■ Reinstate seabed
S2_73	310	Completion of Section	2 (with ME1 Option)	0d		09-Sep-13	73d			◆ Completion of Section 2 (with ME1 Option)
S7A_3	3110	Completion of Section	7A (ME1)	0d		09-Sep-13	73d			◆ Completion of Section 7A (ME1)
ME4 - /	Additio	nal Temporary Rec	lamation			,		,		
Submi	ission C	Deadline								
S7B_2	2015	Prepare and Submit I	MS for dredging works at ME4	24d	22-Nov-11	19-Dec-11	39d			Prepare and \$ubmit MS for dredging works at ME4
S7B_2	2020	Prepare and Submit [Dredging plan for ME4	24d	22-Nov-11	19-Dec-11	39d			Prepare and Submit Dredging plan for ME4
S7B_2	2035	Prepare and and sub	mit Silt curtain proposal for ME4 works	18d	29-Nov-11	19-Dec-11	39d			Prepare and and submit Silt curtain proposal for ME4 works
S7B_2	2040	Engr review and appr	oval MS for dredging works at ME4	24d	20-Dec-11	19-Jan-12	39d			Engr review and approval MS for dredging works at ME4
S7B_2	2045	Engr review and appr	oval - Dredging plan for ME4	24d	20-Dec-11	19-Jan-12	39d			Engr review and approval - Dredging plan for ME4
S7B_2	2055	Engr Review and App	proval Silt curtain proposal for ME4 works	24d	20-Dec-11	19-Jan-12	39d			Engr Review and Approval Silt curtain proposal for ME4 works
S7B_2	2000	Prepare and Submit S	Seawall block design for ME4	24d	22-Dec-11	21-Jan-12	39d			Prepare and Submit Seawall block design for ME4
S7B_2	2005	Prepare and Submit (CMC model for temporary reclamation - ME4	24d	22-Dec-11	21-Jan-12	39d			Prepare and Submit CMC model for temporary reclamation - ME4
S7B_2	2010	Engr review and appr	oval - Seawall block design for ME4	48d	26-Jan-12	21-Mar-12	39d			Engr review and approval - Seawall block design for ME4
S7B_2	2025	Prepare and Submit I	MS for temporary reclamation (seawall block &	24d	26-Jan-12	22-Feb-12	39d			Prepare and Submit MS for temporary reclamation (seawall block & general fill) - ME
S7B_2	2050	general fill) - ME4 Engr review and appr block & general fill) - I	oval - MS for temporary reclamation (seawall	24d	23-Feb-12	21-Mar-12	39d			Engr review and approval - MS for temporary reclamation (seawall block & genera
S7B_2			nstrumentation Plan - ME4	24d	17-May-12	14-Jun-12	49d			Submit Geotechnical Instrumentation Plan - ME4
S7B_2	2060		oval - Geotechnical Instrumentation Plan -	24d	15-Jun-12	14-Jul-12	49d			Engr review and approval - Geotechnical Instrumentation Plan - ME4
		ME4	23 of 53							Prepared by William Caluza
		IY WOIK	25 61 55						Date	Revision Checked Approved
		emaining Work	China Stat	e Constru	ction Engineering	(Hong Kong) L	td		15-Feb Date	te prepared ST KL
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			Contract No. HY/2009/15 - Central V	van Cildi B	y rass - Iulillel (Causeway Day	ι γριισσιι δ	menter Section	to 1	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Ac	tivity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
	Additional T	emporary Reclamation (TS4+ Area)							
Ш	CD_5770	Engineer Instruction Section 7B (480d)	Od	20-Jan-12		49d			◆ Engineer Instruction Section 7B (480d)
Ш									
Ш	S7B_2065	Commencement of ME4 (subject to excision 480d)	Od	20-Jan-12		39d			◆ Commencement of ME4 (subject to excision 480d)
Ш	S7B_2070	TS4+ Area, Dredge Type 2 sediments	18d	20-Jan-12	13-Feb-12	39d	31,000 m3	1,850 m3/d	■ TS4+ Area, Dredge Type 2 sediments
ı	S7B_2075	TS4+ Area, Place rockfill	8d	14-Feb-12	22-Feb-12	39d	10,898 m3	1,300 m3/d	■ TS4+ Area, Place rockfill
	S7B_2080	TS4+ Area, Place levelling stone	24d	23-Feb-12	21-Mar-12	39d			TS4+ Area, Place levelling stone
	S7B_2085	TS4+ Area, Place seawall block	22d	22-Mar-12	20-Apr-12	39d	1,087 nos	50no/d	TS4+ Area, Place seawall block
	S7B_2090	TS4+ Area, General fill to +4	15d	21-Apr-12	09-May-12	39d	46,100 m3	4000 m3/d	■ TS4+ Area General fill to +4
	Additional T	emporary Reclamation (TZ6)							
	S7B_2095	TZ6 Area, Dredge Type 3 sediments	55d	10-May-12	16-Jul-12	77d	8,000 m3	600m3/trip @ 4d/trip	TZ6 Area, Dredge Type 3 sediments
ı	S7B_2100	TZ6 Area, Place rockfill	5d	17-Jul-12	21-Jul-12	77d	6,792 m3	1,300 m3/d	I TZ6 Area, Place rockfill
ı	S7B_2105	TZ6 Area, Place levelling stone	18d	23-Jul-12	11-Aug-12	77d			■ TZ6 Area, Place levelling stone
	S7B_2107	TZ6 Area, Place seawall block	14d	13-Aug-12	28-Aug-12	77d	684	50no/d	■ TZ6 Area, Place seawall block
ı	S7B_2109	TZ6 Area, General fill to +4	13d	29-Aug-12	12-Sep-12	77d	36,600	3000 m3/d	■ TZ6 Area, General fill to +4
П	ME4 - Diaph	ragm Wall		1				1	
	Submission	Deadline							
ı	S7B_2110	Submit Diaphragm Wall Trench Stability and Guide Wall Design	24d	17-Feb-12	15-Mar-12	45d			Submit Diaphragm Wall Trench Stability and Guide Wall Design
ı	S7B_2115	Prepare and submit CMC model for diaphragm wall construction - ME4	24d	09-Mar-12	10-Apr-12	39d			Prepare and submit CMC model for diaphragm wall construction - ME4
	S7B_2120	Engineers review and approval -Diaphragm Wall Trench Stability and Guide Wall Design	48d	16-Mar-12	16-May-12	45d			Engineers review and approval -Diaphragm Wall Trench Stability and Guide W
ı	S7B_2125	Submit MS for diaphragm wall construction - ME4	24d	11-Apr-12	09-May-12	39d			■ Submit MS for diaphragm wall construction - ME4
ı	S7B_2130	Engineers review and approval - MS for diaphragm wall construction - ME4	24d	10-May-12	07-Jun-12	39d			■ Engineers review and approval - MS for diaphragm wall construction - ME4
I	Diaphragm \	Wall							
	S7B_5330	Curtain grout along proposed diaphragm wall	24d	10-May-12	07-Jun-12	39d			□ Curtain grout along proposed diaphragm wall
	S7B_3200	ME4 D-WALL SUMMARY	160d	10-May-12	16-Oct-12	94d			ME4 D+WALL SUMMARY
ı	S7B_2145	Site investigation for diaphragm wall	46d	10-May-12	05-Jul-12	39d	46 nos	3d/no., use 3 rig	gs Site investigation for diaphragm wall
	S7B_2138	Install king posts	24d	10-May-12	07-Jun-12	103d	12 nos	3 per week	■ Install king posts
ı	S7B_2140	Construct guide wall	21d	17-May-12	11-Jun-12	45d			■ Construct guide wall
	S7B_2150	Diaphragm wall construction- TS4+	42d	08-Jun-12	28-Jul-12	39d	28 nos	6d/panel @ 3d cycle	Diaphragm wall construction- T\$4+
	S7B_2152	Install shear pins at D Wall in TS4+	38d	28-Jun-12	11-Aug-12	159d	64 nos	5nos/week/rig	Install shear pins at D.Wall in TS4+
	Remaini	ing Work 24 of 53		1	I.				Prepared by William Caluza
ı	Critical F	Remaining Work China St	ate Consti	ruction Engineering	(Hong Kong) L	td		Date 15-Feb [Revision Checked Approved Date prepared ST KL
•	Mileston	Contract No. HY/2009/15 - Central					Shelter Section	20)	(progress updated 中國建築工程(春港) 有限公司
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Activity	y ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		201	1	2012	2	013	2014		2015	2016
	S7B_2158	Contact and fissure gr	routing for D Wall TS4+	3d	30-Jul-12	01-Aug-12	168d	48 nos	16 nos/d		411414	7		ntact and fiss	sure grouting	for D Wall T	34+		
⊪	S7B_2155	Diaphragm wall constr	ruction- southwest area TZ6 area	27d	13-Sep-12	16-Oct-12	77d	18 nos		_				Diaphragm	wall construc	tion- southwe	st area TZ6	area	
				3d	•				16 nos/d	_									
	S7B_2162		outing for D Wall TZ6 area	Su	17-Oct-12	19-Oct-12	170d	30 1108	16 1105/0					Contact and	u; iissute gro	ting for D Wa	ı ızo area		
	ME4 - ELS W	orks									1 1			1					
	Submission	Deadline												1					
	S7B_2160	Prepare and submit C	MC model for ELS at ME4	24d	01-Feb-12	28-Feb-12	39d						Prepare an	d submit CM	C model for	ELS at ME4			
	S7B_2165	Submit ELS design Mi	E4 (4 month for GEO comments&resolution)	24d	29-Feb-12	27-Mar-12	39d						Submit EL	S design ME	4 (4 month fo	r GEO comm	ents&resolut	ion)	
	S7B_2170	Submit MS for ELS at comments&resolution)	t ME4 (4 month for GEO	24d	29-Feb-12	27-Mar-12	39d					•	Submit MS	for EL\$ at	ME4 (4 mon	h for GEO co	nments&res	olution)	
	S7B_2185	Submit design for dew	vatering system	24d	02-Mar-12	29-Mar-12	39d				1 1		Submit de	sign for dewa	atering system	n			
	S7B_2167	Engineers review and	approval - ELS design ME4	24d	28-Mar-12	28-Apr-12	39d						Enginee	rs review and	approval -	ELS design M	4		
	S7B_2172	Engineers review and	approval - MS FOR ELS at ME4 area	24d	28-Mar-12	28-Apr-12	39d						Enginee	rs review and	approval -	MS FOR ELS	at ME4 area	1	
	S7B_2200	Engineers review and	approval - design for dewatering system	48d	30-Mar-12	31-May-12	39d						Engine	ers review a	nd approval	design for de	watering sys	stem	
	S7B_2175	GEO review and approcomments&resolution)	oval - ELS design ME4 (4 months for GEO	96d	30-Apr-12	23-Aug-12	39d						G	EO review ar	nd approval -	ELS design	/IE4 (4 mont	hs for GEO	commer
	S7B_2180	GEO review and approcomments&resolution)	oval - MS for ELS at ME4 (4 month for GEO	96d	30-Apr-12	23-Aug-12	39d						G	EO review a	nd approval	MS for ELS	at ME4 (4 mo	onth for GEC) comm
	S7B_2190	Submit instrumentation	n particulars (indinometer/ strain gauges)	24d	17-May-12	14-Jun-12	49d						Subm	it instrument	ation particul	ars (inclinome	er/ strain ga	uges)	
	S7B_2195	Submit MS for instrum	nentation	24d	17-May-12	14-Jun-12	49d						Subm	it MS for inst	rumentation				
	S7B_2205	Engineers review and (inclinometer/ strain ga	approval - instrumentation particulars auges)	24d	15-Jun-12	14-Jul-12	49d						■ Eng	ineers review	and approv	al - instrumen	ation particu	lars (inclinon	neter/ s
	S7B_2210	Engineers review and	approval - MS for instrumentation	24d	15-Jun-12	14-Jul-12	49d						■ Eng	ineers review	and approv	al - MS for ins	rumentation		
	S7B_2215	Submit pumping test r	eport	1d	23-Aug-12	23-Aug-12	39d						ıs	ubmit pumpir	g test report				
	ME4 - ELS (T	S4+ Area)																	
	S7B_2225	Install dewatering well	s and piezometers for pump test	48d	01-Jun-12	28-Jul-12	39d						Ins	all dewaterir	g wells and	iezometers fo	r pump test		
	S7B_2220	Install inclinometers in	side D Wall	24d	16-Jul-12	11-Aug-12	49d						■ Ins	stall inclinome	eters inside D	Wall			
	S7B_2230	Carry out pump test		21d	30-Jul-12	22-Aug-12	39d						■ C	arry out pum	p test				
	S7B_2235	1st Layer - Soft Excav	ation & demolish exist d wall	8d	24-Aug-12	01-Sep-12	39d						1 1	st Layer - So	ft Excavation	& demolish e	dist d wall		
	S7B_2240	1st Layer - install later	al supports	8d	28-Aug-12	05-Sep-12	39d						I 1	st Layer - ins	stall lateral su	oports			
	S7B_2245	Install vibrating wire st	rain gauge	6d	06-Sep-12	12-Sep-12	39d						1	nstall vibratin	g wire strain	gauge			
	S7B_2250	2nd Layer - Soft Excar	vation & demolish existing D Wall	8d	13-Sep-12	21-Sep-12	39d							2nd Layer - S	Soft Excavati	on & demolish	existing D W	/all	
	S7B_2255	2nd Layer - install late	eral supports	8d	15-Sep-12	24-Sep-12	39d							2nd Layer -	install lateral	supports			
	S7B_2260	3rd Layer - Soft Excav	vation & demolish existing D Wall	8d	24-Sep-12	04-Oct-12	39d							3rd Layer -	Soft Excavati	on & demolish	existing D W	Vall	
	Remainir	ng Work	25 of 53				, ,			P		William Caluz					. '	, 1	
		Remaining Work	China Sta	te Constri	uction Engineering	ı (Hong Kona) L	_td		Date 15-Feb	Date nre	Revision	S	Checked App	roved					
♦	Milestone							Nhalkar O - 41		(progress			. INC	·SC		建架工			A
			Contract No. HY/2009/15 - Central V	wan Chai	By Pass - Tunnel (Causeway Bay	ı ıypnoon S	oneiter Section	'	to 17 Dec	ember 2010	0)		630	CHINA ST	ATE CONSTRUCT	ON ENGINEERI	NG (HONG KO	NG) LTD.
			\	WORKS	PROGRAMME	REV. B													

Ac	ivity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 ²⁰
	\$7D 2265	3rd Layer -install lateral supports	8d	26-Sep-12	06-Oct-12	39d			3rd Layer -install lateral supports
Ш	37B_2200		ou	20-3ер-12	00-OCI-12	390			
Ш	S7B_2270	4th Layer - Soft Excavation & demolish existing D Wall	8d	06-Oct-12	15-Oct-12	39d			■ 4th Layer - Soft Excavation & demolish existing D Wall
I	S7B_2275	4th Layer - install lateral supports	8d	09-Oct-12	17-Oct-12	39d			■ 4th Layer - install lateral supports
	S7B_2280	5th Layer - Soft Excavation & demolish existing D Wall	8d	17-Oct-12	26-Oct-12	39d			■ 5th Layer - Soft Excavation & demolish existing D Wall
	S7B_2285	5th Layer - install lateral supports	8d	19-Oct-12	29-Oct-12	39d			■ 5th Layer - install lateral supports
П	S7B_2290	6th Layer - Soft Excavation & demolish existing D Wall	8d	29-Oct-12	06-Nov-12	39d			■ 6th Layer - Soft Excavation & demolish existing D Wall
	S7B_2295	6th Layer - install lateral supports	8d	31-Oct-12	08-Nov-12	39d			■ 6th Layer - install lateral supports
П	S7B_2300	7th Layer - Soft Excavation & demolish existing D Wall	8d	08-Nov-12	16-Nov-12	39d			■ 7th Layer - Soft Excavation & demolish existing D Wall
П	S7B_2305	7th Layer - install lateral supports	8d	10-Nov-12	19-Nov-12	39d			■ 7th Layer - install lateral supports
	S7B_2310	8th Layer - Soft Excavation & demolish existing D Wall	8d	20-Nov-12	28-Nov-12	39d			■ 8th Layer - Soft Excavation & demolish existing D Wall
Н	S7B_2315	8th Layer - install lateral supports	8d	22-Nov-12	30-Nov-12	39d			■ 8th Layer - install lateral supports
	S7B_2320	9th Layer - Soft Excavation & demolish existing D Wall	8d	01-Dec-12	10-Dec-12	39d			■ 9th Layer - Soft Excavation & demolish existing D Wall
	S7B_2325	9th Layer - install lateral supports	8d	04-Dec-12	12-Dec-12	39d			■ 9th Layer - install lateral supports
Н	S7B_2327	Install rock anchors	18d	13-Dec-12	05-Jan-13	39d	8 nos	3no/week	■ Install rock anchors
Н	S7B_2330	10th Layer - rock to formation of CCT	18d	07-Jan-13	26-Jan-13	39d	5,000m3	400m3/d	■ 10th Layer - rock to formation of CCT
Н	ME4 - ELS (T	[Z6)							
		Install inclinometers inside D Wall	36d	17-Sep-12	31-Oct-12	86d			Install inclinometers inside D Wall
Ш	_								
Ш	S7B_2345	Install dewatering wells and piezometers for pump test	24d	17-Sep-12	16-Oct-12	77d			Install dewatering wells and piezometers for pump test
П	S7B_2350	Carry out pump test	21d	17-Oct-12	10-Nov-12	77d			■ Carry out pump test
	S7B_2355	1st Layer - Soft Excavation	3d	12-Nov-12	14-Nov-12	77d			I 1st Layer - Soft Excavation
	S7B_2360	1st Layer - install lateral supports	5d	15-Nov-12	20-Nov-12	77d			■ 1st Layer - install lateral supports
	S7B_2365	Install vibrating wire strain gauge	3d	21-Nov-12	23-Nov-12	77d			I Install vibrating wire strain gauge
	S7B_2370	2nd Layer - Soft Excavation	3d	24-Nov-12	27-Nov-12	77d			l 2nd Layer - Soft Excavation
	S7B_2375	2nd Layer - install lateral supports	5d	28-Nov-12	03-Dec-12	77d			l 2nd Layer - install lateral supports
	S7B_2380	3rd Layer - Soft Excavation	3d	04-Dec-12	06-Dec-12	77d			I 3rd Layer - Soft Excavation
	S7B_2385	3rd Layer -install lateral supports	5d	07-Dec-12	12-Dec-12	77d			■ 3rd Layer -install lateral supports
	S7B_2390	4th Layer - Soft Excavation	3d	13-Dec-12	15-Dec-12	77d			I 4th Layer - Soft Excavation
	S7B_2395	4th Layer - install lateral supports	5d	17-Dec-12	21-Dec-12	77d			■ 4th Layer - install lateral supports
	S7B_2400	5th Layer - Soft Excavation	3d	22-Dec-12	27-Dec-12	77d			■ 5th Layer - Soft Excavation
		ing Work 26 of 53						1	Prepared by William Caluza
•	- Remaini	ing Work						Data	

Remaining Work
Critical Remaining Work

China State Construction Engineering (Hong Kong) Ltd

Contract No. HY/2009/15 - Central Wan Chai By Pass - Tunnel (Causeway Bay Typhoon Shelter Section)

WORKS PROGRAMME REV. B

Prepared by William Ca	aluza		
Revision	Checked	Approved	
Date prepared	ST	KL	٦
(progress updated			
to 17 December 2010)			٦
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	Revision Date prepared (progress updated	Date prepared ST (progress updated	Revision Checked Approved Date prepared ST KL (progress updated



Activity ID	Activity Name		Original	Start	Finish	Total Float	Quantity	Prod Rate		201	11	2012	2	2013	2014 2015 2016
			Duration							JAJ	JA	1 1		JAJJ	1
S7B_2405	5th Layer - install late	eral supports	5d	28-Dec-12	03-Jan-13	77d							1	l 5th Layer -	install lateral supports
S7B_2410	6th Layer - Soft Excar	vation	3d	04-Jan-13	07-Jan-13	77d								6th Layer -	Soft Excavation
S7B_2415	6th Layer - install late	eral supports	5d	08-Jan-13	12-Jan-13	77d								6th Layer	- install lateral supports
S7B_2420	7th Layer - Soft Excar	vation	3d	14-Jan-13	16-Jan-13	77d								I 7th Layer	- Soft Excavation
S7B_2425	7th Layer - install late	eral supports	5d	17-Jan-13	22-Jan-13	77d								7th Layer	- install lateral supports
S7B_2430	8th Layer - Soft Excar	vation	3d	23-Jan-13	25-Jan-13	77d								I 8th Layer	- Soft Excavation
S7B_2435	8th Layer - install late	eral supports	5d	26-Jan-13	31-Jan-13	77d								I 8th Layer	- install lateral supports
S7B_2440	9th Layer - Soft Excar	vation	3d	01-Feb-13	04-Feb-13	77d								I 9th Layer	- Soft Excavation
S7B_2445	9th Layer - install late	eral supports	5d	05-Feb-13	09-Feb-13	77d								I 9th Laye	r - install lateral supports
S7B_2450	10th Layer - rock and	d excavation to formation	38d	14-Feb-13	02-Apr-13	77d	15,000 m3	400m3/d						10th L	ayer - rock and excavation to formation
ME4 - RC S	tructure											1 1	 		
Submission	n Deadline												 		
S7B_2455	Submit formwork and	falsework design for CCT - ME4	24d	01-Nov-12	28-Nov-12	39d								Submit formy	vork and falsework design for CCT - ME4
S7B_2460	Prepare and submit (CMC model for CCT-ME4 construction	24d	01-Nov-12	28-Nov-12	39d								Prepare and	submit CMC model for CCT-ME4 construction
S7B_2465	Engineers review and	d approval - formwork and falsework design for	48d	29-Nov-12	26-Jan-13	39d								■ Engineers	s review and approval - formwork and falsework design
S7B_2470	1	ME4 construction	24d	29-Nov-12	28-Dec-12	39d								Submit MS	for CCT-ME4 construction
S7B_2475	Engineers review and	d approval -MS for CCT-ME4 construction	24d	29-Dec-12	26-Jan-13	39d							ı	■ Engineers	s review and approval -MS for CCT-ME4 construction
ME4 - TS4+,	, Additional CCT RC S	tructure			<u> </u>										
S7B_3230	TS4+ CCT SUMMAR	RY	69d	28-Jan-13	06-Apr-13	48d							1	TS4+	CCT SUMMARY
S7B_2480	TS4+ - base slab		25d	28-Jan-13	28-Feb-13	39d	5 bays	5d/bay/formwork	:				1	■ TS4+-	base slab
S7B_2485	TS4+ - wall and roof	slab	40d	15-Feb-13	06-Apr-13	39d	5 bays	8d/bay/formwork	<u>, </u>					TS4+	- wall and roof slab
S7B_2488	TS4+, mass concrete	fill to underside of SCL tunnel	6d	08-Apr-13	13-Apr-13	39d								I T\$4+	, mass concrete fill to underside of SCL tunnel
ME4 - SCL (CCT RC Structure					1							1		
S7B_3235	ME4 SCL CCT SUMI	MARY	117d	08-Apr-13	02-Aug-13	5d							1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		ME4 SCL CCT SUMMARY
S7B_2490	ME4 - SCL tunnel, ba	ase slab	53d	08-Apr-13	10-Jun-13	4d	32 bays	5d/bay/formwork	:				1	M	E4 - SCL tunnel, base slab
S7B_2495	ME4 - SCL tunnel, wa	all and roof slab	85d	22-Apr-13	02-Aug-13	4d	32 bays	8d/bay/formwork	Ξ,				1		ME4 - SCL tunnel, wall and roof slab
S7B_2497	TS4/ME4 - external w	vaterproofing on top of completed CCT box	24d	13-Jul-13	09-Aug-13	4d	32 bays	8d/bay/formwork	.,				1		TS4/ME4 - external waterproofing on top of complet
S7B_2500	, ,,	works on top of completed CCT box (incl.	24d	25-Jul-13	21-Aug-13	4d	65,000 m3	3000 m3/d					1 1		TS4/ME4 + Backfilling works on top of completed CC
TS4 - Remo	oval of Temporary Re	eclamation											1		
Remair	ning Work	27 of 53							F	repared by	/ William C		<u> </u>		<u>, , , , ; , ; ; ; , , , , , , , , , , ,</u>
	Remaining Work	China Stat	te Constru	ıction Engineering	a (Hona Kona) L	.td		Date 15-Feb D	ate pro	Revision		Checked ST	Approv	ed	
◆ Mileston	one						N 14 🏯 :=	(1		updated		31	INL	eSCEe	中國建築工程(春港)有限公司
		Contract No. HY/2009/15 - Central V	van Chai I	By Pass - Tunnel ((Causeway Bay	Typhoon S	inelter Section	on) to	17 Dec	ember 201	10)			92069	CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
			VORKS	PROGRAMME	REV. B									\dashv	

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011	201	2	2013 2014	2015 ²⁰
Submission	n Deadline											
S2_7255	Prepare and submit CMC model for removal of temp reclamation and TZ4. TZ6 construction	24d	30-Apr-13	29-May-13	31d						Prepare and submit CMC	model for removal of temp re
S2_7250	Submit design of bulkhead at TZ4, TZ6	24d	02-May-13	30-May-13	34d						Submit design of bulkhead	I at TZ4, TZ6
S2_7265	Submit MS for removal of temp reclamation and ME4 construction	24d	30-May-13	27-Jun-13	31d						Submit MS for removal of	of temp reclamation and ME4
S2_7260	Engineers review and approval - design of bulkhead at TZ4, TZ6	48d	31-May-13	27-Jul-13	34d						Engineers review and	approval - design of bulkhead
S2_7270	Engineers review and approval - MS for removal of temp reclamation and ME4 construction	24d	28-Jun-13	26-Jul-13	31d						■ Engineers review and	approval - MS for removal of
With ME4, F	Removal of Temporary Reclamation											
S7B_6155	DURATION OF TEMP. RECLAMATION TS4 (1029)	950d	12-Apr-11	16-Nov-13	5d						DURATION OF	TEMP. RECLAMATION TS4
S7B_3240	REMOVAL OF TEMP. RECLAMATION SUMMARY	115d	25-Jul-13	16-Nov-13	5d						REMOVAL OF	EMP. RECLAMATION SUM
S7B_2510	Removal of ELS inside cofferdam	54d	25-Jul-13	26-Sep-13	4d	9 layers	6d/layer				Removal of ELS in	side cofferdam
S7B_2515	Remove general fill (between D Wall & seawall block)	7d	27-Jul-13	03-Aug-13	31d	9,574					■ Remove general fill (b	etween D Wall & seawall bloc
S7B_2520	Remove seawall block	24d	29-Jul-13	24-Aug-13	31d	1,576 nos					Remove seawall bloc	k
S7B_2525	Install seawall block for TZ4, TZ6	18d	29-Jul-13	17-Aug-13	34d	880 nos					■ Install seawall block for	or TZ4, TZ6
S7B_2530	General fill for TZ4, TZ6	3d	19-Aug-13	21-Aug-13	34d	7,774 m3					■ General fill for TZ4, T	Z6
S7B_2535	Saw cut diaphragm wall (nos.)	36d	27-Sep-13	09-Nov-13	4d	70 panels	2d/panel/1mach	ine			Saw cut diaphra	gm wall (nos.)
S7B_2540	Reinstate vertical seawall	24d	27-Sep-13	26-Oct-13	22d						Reinstate vertical	seawall
S7B_2545	Reinstate seabed	22d	23-Oct-13	16-Nov-13	4d			$\dashv \parallel \parallel$			■ Reinstate seabe	d
S7B_3300	Completion of Section 7B (ME4)	0d		16-Nov-13	5d						◆ Completion of S	ection 7B (ME4)
S2_4160	Completion of Section 2 (With ME4 option)	0d		16-Nov-13	5d						◆ Completion of S	ection 2 (With ME4 aption)
Re-Provision	on of Permanent Jetty & Floating Pontoon											
CDS_1020	Permanent Re-provisioned Floating Pontoon - design preparation and submission	72d	16-Mar-13	15-Jun-13	53d						Permanent Re-provision	ed Floating Pontoon + design
CDS_1000	Permanent Re-provisioned Jetty - design preparation and	72d	18-Apr-13	15-Jul-13	53d						Permanent Re-provisio	ned Jetty design preparation
CDS_1030	Submission Design of Permanent Re-provisioned Floating Pontoon - Engineers	24d	17-Jun-13	15-Jul-13	53d						Design of Permanent R	e-provisioned Floating Ponto
S6_5240	review and approval Design Submission to BD -Permanent Jetty	24d	17-Jun-13	15-Jul-13	53d						Design Submission to E	D -Permanent Jetty
CDS_1010	Design of Permanent Re-provisioned Jetty - Engineers review and approval	48d	16-Jul-13	09-Sep-13	53d						Design of Permaner	nt Re-provisioned Jetty - Engi
CDS_1035	Permanent Re-provisioned Floating Pontoon - manufacture/delivery	48d	16-Jul-13	09-Sep-13	53d						Permanent Re-prov	sioned Floating Pontoon - ma
S6_5245	BD Review and Approval -Permanent Jetty	48d	16-Jul-13	09-Sep-13	53d						BD Review and App	roval -Permanent Jetty
PG_1200	Method Statement - Permanent re-provision of Jetty: preparation and submission	24d	23-Jul-13	19-Aug-13	53d						■ Method Statement - I	Permanent re-provision of Je
PG_1220	Method Statement - Permanent re-provision of Floating Pontoon: preparation and submission	24d	23-Jul-13	19-Aug-13	53d]				■ Method Statement - I	Permanent re-provision of Fk
Pemair	ning Work 28 of 53							Prepared by W	illiam Caluza	<u> </u>	<u> </u>	
	Pamaining Work	a Camatu	tian Fasinassina	. /Ilana Kana) I	4.4		Date	Revision	Checked	Approved		
♦ Milesto	ne Cnina Sta	e constr	uction Engineering	, (nong kong) L	Liu			Date prepared progress updated	ST	KL	中國建築工業	望(香港)有阻公司
	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	-\ 	progress updated o 17 December 2010)		- C		ON ENGINEERING (HONG KONG) LT
	,	NODRE		DEV/ D								
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		201	11 10 1 1 1	20	12	201	3	2014		2015	2016
PG_1210		18d	20-Aug-13	09-Sep-13	53d			-	911719	11111	9 1 1 1 1 3	<u> </u>	1911719	Metho	od Statement	- Perma	nent re-pro	ovision of Jet
PG_1230	review and approval Method Statement - Permanent re-provision of Floating Pontoon:	18d	20-Aug-13	09-Sep-13	53d			_						■ Metho	od Statement	- Perma	nent re-pro	ovision of Flo
S6_5260	Engineers review and approval Re-provision of permanent jetty and floating pontoon	48d	10-Sep-13	07-Nov-13	53d										e-provision of			
S6_5265	Demolition/removal of temporary re-provisioned jetty and floating pontoon	48d	08-Nov-13	06-Jan-14*	53d										Demolition/re	emoval o	of temporar	y re-provisior
Landing S	Steps - Demolition/ Reconstruct as Footpath																	
S6_3015	Demolish existing landings (2nos) at southwest corner of CBTS an reconstruct to footpath	d 48d	28-Jun-11	23-Aug-11	487d					Dem	olish existin	g landing	s (2nos) at s	southwest	orner of CBT	S and re	construct t	o footpath
TS4 - OH	VD / Cable Trough																	
S5_6185	TS4 (incl. TS4+) - OHVD Slab (access through temp. opening at Portion 19)	150d	17-Jun-13*	13-Dec-13	70d	284 panels	7 panels/d								TS4 (incl. TS4	4+) - OH	VD Slab (access throug
S5_6190	TS4 (incl. TS4+) - Cable Trough (access through temp. opening a Portion 19)	t 150d	17-Jun-13*	13-Dec-13	8d										TS4 (incl. TS4	4+) - Cal	ole Trough	(access thro
Works fo	or Mined TUNNELING (Portion 16, 17, 18)																	
Tunnel W	orks General Submissions													1				
PG_1255	Particulars - Tunnel Particulars (PS 30.02(1a,b,c)- preparation and submissions	d 48d	12-Jan-12	12-Mar-12	189d						Part	iculars - T	unnel Partic	ulars (PS	80.02(1a,b,c)-	prepara	tion and su	bmissions
PG_1260	Particulars - Tunnel Particulars (PS 30.02(1a,b,c)- Engineers review and approval	48d	12-Mar-12	12-May-12	189d						F	Particulars	S - Tunnel Pa	articulars (F	PS 30.02(1a,b	,c)- Engi	neers revie	ew and appro
CHT Prot	ection Works at Location A,B,C																	
Site Poss	ession									1	1			1				
CD_5570	Site Possession - Portion IX (9), Day 0	0d	27-Sep-10 A					Site	Possessio	n - Portio	1X (9), Da	ay 0						
CD_5610	Site Possession - Portion XV (15), Day 0	0d	27-Sep-10 A					Site	Possessio	n - Portio	XV (15),	Day 0						
CD_561	Site Possession - Portion XVI (16), Day 0	0d	27-Sep-10 A					> Site	Possessio	n - Portio	1 XVI (16),	Day 0						
CD_5620	Site Possession - Portion XVII (17), Day 0	0d	27-Sep-10 A					Site	Possessio	n - Portio	XVII (17)	, Day 0						
CD_562	Site Possession - Portion XVIII (18), Day 0	0d	27-Sep-10 A					Site	Possessio	n - Portio	XVIII (18), Day 0						
Submiss	ions: Design, Method Statement		1								1			1				
PG_1235	Method Statement - Instrumentation (ADMS & Strain Gauges) at CHT: preparation and submission	24d	23-Nov-10 A	20-Dec-10	107d				Method \$	tatement	- Instrume	ntation (A	DMS & Stra	in Gauges)	at CHT: prep	aration a	and submis	sion
CDS_10	Design of Standby Dewatering System, CHT Protection Works (P: 7.236B)- preparation and submission	S 24d	13-Dec-10 A	24-Dec-10	74d				Design of	Standby	Dewaterin	g System,	CHT Prote	ction Works	s (P\$ 7.236B)	prepar	ation and s	ubmission
PG_1240	Method Statement - Instrumentation (ADMS & Strain Gauges) at CHT: Engineers review and approval	26d	21-Dec-10	22-Jan-11	107d				■ Method	Statemer	nt - Instrum	entation (ADM\$ & St	rain Gauge	s) at CHT: E	ngineers	review and	d approval
CDS_10	Design of Standby Dewatering System, CHT Protection Works (PS 7.236B) - GEO comments&resolution	S 96d	25-Dec-10	30-Mar-11	94d				Des	ign of Sta	ndby Dewa	atering Sy	stem, CHT	Protection	Works (PS 7.2	236B) - C	GEO ∞mn	nents&resolu
PG_124	Method Statement - Standby Dewatering System at CHT: preparation and submission	24d	25-Mar-11	26-Apr-11	0d				■ Me	ethod Stat	ement - St	andby De	ewatering Sy	stem at CI	IT: preparatio	n and su	ıbmission	
PG_1250	Method Statement - Standby Dewatering System at CHT: Engineers review and approval	48d	27-Apr-11	24-Jun-11	0d				_	Method	Statement	- Standby	Dewatering	System at	CHT: Engine	ers revie	w and app	roval
Design a	nd Fabrication of Steel Weight / Alum Cladding										1			1				
FB_1030	Alum Cladding & Steel Weights inside CHT- design+ shopdrawing preparation +submission	- 36d	26-Nov-10 A	01-Jun-11	61d					Alum Clad	ding & Ste	el Weight	s inside CH	Γ- design+	shopdrawing-	prepara	ition +subn	nission
Rem	iaining Work 29 of 53				,		Det 1	P	repared by	William (.al A		<u> </u>	-			<u>'</u>
	cal Remaining Work China Se	tate Consti	ruction Engineering	g (Hong Kong) L	.td		Date 15-Feb D	ate pre	Revision pared		ST Checke	d Appro		-				
◆ ◆ Miles	Contract No. HY/2009/15 - Centra	l Wan Chai	i By Pass - Tunnel (Causeway Bav	Typhoon S	Shelter Section	(r	rogress	s updated cember 201	0)			cSCEc	V-0.053V-33V	建架工 ATE CONSTRUCT			
							, ito	ir Dec	ember 201	U)				Ciman 31	CONSTRUCT	.ora Erfoli	TERRITO (III)	nortar LIU.
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Activity ID	1	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
FB_	1040	Alum Cladding & Stee	el Weights inside CHT- design+ shopdrawing:	36d	12-May-11	23-Jun-11	61d			Alum Cladding & Steel Weights inside CHT- design+ shopdrawing; Engr review and approval
	E	Engr review and appr	oval							
513_	_1588	Setting out and site m	leasurement	12d	10-Jun-11	23-Jun-11	61d			Setting out and site measurement
FB_	1050	Alum Cladding & Stee	el Weights inside CHT- start fabrication	0d	24-Jun-11		61d			Alum Cladding & Steel Weights inside CHT- start fabrication
ST3_	_1550 F	Fabrication of Alum C	cladding & Steel Weights	90d	24-Jun-11	21-Sep-11	73d			Fabrication of Alum Cladding & Steel Weights
Struc	tural Con	ndition Survey								
ST3_	_1552	Structural condition su	urvey at POC	18d	19-Nov-10 A	10-Dec-10 A				Structural condition survey at POC
ST3_	_1556	Submit report of Struc	ctural condition survey at POC	18d	07-Dec-10 A	10-Jan-11	312d			Submit report of Structural condition survey at POC
ST3_	_1558	Submit report of Struc	ctural condition survey at RHKYC	18d	11-Dec-10 A	31-Jan-11	294d			■ Submit report of Structural condition survey at RHKYC
ST3_	_1554	Structural condition su	urvey at RHKYC	18d	19-Dec-10 A	10-Jan-11	294d			Structural condition survey at RHKYC
Insta	lation of	GSM, Inclinometer,	, Extensometer							
ST3_	_2000 I	Instrumentation (Ind.	. , Piezometer, or Ext.) - at RHKYC	49d	03-Jan-11*	03-Mar-11	270d	7 nos	6d/ no	Instrumentation (Incl., Ptezometer, or Ext.) - at RHKYC
ST3	_2005 I	Instrumentation (Inc	I. , Piezometer, or Ext.) - at POC	36d	10-Jan-11*	23-Feb-11	211d	6 nos	6d/ no	Instrumentation (Incl., Piezometer, or Ext.) - at PQC
		Instrumentation (Inc	I., Piezometer, or Ext.) - at Hung Hing Road	66d	24-Feb-11	18-May-11	211d	11 nos	6d/no	Instrumentation (Incl. , Piezometer, or Ext.) - at Hung Hing Road & outside POC/RHKYC
	8	& outside POC/RHKY	C Ip Tests at Hung Hing Road							
				204	07 Can 40 A	20 04 40 4				
\$13_	F	POC/RHKYC)	on permit at Hung Hing Rd (bet.	28d	27-Sep-10 A	30-Oct-10 A				CSHK Apply excavation permit at Hung Hing Rd (bet. POC/RHKYC)
ST3_	_1512 H	HYD excavation perm	nit processing & approval (6 months)	186d	31-Oct-10 A	04-May-11	0d			HYD excavation permit processing & approval (6 months)
ST3_	_1515 / i	After XP Appvl: TTA S nstall rd signs & equip	Submission, Rvw & Appvl + Implementation - oments	18d	05-May-11	26-May-11	0d			■ After XP Appvl: TTA Submission, Rvw & Appvl + Implementation - install rd signs & equipments
ST3_	_1520	Trial pits for verification	on of utilities	24d	27-May-11	24-Jun-11	0d			■ Trial pits for verification of utilities
ST3_	_1570	SUMMARY		222d	25-Jun-11	01-Feb-12	0d			SUMMARY
ST3_		Implement TTA (drair Pre-boring	nage in HH rd completed) & Carry out	98d	25-Jun-11	21-Oct-11	0d	150 nos	5 nos/3d	Implement TTA (drainage in HH rd completed) & Carry out Pre-boring
S261	90 8	Sheet pile installation		20d	11-Oct-11	02-Nov-11	0d	300	15 nos/d	Sheet pile installation
S261	95 (Curtain grout		24d	03-Nov-11	30-Nov-11	0d			■ Curtain grout
S262	200	Toe grouting		24d	03-Nov-11	30-Nov-11	0d	150	7nos/d	■ Toe grouting
S262	205 I	Install piezometers, re	e-charge wells/dewatering wells	24d	23-Nov-11	20-Dec-11	0d		3 nos/week/rig, 3	■ Install pięzometers, re-charge wells/dewatering wells
ST3_	_1575 F	Pump Tests		31d	21-Dec-11	01-Feb-12	0d	r wells, 6 piezo	ııyə	Pump Tests
ST3_	_1590 /	Achievement of Stage	23	0d		01-Feb-12	0d			◆ Achievement of Stage 3
Stand	lby Dewa	tering System Pum	np Tests inside POC					<u> </u>		
ST3_	_1595 (Coordination with PO	С	48d	17-Dec-10	17-Feb-11	81d			Coordination with POC
ST3	_1597 F	POC consent on com	mencement of works	0d		17-Feb-11	102d			◆ POC consent on commencement of works
			30 of 53						<u> </u>	Prepared by William Caluza
	Remaining Critical Re	g Work emaining Work							Date	Revision Checked Approved
	Milestone	· ·	China Sta	te Constru	ction Engineering	g (Hong Kong) L	td		15-Feb Da	te prepared ST KL
			Contract No. HY/2009/15 - Central N	Wan Chai E	By Pass - Tunnel (Causewav Bav	Typhoon 9	Shelter Section	, "	rogress updated 中国建築工程(香港)有限公司 CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
					,		, p		, to	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
070 1010		Duration	10.5.1.44	24.14	24.1			
\$13_1610	Stage 1 - trial pit	27d	18-Feb-11*	21-Mar-11	81d			Stage 1 - trial pit
ST3_1612	GEO comments&resolution on design of dewatering system	0d		26-Apr-11*	68d			◆ GEO comments&resolution on design of dewatering system
ST3_1615	Stage 2 - cut off wall, wells, and instruments	24d	27-Apr-11	26-May-11	54d			Stage 2 - cut off wall, wells, and instruments
ST3_1620	Stage 3 - cut off wall, wells, and instruments	24d	27-May-11	24-Jun-11	54d			Stage 3 - cut off wall, wells, and instruments
ST3_1627	Stage 4 - cut off wall, wells, and instruments	24d	25-Jun-11	23-Jul-11	54d			Stage 4 - cut off wall, wells, and instruments
ST3_1630	Stage 5 - cut off wall, wells, and instruments	24d	25-Jul-11	20-Aug-11	54d			Stage 5 - cut off wall, wells, and instruments
ST3_1635	Stage 6 - cut off wall, wells, and instruments	24d	22-Aug-11	19-Sep-11	54d			Stage 6 - cut off wall, wells, and instruments
ST3_1640	Stage 7 - cut off wall, wells, and instruments	24d	20-Sep-11	19-Oct-11	54d			Stage 7 - cut off wall, wells, and instruments
ST3_1645	Stage 8 - Pumping Test	30d	20-Oct-11	23-Nov-11	54d			Stage 8 - Pumping Test
ADMS Install	ation							
PG_5795	Preparation and application of CNP for works outside normal working hrs (in CHT)	24d	27-Nov-10 A	24-Dec-10	106d			Preparation and application of CNP for works outside normal working hrs (in CHT)
PG_5800	EPD review and approval of CNP for works inside CHT	28d	25-Dec-10	21-Jan-11	138d			■ EPD review and approval of CNP for works inside CHT
ST3_1600	ADMS INSTALLATION - SUMMARY	48d	24-Jan-11	12-Mar-11	326d			ADMS INSTALLATION - SUMMARY
ST3_1602	Setting out (inside CHT)	10d	24-Jan-11*	07-Feb-11	107d			Setting out (inside CHT)
ST3_1604	Installation of ADMS prisms (inside CHT)	12d	14-Feb-11*	26-Feb-11	102d	30 nos prisms	3 prisms/	■ Installation of ADMS prisms (inside CHT)
ST3_1606	Installation of Total Station (inside POC)	12d	14-Feb-11	26-Feb-11	262d			■ Installation of Total Station (inside POC)
ST3_1608	IT set up and post installation test	12d	28-Feb-11	12-Mar-11	262d			■ IT set up and post installation test
Strain Gauge	Installation							
ST3_1582	Setting out (inside CHT)	12d	28-Feb-11	12-Mar-11	102d			■ Setting out (inside CHT)
ST3_1584	Construction of cable conduits and manholes (inside CHT)	40d	14-Mar-11	04-May-11	102d	16 manholes sets	2d/mh sets	Construction of cable conduits and manholes (inside CHT)
Installation o	f Steel Weight & Aluminum Cladding							
ST3_1594	Installation of steel weights	72d	24-Jun-11*	17-Sep-11	61d			Installation of steel weights
ST3_1596	Installation of aluminum cladding	48d	19-Sep-11	15-Nov-11	61d			Installation of aluminum dadding
ST3_1625	Achievement of Stage 3	0d		23-Nov-11	70d			◆ Achievement of Stage 3
Tunnel Work	s from East Portal (Access from TS4 Area)							
Works in Slip	Road 8							
SR8 Tunnel	Excavation							
SR8 Top H	eading							
S5_9005	Set up plants and equipments	48d	30-Mar-12	31-May-12	21d			Set up plants and equipments
Remainin	ng Work 31 of 53							Prepared by William Caluza
	Pomoining Work	State Constru	iction Engineering	ı (Hona Kona) I	td		Date	Revision Checked Approved
◆ Milestone	China	State Constitu	ıction Engineerinç	, (nong Kong) L	iu			ate prepared ST KL 中国建築工程(香港)有限公司
	Contract No. HY/2009/15 - Centr	al Wan Chai I	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	· · · · · · · · · · · · · · · · · · ·	of 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Acti	vity ID	Activity Name		Original	Start	Finish	Total Float	Quantity I	Prod Rate		201	1	20	12	20	13	2	014		2015	2016
				Duration							JAJ	14	J J	J	JAJ	JA	J	JJA	J	JJA	1 1
	S5_9010	Temporary works at	portal/tunnel face: forepoling, grouting, probing	48d	01-Jun-12	28-Jul-12	21d							Tempo	orary works	at portal/	tunnel fac	e: forepo	ing, gro	uting, pr	obing
	S5_9015	SR8- 1st 21m, top h	eading excavation + pressure grouting next	33d	30-Jul-12	05-Sep-12	21d	21m ().6m/d					SR8	1st 21m,	top headi	ng excava	ation + pre	essure g	routing I	next 21m
	S5_10025	SR8- next 21m, top 21m	heading excavation + pressure grouting next	33d	06-Sep-12	16-Oct-12	76d	().6m/d					SI	R8- next 21	m, top he	ading ex	cavation +	pressur	re grbuti	ng next 21m
	S5_10027	SR8- next 20m, top 20m	heading excavation + pressure grouting next	33d	17-Oct-12	24-Nov-12	77d	().6m/d						SR8- next	20m, top	heading o	excavation	r + press	sure gro	uting next 20
	SR8 Botto	m Benching													1 1					1	
	S5_10000	SR8- 1st 21m, bottor	m benching excavation + pressure grouting	25d	06-Sep-12	06-Oct-12	21d	().8m/d					■ SF	8- 1st 21m	n, bottom l	enching	excavatio	n + pres	ssure gr	outing next 2
	S5_10040	SR8- next 21m, botto next 21m	om benching excavation + pressure grouting	25d	08-Oct-12	06-Nov-12	69d	().8m/d					- 3	SR8- next 2	1m, botto	m benchii	ng excava	ation + p	ressure	grouting nex
	SR8 Concre	ete Lining Works	,	,		'															
ı	SR8 - Kick	er Wall and Arc Tunn	el Lining												1 1						
	S5_10065	SR8 - erect lining mo	uld	24d	07-Sep-12	06-Oct-12	21d							■ SF	8 - erect li	ning moul					
ı	S5_9019	SR8 - 1st 10.5m, wat	terproofing, rebar fixing, formwork + concrete	9d	08-Oct-12	17-Oct-12	21d		1.5week/bay					I S	R8 - 1st 10	.5m, wate	rproofing,	rebar fixi	ng, form	work +	concrete linir
	S5_10005	3	aterproofing, rebar fixing, formwork + concrete	9d	18-Oct-12	29-Oct-12	21d		1.5week/bay					I 8	R8 - next 1	0.5m, wa	terproofin	g, rebar f	ixing, fai	rmwork	+ concrete lir
	S5_10070	SR8 - next 10.5m, wa	aterproofing, rebar fixing, formwork + concrete	9d	07-Nov-12	16-Nov-12	69d		1.5week/bay					•	SR8 - next	10.5m, w	aterproofi	ng, rebar	fixing, fo	ormwork	x + concrete
	S5_10075	SR8 - next 10.5m, wa	aterproofing, rebar fixing, formwork + concrete	9d	17-Nov-12	27-Nov-12	69d		1.5week/bay					•	SR8 - nex	10.5m, w	aterproof	fing, rebar	fixing, f	ormwor	k + concrete
	SR8 - Base	Slab	,	,				,												1	
ı	S5_9955	SR8 - 1st 10.5 m, ba	se slab, rebar fixing, formwork + concrete	6d	18-Oct-12	25-Oct-12	24d		lweek/bay					I S	R8 - 1st 10	.5 m bas	e slab, rel	oar fixing,	formwo	rk + con	crete
	S5_10010	SR8 - next 10.5 m, b	ase slab, rebar fixing, formwork + concrete	6d	30-Oct-12	05-Nov-12	21d		1week/bay					1 :	SR8 - next	10.5 m, ba	se slab, r	ebar fixin	g, form	vork + co	oncrete
	S5_10085	SR8 - next 10.5 m, b	ase slab, rebar fixing, formwork + concrete	6d	17-Nov-12	23-Nov-12	72d		1week/bay					1	SR8 - next	10.5 m, b	ase slab,	rebar fixir	ng, form	work + o	oncrete
	S5_10090	SR8 - next 10.5 m, b	ase slab, rebar fixing, formwork + concrete	6d	28-Nov-12	04-Dec-12	69d		lweek/bay					1	SR8 - nex	t 10.5 m,	pase slab	, rebar fix	ng, form	nwork +	concrete
	Works in Eas	st Bound Tunnel					1														
i	EB, Tunnel	Excavation																			
	EB Top 1st	t Half Heading																			
ı	S5_8925	Temporary works at	portal/tunnel face: forepoling, grouting, probing	48d	30-Jul-12	22-Sep-12	22d							Ter	mporary wo	orks at por	tal/tunnel	face: fore	poling,	grouting	, probing
	S5_8965	EB 1st half heading e	excavation, 1st 21m + pressure grouting	33d	24-Sep-12	03-Nov-12*	29d	21m ().6m/d					= E	B 1st half h	neading e	cavation,	1st 21m	+ pressi	ıre grou	iing
	S5_10050	EB 1st half heading e	excavation, next 21m + pressure grouting	33d	05-Nov-12	12-Dec-12	29d	().6m/d					-	EB 1st ha	If heading	excavation	n, next 2	1m + pr	essure g	routing
	EB Top 2n	d Half Heading													1 1						
ı	S5_8967	EB 2nd half heading	excavation, 1st 21m + pressure grouting	33d	06-Nov-12	13-Dec-12	28d	21m ().6m/d					_	EB 2nd h	alf heading	excavati	on, 1st 21	m + pre	essure gi	outing
	S5_10100	EB 2nd half heading	excavation, next 21m + pressure grouting	33d	14-Dec-12	24-Jan-13	28d	().6m/d						EB 2nd	halfihead	ing excav	ation, nex	t 21m +	pressur	e grouting
	EB Bottom	n Benching																			
	Domaini	ing Work	32 of 53						T	Pr	epared by	William Ca	aluza					1 1			-
		ing Work Remaining Work		•	-	<i>n</i> 1 17 15			Date		Revision		Checke	d Approv	ved						
•	◆ Mileston	•	China Stat	e Constr	uction Engineering	(Hong Kong) L	.td		15-Feb	· ·			ST	KL	nnr	मंग्रह	夏津 芝	工程	(華)	()看	限公司
			Contract No. HY/2009/15 - Central W	lan Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	helter Section)	(progress to 17 Dece	•	0)	+		cSUEc						IG KONG) LTD.
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Activi	ty ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		2011	20	12	20)13	20)14	201	15 2016
	\$5,0060	ER hottom benching	1st 21m + pressure grouting	25d	27-Nov-12	27-Dec-12	36d		0.8m/d				J	FR: botto	m benchin	g 1st 21m	+ pressure	e grouting	44
			13.2 Till • pressure grouting	250	27-1404-12	27-060-12	300		J.011//d					LB,bott	in benomin	y, 131 Z 1111	Piessuit	grouting	
Ш	EB Concrete	e Lining Works																	
	EB - Kicker	r Wall and Arc Tunne	el Lining									1			1 1				
Ш	S5_10105	Erect lining mould		24d	28-Nov-12	27-Dec-12	36d							Erect lin	ing mould				
Ш	S5_9965	EB - Concrete lining,	1st 10.5m, waterproofing, rebar fixing,	9d	28-Dec-12	08-Jan-13	36d		1.5 weeks/bay					■ EB - Co	ncrețe linir	ıg, 1st 10.5	5m, waterp	roofing, re	bar fixing, form
Ш	EB - Base S	formwork + concrete Slab	ıırılıng									1			1 1				
	S5 9970	EB - base slab 1st 10).5m, rebar fixing, formwork + concrete	6d	09-Jan-13	15-Jan-13	36d		1 week / bay					■ EB - ba	se slab 1st	10.5m, re	bar fixing,	formwork	+ concrete
111		st Bound Tunnel	<u> </u>												1 1 1 1 1 1				
	WB, Tunnel																		
Ш.															i i i i i i i i i i i i i i i i i i i			<u> </u>	
	WB Top 1s	t Half Heading													1 1 1 1 1 1				
Ш	S5_9910	Temporary works at	portal/tunnel face: forepoling, grouting, probing	48d	16-Aug-12	12-Oct-12	22d						Т	emporary v	works at po	rtal/tunnel	face: forep	oling, grou	iting, probing
Ш	S5_9950	WB 1st half heading	excavation, 1st 20m + pressure grouting next	33d	13-Oct-12	21-Nov-12*	22d	21m	0.6m/d					WB 1st ha	lf heading	excavation	, 1st 20m	pressure	grouting next 20
Ш	S5_10055	WB 1st half heading	excavation, next 20m + pressure grouting next	33d	22-Nov-12	02-Jan-13	24d	(0.6m/d					WB 1st	half headin	g excavati	on, next 20	m + press	sure grouting ne
Ш	WB Top 2n	nd Half Heading				I									1 1				
Ш	S5_9975		excavation, 1st 20m + pressure grouting next	33d	06-Nov-12	13-Dec-12	21d	(0.6m/d					WB 2nd	half headin	g excavation	on, 1st 20n	ı + pressur	e grouting next
Ш	S5_10060		excavation, next 20m + pressure grouting next	33d	14-Dec-12	24-Jan-13	28d	(0.6m/d					WB 2r	d half head	ling excav	ation, next	20m + pre	ssure grouting r
Ш	WB Bottom	20m n Benching																	
Ш	S5 9980	WB bottom benching	excavation, 1st 20m + pressure grouting next	25d	14-Dec-12	15-Jan-13	21d	(0.8m/d					■ WB bo	ttom bench	ing excava	ation, 1st 2	0m + press	sure grouting ne
Ш	_	20m te Lining Works	μ. ε.			10 000									1 1	3	1 1		39
Ш.																	1		
		er Wall and Arc Tunne	el Lining					_							! ! ! !				
Ш	S5_10110	Erect lining mould		24d	15-Dec-12	15-Jan-13	21d							Erect li	ning mould				
Ш	S5_9985	WB concrete lining, 1 concrete lining	st 9m, waterproofing, rebar fixing, formwork +	9d	16-Jan-13	25-Jan-13	21d		1.5 weeks/bay					■ WB α	ncrete linin	g, 1st 9m,	waterprod	fing, rebar	fixing, formwor
	WB - Base	Slab				,		,											
Ш	S5_9990	WB base slab, 1st 9n	n, rebar fixing, formwork + concrete	6d	26-Jan-13	01-Feb-13	21d		1 week/bay					■ WBb	ase slab, 1	st 9m, reba	ar fixing, for	mwork + c	concrete
	Tunnel Work	s from West Portal	(Access from TPCWAE & TZ5)												i i				
	Works in Slip	Road 8													1 1				
	SR8 Tunnel	Excavation -Access	from TPCWAE																
HI.	Tunnel Exc	cavation- SR8 Top H	eading																
				404	12 Mar 12	12 May 12	1004						Funnal M	ant Dortal	Cot up pla	to and an	uin manta		
	30_4/15	runner vvest Portal -	Set up plants and equipments	48d	12-Mar-12	12-May-12	189d						unner W	ost Portal -	Set up plai	ns and equ	uprilents		
		ng Work	33 of 53						Date		ared by William Revision		ed Appro	ved					
		Remaining Work	China Sta	te Constr	uction Engineering	(Hong Kong) L	.td			Date prepare		ST	KL					= ** \=	
	◆ Milestone	E	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causewav Bav	Typhoon 9	Shelter Section	١ 🗕	(progress up				.SCE					F限公司
							. , թ.:٠٠٠ (′ 	to 17 Decemb	ber 2010)	-	_	2005	Unina S	IAIE CUNSII	AUCTION EN	JINEEKING (h	HONG KONG) LTD.
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Activity I	D	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 ²⁰¹⁶
	S5_4720	Temporary works at portal/tunnel face: forepoling, grouting, probing	48d	12-May-12	11-Jul-12	189d			Temporary works at portal/tunnel face: forepoling, grouting, probing
	S5_5115	SR8- 1st 20m, top heading excavation + pressure grouting to next 20m	33d	11-Jul-12	18-Aug-12	189d	20m	0.6m/d	SR8- 1st 20m, top heading excavation + pressure grouting to next 20m
	S5_5120	SR8- next 20m, top heading excavation + pressure grouting to next 20m	33d	18-Aug-12	26-Sep-12	207d	20m	0.6m/d	SR8- next 20m, top heading excavation + pressure grouting to next 20i
Ш	S5_5140	SR8- next 20m, top heading excavation + pressure grouting to next 20m	20d	26-Sep-12	22-Oct-12	207d	20m	1m/d	SR8- next 20m, top heading excavation + pressure grouting to next 2
	S5_5143	SR8- next 20m, top heading excavation + pressure grouting to next 20m	20d	22-Oct-12	15-Nov-12	207d	21m	1m/d	\$R8- next 20m, top heading excavation + pressure grouting to next
	S5_10115	SR8- next 20m, top heading excavation + pressure grouting to next 20m	20d	15-Nov-12	08-Dec-12	207d		1m/d	SR8- next 20m, top heading excavation + pressure grouting to nex
Ш	S5_10120	SR8 Breakthrough	0d		08-Dec-12*	0d			◆ SR8 Breakthrough
Ш	Tunnel Ex	cavation- SR8 Bottom Benching							
	S5_5150	SR8- 1st 20m, bottom benching excavation+ pressure grouting to next 20m	25d	18-Aug-12	17-Sep-12	189d	20m	0.8m/d	SR8- 1st 20m, bottom benching excavation+ pressure grouting to next 2
	S5_5155	SR8- next 20m, bottom benching excavation+ pressure grouting to next 20m	25d	17-Sep-12	18-Oct-12	189d	20m	0.8m/d	SR8- next 20m, bottom benching excavation+ pressure grouting to ne
	S5_5160	SR8- next 20m, bottom benching excavation+ pressure grouting to next 20m	25d	18-Oct-12	17-Nov-12	205d	20m	0.8m/d	SR8- next 20m, bottom benching excavation+ pressure grouting to r
	S5_5165	SR8- next 20m, bottom benching + pressure grouting to next 20m	20d	17-Nov-12	11-Dec-12	205d	20m	1m/d	SR8- next 20m, bottom benching + pressure grouting to next 20m
	S5_5185	SR8- next 20m, bottom benching excavation+ pressure grouting to next 20m	20d	11-Dec-12	07-Jan-13	205d	20m	1m/d	SR8- next 20m, bottom benching excavation+ pressure grouting
	S5_10125	SR8- next 20m, bottom benching excavation+ pressure grouting to next 20m	20d	07-Jan-13	30-Jan-13	205d	20m	1m/d	■ SR8- next 20m, bottom benching excavation+ pressure grouting
	SR8 Concre	ete Lining Works							
Ш	SR8 - Kick	er Wall and Arc Tunnel Lining							
	S5_5330	SR8 erect lining mould	48d	21-Aug-12	18-Oct-12	189d			SIR8 enect lining mould
	S5_5195	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 1 (10m)	9d	18-Oct-12	30-Oct-12	189d			■ SR8 lining -water,proofing, rebar fixing, formwork / concrete- Bay 1 (1)
	S5_5200	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 2 (10m)	9d	30-Oct-12	09-Nov-12	189d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 2 (
	S5_5205	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 3 (10m)	9d	09-Nov-12	20-Nov-12	189d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 3
	S5_5210	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 4 (10m)	9d	20-Nov-12	30-Nov-12	189d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 4
	S5_5215	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 5 (10m)	9d	30-Nov-12	11-Dec-12	189d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 5
	S5_5220	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 6 (10m)	9d	11-Dec-12	21-Dec-12	209d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 6
	S5_5225	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 7 (10m)	9d	21-Dec-12	04-Jan-13	209d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork/ concrete Bay
	S5_5230	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 8 (10m)	9d	07-Jan-13	17-Jan-13	207d	10m	1.5 weeks/ba	bay
	S5_5235	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 9 (10m)	9d	17-Jan-13	28-Jan-13	207d	10m	1.5 weeks/ba	bay
	S5_5240	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 10 (10m)	9d	30-Jan-13	09-Feb-13	205d	10m	1.5 weeks/ba	bay SR8 lining +waterproofing, rebar fixing, formwork / concrete- Ba
	S5_5243	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 11 (10m)	9d	09-Feb-13	23-Feb-13	205d	10m	1.5 weeks/ba	bay
	S5_5245	SR8 lining -waterproofing, rebar fixing, formwork / concrete- Bay 12 (10m)	9d	23-Feb-13	06-Mar-13	205d	10m	1.5 weeks/ba	bay SR8 lining -waterproofing, rebar fixing, formwork / concrete- t
	Remain	ing Work 34 of 53							Prepared by William Caluza
			te Constr	uction Engineering	(Hong Kong) L	_td		Date 15-Feb	b Date prepared ST KL
•	Mileston						Shaltar Saatian		(progress updated 中國建築工程(春港)有限公司
		Contract No. n1/2009/15 - Central V	van Ciidi	Dy Fass - Tullilei (oauseway Dây	Typhoon S	menter Section	'	to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activ	vity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity P	Prod Rate		2011	2012		2013	2014	2015	2016
	CE 6100	Dismantle lining formy	voels		06-Mar-13	08-Apr-13	2054			—Ш,	<u> </u>		<u> </u>	Dismantle lin	J J J A J		1111411
Ш	55_6180	Dismantie lining formy	VOTK	24d	06-Mar-13	08-Apr-13	205d							Dismanție iir	ing formwork		
Ш	SR8 - Tun	nnel Base Slab															
Ш	S5_5265	Construct SR8 tunnel concrete	base slab- Bay 1 (10m), rebar fixing and	6d	11-Dec-12	18-Dec-12	189d	1	bay/4d				1	Construct SR8 tun	el base slab- Bay 1	(10m), rebar fixi	ng and con
Ш	S5_5270	Construct SR8 tunnel concrete	base slab- Bay 2 (10m), rebar fixing and	6d	18-Dec-12	27-Dec-12	189d	1	bay/4d					Construct SR8 tur	nel base slab- Bay 2	(10m), rebar fix	ing and cor
Ш	S5_5275	Construct SR8 tunnel concrete	base slab - Bay 3 (10m), rebar fixing and	6d	27-Dec-12	04-Jan-13	224d	1	bay/4d				•	Construct SR8 tu	nel base slab - Bay	3 (10m), rebar fi	xing and co
Ш	S5_5280	Construct SR8 tunnel concrete	base slab- Bay 4 (10m), rebar fixing and	6d	04-Jan-13	11-Jan-13	224d	1	bay/4d				•	Construct SR8 tu	nnel base slab- Bay	4 (10m), rebar fi	xing and co
Ш	S5_5285	Construct SR8 tunnel concrete	base slab- Bay 5 (10m), rebar fixing and	6d	11-Jan-13	18-Jan-13	224d	1	bay/4d					Construct SR8 to	nnel base slab- Bay	5 (10m), rebar fi	ixing and co
Ш	S5_5290	Construct SR8 tunnel concrete	base slab- Bay 6 (10m), rebar fixing and	6d	18-Jan-13	25-Jan-13	224d	1	bay/4d				1	Construct SR8 to	nnel base slab- Bay	6 (10m), rebar f	ixing and o
Ш	S5_5295	Construct SR8 tunnel concrete	base slab- Bay 7 (10m), rebar fixing and	6d	25-Jan-13	01-Feb-13	224d	1	bay/4d				ı	Construct SR8 t	unnel base slab- Ba	7 (10m), rebar	fixing and c
Ш	S5_5300	Construct SR8 tunnel concrete	base slab- Bay 8 (10m), rebar fixing and	6d	01-Feb-13	08-Feb-13	224d	1	bay/4d					Construct \$R8	unnel base slab- Ba	8 (10m), rebar	fixing and c
Ш	S5_5305	Construct SR8 tunnel concrete	base slab- Bay 9 (10m), rebar fixing and	6d	08-Feb-13	19-Feb-13	224d	1	bay/4d					Construct SR8	tunnel base slab- Ba	9 (10m), rebar	fixing and
Ш	S5_5310	Construct SR8 tunnel concrete	base slab- Bay 10 (10m), rebar fixing and	6d	19-Feb-13	26-Feb-13	224d	1	bay/4d					Construct SR8	tunnel base slab- B	ay 10 (10m), reb	ar fixing an
Ш	S5_5312	Construct SR8 tunnel concrete	base slab- Bay 11 (10m), rebar fixing and	6d	26-Feb-13	05-Mar-13	224d	1	bay/4d					■ Construct SR8	tunnel base slab- B	ay 11 (10m), reb	ar fixing an
Ш	S5_5315	Construct SR8 tunnel concrete	base slab- Bay 12 (10m), rebar fixing and	6d	06-Mar-13	13-Mar-13	223d	1	bay/4d					I Construct SR	tunnel base slab- E	3ay 12 (10m), reb	ar fixing ar
Ш	Works in Ea	ast Bound Tunnel															
	EB, Tunne	el Excavation															
	EB Top 1s	st Half Heading															
Ш	95 5340	Temporary works at r	portal/tunnel face: forepoling, grouting, probing	36d	07-Jul-12	18-Aug-12	423d	1	.5 months				L Tempo	rary works at norta	l/tunnel face: forepo	ling grouting pro	ohing
Ш																	
Ш		20m	xcavation, 1st 20m+ pressure grouting next	33d	18-Aug-12	26-Sep-12	423d	20m 0).6m/d						avation, 1st 20m+ pi		
Ш	S5_5345	EB 1st half heading ex 20m	xcavation, next 20m+ pressure grouting next	33d	26-Sep-12	07-Nov-12	423d	20m 0).6m/d				■ EB	1st half heading e	xcavation, next 20m	+ pressure grout	ng next 20
Ш	S5_5350	EB 1st half heading ex 20m	xcavation, next 20m+ pressure grouting next	25d	07-Nov-12	06-Dec-12	423d	20m 0).8m/d				■ E	B 1st half heading	excavation, next 20	m+ pressure grou	uting next 2
Ш	S5_5355	EB 1st half heading ex 20m	xcavation, next 20m+ pressure grouting next	25d	06-Dec-12	08-Jan-13	423d	20m 0	.8m/d					EB 1st half heading	g excavation, next 2	0m+ pressure gr	puting next
Ш	S5_5360	EB 1st half heading ex 20m	xcavation, next 20m+ pressure grouting next	20d	08-Jan-13	31-Jan-13	423d	20m 1	m/d					I EB 1st half head	ing excavation, next	20m+ pressure g	grouting ne
Ш	S5_5370	EB 1st half heading ex 20m	xcavation, next 20m+ pressure grouting next	20d	31-Jan-13	27-Feb-13	423d	20m 1	m/d				1	■ EB 1st half hea	ding excavation, ne	xt 20m+ pressure	grouting n
Ш	S5_1013	5 EB Tunnel Breakthrou	ugh	0d		27-Feb-13*	0d							◆ EB Tunnel Bre	akthrough		
Ш	EB Top 2	nd Half Heading															
Ш	S5_5390	EB 2nd half heading 6	excavation 1st 20m+ pressure grouting next	33d	27-Dec-12	05-Feb-13	324d	20m 0).6m/d				-	EB 2nd half hea	ding excavation 1st	20m+ pressure g	routing nex
	S5_5395	EB 2nd half heading 6	excavation next 20m+ pressure grouting next	25d	05-Feb-13	09-Mar-13	324d	20m 0	.8m/d	-				EB 2nd half he	eading excavation ne	ext 20m+ pressure	e grouting i
Ш	S5_5400		excavation next 20m+ pressure grouting next	25d	09-Mar-13	12-Apr-13	349d	20m 0).8m/d					EB 2nd half	heading excavation	next 20m+ press	ure groutin
	Domoin	ning Work	35 of 53						<u> </u>	F	repared by Willian	n Caluza	;	<u> </u>			<u>: </u>
		Remaining Work							Date		Revision	Checked		d			
•	◆ Milestor	· ·	China Sta	e Constr	uction Engineering	(Hong Kong) L	_td		15-Feb.	. Date pre		ST	KL	nne sty v	国建架工程(華(年)多版	
			Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causewav Bav	Typhoon S	Shelter Section)		<u> </u>	s updated				STATE CONSTRUCTION E		
							,,	,		IO 17 Dec	cember 2010)			CHINA	JUNE CONSTRUCTION E	TOTAL CALL CONTROL CON	, norta/ Lib.
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Acti	vity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
	S5_5405	EB 2nd half heading excavation next 20m+ pressure grouting next	20d	12-Apr-13	07-May-13	349d	20m	0.8m/d	■ EB 2nd half heading excavation next 20m+ pressure grouti
Ш	S5_5410	EB 2nd half heading excavation next 20m+ pressure grouting next 20m	20d	07-May-13	31-May-13	349d	20m	1m/d	■ EB 2nd half heading excavation next 20m+ pressure grou
Ш	S5_5415	EB 2nd half heading excavation next 20m+ pressure grouting next 20m	20d	31-May-13	25-Jun-13	349d	20m	1m/d	■ EB 2nd half heading excavation next 20m+ pressure gro
Ш	EB Bottom								
Ш	S5_5435	EB - 1st 20m bottom benching+ pressure grouting next 20m	25d	05-Feb-13	09-Mar-13	324d	20m	0.8m/d	■ EB - 1st 20m bottom benching+ pressure grouting next 20m
Ш	S5_5440	EB - next 20m bottom benching+ pressure grouting next 20m	25d	09-Mar-13	12-Apr-13	324d	20m	0.8m/d	EB - next 20m bottom benching+ pressure grouting next 20m
Ш	S5_5445	EB - next 20m bottom benching+ pressure grouting next 20m	20d	12-Apr-13	07-May-13	349d	20m	1m/d	■ EB - next 20m bottom benching+ pressure grouting next 20
Ш	S5_5450	EB - next 20m bottom benching+ pressure grouting next 20m	20d	07-May-13	31-May-13	349d	20m	1m/d	■ EB - next 20m bottom benching+ pressure grouting next 2
Ш	S5_5455	EB - next 20m bottom benching+ pressure grouting next 20m	20d	31-May-13	25-Jun-13	349d	20m	1m/d	■ EB - next 20m bottom benching+ pressure grouting nex
Ш	S5_5460	EB - next 20m bottom benching+ pressure grouting next 20m	16d	25-Jun-13	15-Jul-13	349d	20m	1.2m/d	■ EB - next 20m bottom benching+ pressure grouting ne
Ш	S5_5465	EB - next 21m bottom benching+ pressure grouting next 21m	16d	15-Jul-13	02-Aug-13	349d	21m	1.2m/d	■ EB - next 21m bottom benching+ pressure grouting n
Ш	EB Tunnel (Concrete Lining Works							
Ш	EB Kicker V	Nall and Arc Tunnel Lining							
Ш	S5_7750	EB erect lining mould	48d	07-Feb-13	12-Apr-13	324d			EB erect lining mould
Ш	S5_7685	EB - tunnel wall lining, Bay 1 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	12-Apr-13	23-Apr-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 1 (10m) waterproofing, rebar fix
Ш	S5_7690	EB - tunnel wall lining, Bay 2 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	23-Apr-13	04-May-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 2 (10m) waterproofing, rebar fix
Ш	S5_7695	EB - tunnel wall lining, Bay 3 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	04-May-13	15-May-13	324d		1.5 weeks/bay	■ EB - tunne wall lining, Bay;3 (10m) waterproofing, rebar fit
Ш	S5_7700	EB - tunnel wall lining, Bay 4 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	15-May-13	27-May-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 4 (10m) waterproofing, rebar f
Ш	S5_7705	EB - tunnel wall lining, Bay 5 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	27-May-13	06-Jun-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 5 (10m) water proofing, rebar
Ш	S5_7710	EB - tunnel wall lining, Bay 6 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	06-Jun-13	18-Jun-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 6 (10m) waterproofing, rebar
Ш	S5_7715	EB - tunnel wall lining, Bay 7 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	18-Jun-13	28-Jun-13	324d		1.5 weeks/bay	EB:- tunnel wall lining, Bay 7 (10m) waterproofing, rebal
Ш		EB - tunnel wall lining, Bay 8 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	28-Jun-13	10-Jul-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 8 (10m) waterproofing, reba
Ш		EB - tunnel wall lining, Bay 9 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	10-Jul-13	20-Jul-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 9 (10m) waterproofing, reb
	S5_7730	EB - tunnel wall lining, Bay 10 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	20-Jul-13	31-Jul-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 10 (10m) waterproofing, re
Ш	S5_7735	EB - tunnel wall lining, Bay 11 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	31-Jul-13	10-Aug-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 11 (10m) waterproofing, n
Ш		EB - tunnel wall lining, Bay 12 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	10-Aug-13	21-Aug-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 12 (10m) waterproofing, r
Ш	S5_7745	EB - tunnel wall lining, Bay 13 (10.5m) waterproofing, rebar fixing, formwork + concrete lining	9d	21-Aug-13	31-Aug-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 13 (10.5m) waterproofing
Ш		EB - tunnel wall lining, Bay 14 (10.5m) waterproofing, rebar fixing, formwork + concrete lining	9d	31-Aug-13	11-Sep-13	324d		1.5 weeks/bay	
		EB - tunnel wall lining, Bay 15 (10.5m) waterproofing, rebar fixing, formwork + concrete lining	9d	11-Sep-13	23-Sep-13	324d		1.5 weeks/bay	■ EB - tunnel wall lining, Bay 15 (10.5m) waterproofi
	Remainir							Date	Prepared by William Caluza Revision Checked Approved
	Critical R Milestone		te Constr	uction Engineering	(Hong Kong) L	td		15-Feb	Date prepared ST KL 中央津井工程(乗井) 李阳八号
	,	Contract No. HY/2009/15 - Central N	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	helter Sectio	n)	(progress updated to 17 December 2010) 中國建築工程(香港) 有限公司 CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Acti	vity ID	Activity Name		Original	Start	Finish	Total Float	Quantity	Prod Rate	2011	2012	201	3 2014	2015 2016
	05 3355	Diamagette But - 5	auli	Duration	00.0 10	00.0-4.40	0041					JJ	14 1 1 1 1 1 1 1 1 1 1	
	S5_7755	Dismantle lining form	WOFK	24d	23-Sep-13	23-Oct-13	324d						Dismantle lining for	TIWOFK
	EB Base Si	Slab - Rebar, Formwo	rk and Concrete											
	S5_5550	EB - tunnel base slab concrete	, Bay 1 (10m) rebar fixing, formwork +	6d	10-Jul-13	17-Jul-13	327d		1 weeks/bay				EB - tunnel base slab, Ba	y 1 (10m) rebar fixing, formw
Ш	S5_5555	EB - tunnel base slab concrete	, Bay 2 (10m) rebar fixing, formwork +	6d	17-Jul-13	24-Jul-13	327d		1 weeks/bay				EB - tunnel base slab, Ba	ay 2 (10m) rebar fixing, formw
Ш	S5_5560	EB - tunnel base slab concrete	, Bay 3 (10m) rebar fixing, formwork +	6d	24-Jul-13	31-Jul-13	327d		1 weeks/bay				■ EB - tunnel base slab, B	ay 3 (10m) rebar fixing, formv
Ш	S5_5565	EB - tunnel base slab concrete	, Bay 4 (10m) rebar fixing, formwork +	6d	31-Jul-13	07-Aug-13	327d		1 weeks/bay				■ EB - tunnel base slab, E	ay 4 (10m) rebar fixing, formv
Ш	S5_5570	EB - tunnel base slab concrete	, Bay 5 (10m) rebar fixing, formwork +	6d	07-Aug-13	14-Aug-13	327d		1 weeks/bay				■ EB - tunnel base slab, E	Bay 5 (10m) rebar fixing, form
Ш	S5_5575	EB - tunnel base slab concrete	, Bay 6 (10m) rebar fixing, formwork +	6d	14-Aug-13	21-Aug-13	327d		1 weeks/bay				■ EB - tunnel base slab, l	Bay 6 (10m) rebar fixing form
Ш	S5_5580	EB - tunnel base slab concrete	, Bay 7 (10m) rebar fixing, formwork +	6d	21-Aug-13	28-Aug-13	327d		1 weeks/bay				■ EB - tunnel base slab,	Bay 7 (10m) rebar fixing, form
Ш	S5_5585	EB - tunnel base slab concrete	, Bay 8 (10m) rebar fixing, formwork +	6d	28-Aug-13	04-Sep-13	327d		1 weeks/bay				■ EB - tunnel base slab,	Bay 8 (10m) rebar fixing, form
Ш	S5_5590	EB - tunnel base slab concrete	, Bay 9 (10m) rebar fixing, formwork +	6d	04-Sep-13	11-Sep-13	327d		1 weeks/bay				■ EB - tunnel base slab	Bay 9 (10m) rebar fixing, for
Ш	S5_5595	EB - tunnel base slab concrete	, Bay 10 (10m) rebar fixing, formwork +	6d	11-Sep-13	18-Sep-13	327d		1 weeks/bay				■ EB - tunnel base slab	, Bay 10 (10m) rebar fixing, fo
Ш	S5_5600	EB - tunnel base slab concrete	, Bay 11 (10m) rebar fixing, formwork +	6d	18-Sep-13	26-Sep-13	327d		1 weeks/bay				EB - tunnel base slat	o, Bay 11 (10m) rebar fixing, fo
Ш	S5_5605	EB - tunnel base slab concrete	, Bay 12 (10m) rebar fixing, formwork +	6d	26-Sep-13	04-Oct-13	327d		1 weeks/bay				EB - tunnel base slal	o, Bay 12 (10m) rebar fixing, f
Ш	S5_5610	EB - tunnel base slab concrete	, Bay 13 (10.5m) rebar fixing, formwork +	6d	04-Oct-13	11-Oct-13	327d		1 weeks/bay				■ EB - tunnel base sla	b, Bay 13 (10.5m) rebar fixing
Ш	S5_5612	EB - tunnel base slab concrete	, Bay 14 (10.5m) rebar fixing, formwork +	6d	11-Oct-13	19-Oct-13	327d		1 weeks/bay				■ EB - tunnel base sla	ab, Bay 14 (10.5m) rebar fixing
	S5_5614	EB - tunnel base slab concrete	, Bay 15 (10.5m) rebar fixing, formwork +	6d	23-Oct-13	30-Oct-13	324d		1 weeks/bay				■ EB - tunnel base sl	ab, Bay 15 (10.5m) rebar fixin
Ш	Works in We	est Bound Tunnel												
Ш	WB, Tunnel	l Excavation												
Ш	WB Top 1s	st Half Heading												
Ш	S5_8410	Temporary works at	portal/tunnel face: forepoling, grouting, probing	36d	07-Jul-12	18-Aug-12	325d		1.5 months			Temporary work	s at portal/tunnel face: fore	poling, grouting, probing
Ш	S5_8450	WB 1st half heading 20m	excavation, 1st 20m+ pressure grouting next	33d	18-Aug-12	26-Sep-12	325d	20m (0.6m/d		•	WB 1st half he	ading excavation, 1st 20m+	pressure grouting next 20m
Ш	S5_8415	WB 1st half heading 20m	excavation, next 20m+ pressure grouting next	33d	26-Sep-12	07-Nov-12	325d	20m (0.6m/d			WB 1st half	heading excavation, next 20	0m+ pressure grouting next 20
Ш	S5_8420	WB 1st half heading 20m	excavation, next 20m+ pressure grouting next	25d	07-Nov-12	06-Dec-12	325d	20m (0.8m/d			■ WB 1st ha	If heading excavation, next	20m+ pressure grouting next
Ш	S5_8425	WB 1st half heading 20m	excavation, next 20m+ pressure grouting next	25d	06-Dec-12	08-Jan-13	325d	20m (0.8m/d			WB 1st h	nalf heading excavation, ne	d 20m+ pressure grouting nex
Ш	S5_8430	WB 1st half heading 20m	excavation, next 20m+ pressure grouting next	20d	08-Jan-13	31-Jan-13	325d	20m	1m/d			■ WB 1st	half heading excavation, no	ext 20m+ pressure grouting ne
Ш	S5_8445	WB 1st half heading	excavation, next 9m+ pressure grouting	9d	31-Jan-13	14-Feb-13	325d	9m	1m/d			■ WB1s	t half heading excavation, n	ext 9m+ pressure grouting
Ш	S5_10130	WB Tunnel Breakthro	ough	0d		14-Feb-13*	0d					♦ WB Tu	unnel Breakthrough	
Ш	WB Top 2n	nd Half Heading		, ,			,							
	Remaini	ing Work	37 of 53							Prepared by W				
_	Critical F	Remaining Work	China Sta	te Constri	uction Engineering	(Hong Kong) I	⊥td		Date 15 Feb	Revision Date prepared	Checked A			
•	Mileston	ne			-					(progress updated	ST K	ppr		(香港)有限公司
			Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	/ Typhoon S	Shelter Section)	to 17 December 2010)		caute	CHINA STATE CONSTRUCTION	ENGINEERING (HONG KONG) LTD.
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Activ	vity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity F	Prod Rate		2011		2012	2013	3	2014	2015	2016
									Щ	14 14 14 14 14 14 14 14 14 14 14 14 14 1	4 4		1 1 4 1 1 1	4 4		J J J A	
Ш	S5_8455	WB 2nd half heading excavation 1st 20m+ pressure grouting next 20m	33d	27-Dec-12	05-Feb-13	189d	20m ().6m/d					WB 2nd	I half heading	g excavation 1st	20m+ pressure (grouting ne
Ш	S5_8460	WB 2nd half heading excavation next 20m+ pressure grouting next 20m	25d	05-Feb-13	09-Mar-13	189d	20m ().8m/d					■ WB 2r	nd half headi	ng excavation ne	xt 20m+ pressu	re grouting
П	S5_8465	WB 2nd half heading excavation next 20m+ pressure grouting next 20m	25d	09-Mar-13	12-Apr-13	240d	20m ().8m/d					■ WB	2nd half hea	ding excavation	next 20m+ press	sure groutir
П	S5_8470	WB 2nd half heading excavation next 20m+ pressure grouting next 20m	20d	12-Apr-13	07-May-13	240d	20m 0).8m/d					■ WE	3 2nd half he	eading excavation	next 20m+ pre	ssure grout
Ш	S5_8475	WB 2nd half heading excavation next 20m+ pressure grouting next 20m	20d	07-May-13	31-May-13	240d	20m 1	1m/d					■ w	/B 2nd half h	neading excavation	on next 20m+ pr	essure gro
П	S5_8490	WB 2nd half heading excavation next 9m+ pressure grouting	9d	31-May-13	11-Jun-13	240d	9m 1	1m/d		1 1			■ V	VB 2nd half	heading excavat	on next 9m+ pre	essure grou
П	WB Botto	m Benching										1 1 1					
П	S5_8530	WB - 1st 20m bottom benching+ pressure grouting next 20m	25d	05-Feb-13	09-Mar-13	189d	20m ().8m/d					■ WB-	1st 20m botto	om benching+ pr	essure grouting	next 20m
П	S5_8535	WB - next 20m bottom benching+ pressure grouting next 20m	25d	09-Mar-13	12-Apr-13	189d	20m 0).8m/d					■ WB	- next 20m b	oottom benching-	pressure grout	ting next 20
П	S5_8540	WB - next 20m bottom benching+ pressure grouting next 20m	20d	12-Apr-13	07-May-13	213d	20m 1	1m/d					■ WE	3 - next 20m	bottom benching	g+ pressure gro	uting next 2
П	S5_8545	WEB - next 20m bottom benching+ pressure grouting next 20m	20d	07-May-13	31-May-13	213d	20m 1	1m/d					■ W	VEB - next 20	0m bottom bencl	ning+ pressure g	grouting ne
П	S5_8550	WB - next 20m bottom benching+ pressure grouting next 20m	20d	31-May-13	25-Jun-13	213d	20m 1	1m/d						WB - next 20	0m bottom bencl	ning+ pressure g	grouting nex
П	S5_8555	WB - next 20m bottom benching+ pressure grouting next 20m	16d	25-Jun-13	15-Jul-13	213d	20m 1	1.2m/d		1 1				WB - next 2	20m bottom bend	hing+ pressure	grouting ne
Ш	S5_8565	WB - next 9m bottom benching+ pressure grouting next	8d	15-Jul-13	24-Jul-13	213d	9m 1	1.2m/d		1 1				WB - next	9m bottom bend	ning+ pressure (grouting ne
Ш	WB Tunnel	I Concrete Lining Works															
	WB Kicker	r Wall and Arc Tunnel Lining															
		<u> </u>											1 1				
Ш	S5_8790	WB erect lining mould	48d	07-Feb-13	12-Apr-13	189d							WB	erect lining r	mould		
Ш	S5_8725	WB - tunnel wall lining, Bay 1 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	12-Apr-13	23-Apr-13	189d	1	1.5 weeks/bay					■ WB	3 - tunnel wal	ll lining, Bay 1 (10	0m) waterproofii	ng, rebar fi
П	S5_8730	WB - tunnel wall lining, Bay 2 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	23-Apr-13	04-May-13	189d	1	1.5 weeks/bay		1 1			■ WE	3 - tunnel wa	all lining, Bay 2 (1	0m) waterproof	ing, rebar f
П	S5_8735	WB - tunnel wall lining, Bay 3 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	04-May-13	15-May-13	189d	1	1.5 weeks/bay		1 1			I W	B - tunnel wa	all lining, Bay 3 (1	0m) waterproof	fing, rebar f
П	S5_8740	WB - tunnel wall lining, Bay 4 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	15-May-13	27-May-13	189d	1	1.5 weeks/bay					■ W	/B - tunnel w	all lining, Bay 4 (10m) waterprod	ofing, rebar
П	S5_8745	WB - tunnel wall lining, Bay 5 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	27-May-13	06-Jun-13	189d	1	1.5 weeks/bay					IV	VB - tunnel v	vall lining, Bay 5	(10m) waterpro	ofing, rebar
П	S5_8750	WB - tunnel wall lining, Bay 6 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	06-Jun-13	18-Jun-13	189d	1	1.5 weeks/bay					• \	WB - tunnel	wall lining, Bay 6	(10m) waterpro	ofing, reba
П	S5_8755	WB - tunnel wall lining, Bay 7 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	18-Jun-13	28-Jun-13	189d	1	1.5 weeks/bay					B.	WB - tunnel	wall lining, Bay 7	(10m) waterpro	oofing, reba
П	S5_8760	WB - tunnel wall lining, Bay 8 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	28-Jun-13	10-Jul-13	189d	1	1.5 weeks/bay						WB - tunne	l wall lining, Bay	8 (10m) waterpi	roofing, reb
	S5_8765	WB - tunnel wall lining, Bay 9 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	10-Jul-13	20-Jul-13	189d	1	1.5 weeks/bay					1	WB - tunne	el wall lining, Bay	9 (10m) waterp	roofing, ret
	S5_8770	WB - tunnel wall lining, Bay 10 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	20-Jul-13	31-Jul-13	189d	1	1.5 weeks/bay		1 1				WB - tunn	el wall lining, Bay	10 (10m) wate	rproofing, r
	S5_8775	WB - tunnel wall lining, Bay 11 (10m) waterproofing, rebar fixing, formwork + concrete lining	9d	31-Jul-13	10-Aug-13	189d	1	1.5 weeks/bay						■ WB - tunr	nel wall lining, Ba	y 11 (10m) wate	erproofing,
	S5_8780	Ţ.	9d	10-Aug-13	21-Aug-13	189d	1	1.5 weeks/bay		1 1				■ WB - tun	nel wall lining, Ba	y 12 (10m) wat	erproofing,
		20 of 52			J		1			Prepared by V	Villiam Caluza	<u> </u>		!	1 1 1	1 ! !	<u> </u>
		iling vvork						Date		Revision		hecked Approv	/ed				
		Remaining Work China Sta	te Constr	uction Engineering	(Hong Kong) L	.td		15-Feb	Date pre		ST			-	# do *** /	== ** \ > =	
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		Contract No. HY/2009/15 - Central V	van Chai	by Pass - Tunnel (Causeway Bay	ypnoon	oneiter Section)	'	to 17 De	cember 2010)		chutc	CHINA STATE	CONSTRUCTION EN	GINEERING (HONC	KONG) LTD.
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Activity ID	Activity Name	Original		Finish	Total Float	Quantity	Prod Rate	2011	2012	2013	201	4	2015 20
		Duration						J 4 J 4	J J J	J 4 J J	4 1 4 1 4	14 1 1 1 1	1994 1119
	WB - tunnel wall lining, Bay 13 (10m) waterproofing, reba formwork + concrete lining		21-Aug-13	31-Aug-13	189d		1.5 weeks/bay				WB - tunnel wa		
S5_878	 WB - tunnel wall lining, Bay 14 (10m) waterproofing, rebaformwork + concrete lining 	ar fixing, 9d	31-Aug-13	11-Sep-13	189d		1.5 weeks/bay				■ WB - tunnel wa	ll lining, Bay 14 (1	0m) waterproof
S5_879	5 Dismantle lining formwork	24d	11-Sep-13	11-Oct-13	189d						Dismantle lining	ng formwork	
WB Base	e Slab - Rebar, Formwork and Concrete	,	'										
S5_857	0 WB - tunnel base slab, Bay 1 (10m) rebar fixing, formwor concrete	·k + 6d	10-Jul-13	17-Jul-13	189d		1 weeks/bay			ı	WB - tunnel base	slab, Bay 1 (10m)	rebar fixing, for
S5_857	WB - tunnel base slab, Bay 2 (10m) rebar fixing, formwork concrete	·k + 6d	17-Jul-13	24-Jul-13	189d		1 weeks/bay	1		1	WB - tunnel base	slab, Bay 2 (10m)	rebar fixing, for
S5_858	0 WB - tunnel base slab, Bay 3 (10m) rebar fixing, formwork concrete	·k + 6d	24-Jul-13	31-Jul-13	189d		1 weeks/bay	1		1	WB - tunnel base	slab, Bay 3 (10m)	rebar fixing, fo
S5_858	5 WB - tunnel base slab, Bay 4 (10m) rebar fixing, formwork concrete	·k + 6d	31-Jul-13	07-Aug-13	189d		1 weeks/bay	1		1	WB - tunnel base	slab, Bay 4 (10m) rebar fixing, fo
S5_859		·k + 6d	07-Aug-13	14-Aug-13	189d		1 weeks/bay	-		1	WB - tunnel base	slab, Bay 5 (10m	n) rebar fixing, fo
S5_859	5 WB - tunnel base slab, Bay 6 (10m) rebar fixing, formwork concrete	·k + 6d	14-Aug-13	21-Aug-13	189d		1 weeks/bay	1		ı	WB - tunnel bas	e slab, Bay 6 (10n	n) rebar fixing, f
S5_860	0 WB - tunnel base slab, Bay 7 (10m) rebar fixing, formwor concrete	·k + 6d	21-Aug-13	28-Aug-13	189d		1 weeks/bay	1			WB - tunnel bas	e slab, Bay 7 (10i	n) rebar fixing, t
S5_860	5 WB - tunnel base slab, Bay 8 (10m) rebar fixing, formwor concrete	·k + 6d	28-Aug-13	04-Sep-13	189d		1 weeks/bay	1			■ WB - tunnel bas	se slab, Bay 8 (10	m) rebar fixing,
S5_8610	0 WB - tunnel base slab, Bay 9 (10m) rebar fixing, formwor concrete	·k + 6d	04-Sep-13	11-Sep-13	189d		1 weeks/bay	1			■ WB - tunnel ba	se slab, Bay 9 (10	m) rebar fixing,
S5_861	5 WB - tunnel base slab, Bay 10 (10m) rebar fixing, formwo	ork + 6d	11-Sep-13	18-Sep-13	189d		1 weeks/bay	1			WB - tunnel ba	se slab, Bay 10 (10m) rebar fixin
S5_862	0 WB - tunnel base slab, Bay 11 (10m) rebar fixing, formwo	ork + 6d	18-Sep-13	26-Sep-13	189d		1 weeks/bay	1			WB - tunnel ba	ase slab, Bay 11 (10m) rebar fixin
S5_862	5 WB - tunnel base slab, Bay 12 (10m) rebar fixing, formwo	ork + 6d	26-Sep-13	04-Oct-13	189d		1 weeks/bay				■ WB - tunnel b	ase slab, Bay 12 (10m) rebar fixir
S5_863	0 WB - tunnel base slab, Bay 13 (10m) rebar fixing, formwo	ork + 6d	04-Oct-13	11-Oct-13	189d		1 weeks/bay				■ WB - tunnel b	ase slab, Bay 13	(10m) rebar fixiı
S5_892	0 WB - tunnel base slab, Bay 14 (10m) rebar fixing, formwo	ork + 6d	11-Oct-13	19-Oct-13	189d		1 weeks/bay	1			■ WB - tunnel l	pase slab, Bay 14	(10m) rebar fixi
Tunnel OH	VD & Cable Trough												
SR8 OHVD	and Cable Trough												
S5_6100	SR8 - Cable Trough Construction	72d	02-Dec-13	03-Mar-14	8d						SR8	Cable Trough C	onstruction
S5_6110	SR8 - OHVD Precast +Stitching	72d	03-Mar-14	03-Jun-14	8d	66 panels	7 panels/d	-				SR8 - OHVD Pred	ast +Stitching
WB Tunne	I OHVD and Cable Trough								1 1 1				
S5_6117	WB - OHVD Precast +Stitching	72d	03-Jun-14	27-Aug-14	8d	122 panels	7 panels/d	•				WB - OHVD	Precast +Stitchi
S5_6119	WB - Cable Trough Construction	72d	27-Aug-14	22-Nov-14	8d			-				WB-C	able Trough Co
EB Tunnel	OHVD and Cable Trough												
S5_6115	EB - Cable Trough Construction	72d	22-Nov-14	18-Feb-15	8d							EB	- Cable Troug
S5_6120	EB - OHVD Precast +Stitching	72d	18-Feb-15	22-May-15	8d	132 panels	7 panels/d	-					I EB - OHVD I
	TPCWAE Area (Portion 20A, 20B)									1 1			
	90.450							Prepared by William C	aluza	<u> </u>			
	N Romaining Work						Date	Revision	Checked Approve	ed			
◆ Milest	al Remaining Work	hina State Cons	truction Engineerir	ng (Hong Kong) l	Ltd		15-Feb Da		ST KL		****	- 20/= **	- PC - 1 - 1
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	Contract No. n 1/2009/15 -	Ocinciai vvali Olič	aı ⊔y raəə - Tullilei	t Causeway Day	, i ypilooli s	,	to '	17 December 2010)		DOULD	CHINA STATE CONSTR	UCTION ENGINEERIN	G (HONG KONG) L
		WORK	S PROGRAMMI	E REV. B						\dashv			

ctivity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 ²⁰
TPCWAE- P	Permits and/or Licens	ses							
S6_7245	Apply for DASO Perm	nit for Type 1/2	24d	27-Sep-10 A	26-Oct-10 A				Apply for DASO Permit for Type 1/2
S6_7255	EPD approval of DAS	6O Permit for type 1/2	28d	27-Oct-10 A	27-Nov-10 A				EPD approval of DASO Permit for type 1/2
Drainage D	iversion works along	Hung Hing Road (Portion 19)							
		,	004	15 Oct 10 A	10 lon 11	04			A Santa Constitution Description description and a state of UNIVERSAL UNIVER
PG_5440		mit for drainage works in HH Road	90d	15-Oct-10 A	12-Jan-11	0d			Apply Excavation Permit for drainage works in HH Road
PG_5805	TTA Submission for (CSHK works in Hung Hing Rd	28d	08-Dec-10 A	17-Dec-10	20d			TTA Submission for CSHK works in Hung Hing Rd
CD_5630	Site Possession - Por	tion XIX (19), Day 73	0d	10-Dec-10 A					Site Possession - Portion XIX (19), Day 73
S6_3003	TTA Implementation t	for drainage works along Hung hing Road	6d	13-Jan-11	19-Jan-11	0d			■ TTA Implementation for drainage works along Hung hing Road
S6_3005	Trial pit & verification	of any existing utilities at Hung Hing Road	12d	20-Jan-11	02-Feb-11	0d			■ Trial pit & verification of any existing utilities at Hung Hing Road
S6_3010	DRAINAGE AT HH R	D - SUMMARY	138d	07-Feb-11	24-Jun-11	0d			DRAINAGE AT HH RD - SUMMARY
S6_3012	Stage 1- short pipe		12d	07-Feb-11	19-Feb-11	0d	225DN, 12m length		Stage 1- short pipe
S6_3017	Stage 2- excavation,	pipelaying, MH, backfill	24d	21-Feb-11	19-Mar-11	0d		1.5 wk excav, 0.5 week pipelaying, 2	
S6_3025	Stage 3- excavation,	pipelaying, MH, backfill	24d	21-Mar-11	18-Apr-11	0d	. ,	1.5 wk excav, 0.5 week pipelaying, 2	Stage 3- excavation, pipelaying, MH, backfill:
S6_3030	Stage 4- excavation,	pipelaying, MH, backfill	24d	19-Apr-11	21-May-11	0d	0 /	1.5 wk excav, 0.5 week pipelaying, 2	Stage 4- excavation, pipelaying, MH, backfill
S6_3035	Stage 5- excavation,	pipelaying, MH, backfill	28d	23-May-11	24-Jun-11	0d	300/375DN,	2 wk excav, 1 week pipelaying, 2	Stage 5- excavation, pipelaying, MH, backfill
TPCWAE - I	Initial Works						7011 length, 2	week pipelaying, 2	
CD_5635	Site Possession - Por	tion XXA (20A), Day 0	Od	27-Sep-10 A					Site Possession - Portion XXA (20A), Day 0
CD_5640	Site Possession - Por	tion XXB (20B), Day 0	0d	27-Sep-10 A					Site Possession - Portion XXB (20B), Day 0
CD_5645	Site Possession - Por	tion XXI (21), Day 0	Od	27-Sep-10 A					Site Possession - Portion XXI (21), Day 0
S6_8195	Initial hydrographic su	rvey (echo sounding)	6d	01-Nov-10 A	13-Nov-10 A				Initial hydrographic survey (echo sounding)
S6_8200	Detailed survey and r	ecord photo- existing seawall	6d	14-Nov-10 A	04-Dec-10 A				Detailed survey and record photo- existing seawall
S6_8205	CEDD Agreement - D	Detailed survey and record photo- existing	6d	17-Dec-10	23-Dec-10	184d			CEDD Agreement - Detailed survey and record photo- existing seawall
S6_8203	Instrumentation at PC	CWA	24d	17-Dec-10	17-Jan-11	148d	12	???	Instrumentation at PCWA
S6_8210	Submit reinstatement works)	plan prior to demolition (45d prior to start of	6d	24-Dec-10	03-Jan-11	184d			Submit reinstatement plan prior to demolition (45d prior to start of works)
TPCWAE- N	Marine Site Investigat	tion							
S6_7225	MDN application for n	narine investigation	12d	04-Nov-10 A	11-Nov-10 A				MDN application for marine investigation
S6_7230	Issue of MDN for mar	ine investigation works	18d	12-Nov-10 A	29-Nov-10 A				Issue of MDN for marine investigation works
S6_7235		on - CPPT and vibrocore works at TPCWAE	10d	30-Nov-10 A	04-Dec-10 A				Marine site investigation - CPPT and vibrocore works at TPCWAE
S6_7240	-	on - submissions of reports	4d	05-Dec-10 A	17-Dec-10	19d			Marine site investigation - submissions of reports
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	ning Work	40 of 53						Date	Prepared by William Caluza Revision Checked Approved
	Remaining Work	China Sta	te Constru	uction Engineering	յ (Hong Kong) L	.td			ate prepared ST KL
♠ Milesto	ne	Contract No. UV/2000/45 Contract No.	Non Chail	Dy Doos Turnel (Caucaway Barr	Tunhaan	Shaltar Saatia.	(pro	rogress updated 中國建築工程(春港)有限公司
		Contract No. HY/2009/15 - Central \	wan Chai I	Dy Pass - Tunnel (Causeway Bay	ypnoon \$	onener Section	to 1	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LT
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Activity ID	Activity Name		Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 ²⁰¹⁶
TOCIMAE	Farmania III Baalania	4 5	Duration						
TPCWAE - Temporary Reclamation									
Submission Deadline									
S6_7880	Prepare and Submit N	MS for dredging works at TPCWAE	24d	29-Oct-10 A	17-Dec-10 A				Prepare and Submit MS for dredging works at TPCWAE
S6_7870	Prepare and and sub	mit Silt curtain proposal for TPCWAE works	18d	05-Nov-10 A	25-Nov-10 A				Prepare and and submit Silt curtain proposal for TPCWAE works
S6_7885	Prepare and Submit [Dredging plan for TPCWAE	24d	16-Nov-10 A	24-Nov-10 A				Prepare and Submit Dredging plan for TPCWAE
S6_7845	Engr review and appr	oval - Dredging plan for TPCWAE	24d	24-Nov-10 A	06-Dec-10 A				Engr review and approval - Dredging plan for TPCWAE
S6_7860	Engr Review and App	proval Silt curtain proposal for TPCWAE works	24d	26-Nov-10 A	23-Dec-10	7d			I Engr Review and Approval Silt curtain proposal for TPCWAE works
S6_7840	Engr review and appr	roval MS for dredging works at TPCWAE	18d	17-Dec-10 A	03-Jan-11	1d			Engr review and approval MS for dredging works at TPCWAE
S6_7875	Prepare and Submit S	Seawall block design for TPCWAE	6d	17-Dec-10	23-Dec-10	0d			Prepare and Submit Seawall block design for TPCWAE
S6_7900	Prepare and Submit (TPCWAE	CMC model for temporary reclamation -	6d	17-Dec-10	23-Dec-10	0d			Prepare and Submit CMC model for temporary reclamation - TPCWAE
S6_7850		roval - Seawall block design for TPCWAE	24d	22-Dec-10	21-Jan-11	0d			Engr review and approval - Seawall block design for TPCWAE
S6_7890	general fill) - TPCWA		6d	22-Dec-10	30-Dec-10	0d			Prepare and Submit MS for temporary reclamation (seawall block & general fill) - TPCWAE
S6_7855	block & general fill) - 7		18d	31-Dec-10	21-Jan-11	0d			■ Engr review and approval - MS for temporary reclamation (seawall block & general fill) - TPCWAE
S6_7895		Instrumentation Plan - TPCWAE	24d	04-Jul-11	01-Aug-11	85d			Submit Geotechnical Instrumentation Plan - TPCWAE
S6_7865	TPCWAE	roval - Geotechnical Instrumentation Plan -	24d	01-Aug-11	29-Aug-11	85d			Engr review and approval - Geptechnical Instrumentation Plan - TPCWAE
Temporary Reclamation									
S6_7095	TPCWAE- dredge W	est side	14d	08-Dec-10 A	10-Jan-11	1d	22,200 m3	1,850 m3/d	■ TPCWAE- dredge West side
S6_7125	TPCWAE - dredge North side and remaining areas (middle area)		15d	11-Jan-11	25-Jan-11	1d	22,200 m3	1,850 m3/d	■ TPCWAE - dredge North side and remaining areas (middle area)
S6_7130	TPCWAE - place rockfill North side		6d	22-Jan-11*	27-Jan-11	0d	7,848 m3	1,500 m3/d	I TPCWAE - place rockfill North side
S6_7105	·		6d	28-Jan-11	02-Feb-11	29d	7,848 m3	1,500 m3/d	■ TPCWAE - place rockfill West side
S6_7107	TPCWAE - Erect sea	wall block for survey platform	1d	20-Feb-11*	20-Feb-11	128d			I TPCWAE - Erect sea wall block for survey platform
S6_7110	TPCWAE - place leve		14d	07-Mar-11*	20-Mar-11	0d			■ TPCWAE - place levelling stone West side
S6_7120	·	wall block to +4 at West side	11d	21-Mar-11	31-Mar-11	100d	530 nos	50 nos/d	■ TPCWAE - place seawall block to +4 at West side
S6_7135	TPCWAE - place leve		14d	21-Mar-11	03-Apr-11	97d			■ TPCWAE - place levelling stone North side
S6_7140	temporary opening to		11d	04-Apr-11	14-Apr-11	97d	530 nos	50 nos/d	■ TPCWAE - place seawall blocks to +4 North side but leave temporary opening to allow barge for filling
S6_8455		ill to +2 within the seawall	24d	15-Apr-11	09-May-11	97d	71,205m3	3,000 m3/d	■ TPCWAE - General fill to +2 within the seawall
S6_8450			4d	10-May-11	13-May-11	97d	200	50 nos/d	TPCWAE - place seawall blocks to +4 at the temporary opening
	S6_7145 TPCWAE - Remaining General fill to +4 within the seawall (construct twin steel pipe 3mdia at TZ5 for future access)		7d	14-May-11	20-May-11	97d	20,000	3,000 m3/d	■ TPCWAE - Remaining General fill to +4 within the seawall (construct twin steel pipe 3mdia at TZ5 fr
TPCWAE - Diaphragm Wall									
Remair	ning Work	41 of 53							Prepared by William Caluza
	Remaining Work	China State Construction Engineering (Hong Kong) Ltd						Date 15 Feb	
◆ Mileston	ne								… Date prepared ST KL 中國建築工程(香港)有限公司
		Contract No. HY/2009/15 - Central Wan Chai By Pass - Tunnel (Causeway Bay Typhoon Shelter Section)						n)	(progress updated 中国建築工程(春港)有限公司 to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2010
Submission	 Deadline							
S6_7940	Submit ELS design TPCWAE (4 month for GEO	12d	11-Jan-11	25-Jan-11	81d			Submit ELS design TPCWAE (4 month for GEQ comments&resolution)
S6_7942	comments&resolution) Engineers review and approval - ELS design TPCWAE	18d	25-Jan-11	18-Feb-11	81d			■ Engineers review and approval - ELS design TPCWAE
S6_7930	GEO review and approval - ELS design TPCWAE - (4 months for	96d	18-Feb-11	18-Jun-11	81d			GEO review and approval - ELS design TPCWAE - (4 months for GEO comments&resolution)
S6_7915	GEO comments&resolution) Submit Diaphragm Wall Trench Stability and Guide Wall Design	24d	25-Feb-11	25-Mar-11	87d			Submit Diaphragm Wall Trench Stability and Guide Wall Design
S6_7925	Prepare and submit CMC model for diaphragm wall construction -	24d	18-Mar-11	16-Apr-11	81d			■ Prepare and submit CMC model for diaphragm wall construction - TPCWAE
S6_7905	TPCWAE Engineers review and approval -Diaphragm Wall Trench Stability	48d	25-Mar-11	27-May-11	87d			Engineers review and approval -Diaphragm Wall Trench Stability and Gulde Wall Design
S6_7920	and Guide Wall Design Submit MS for diaphragm wall construction - TPCWAE	24d	16-Apr-11	20-May-11	81d			Submit MS for diaphragm wall construction - TPCWAE
S6_7910	Engineers review and approval - MS for diaphragm wall construction - TPCWAE	24d	20-May-11	18-Jun-11	81d			Engineers review and approval - MS for diaphragm wall construction - TPCWAE
Diaphragm V								
S6_7260	Curtain grout along proposed diaphragm wall	20d	20-May-11	14-Jun-11	87d	308 holes	16 holes/d	Curtain grout along proposed diaphragm wall
S6_7270	DIAPHRAGM WALL SUMMARY	114d	20-May-11	06-Oct-11	105d			DIAPHRAGM WALL SUMMARY
S6_8275	Install king posts	48d	20-May-11	18-Jul-11	157d	24 nos	3nos/week/rig	Install king posts
S6_8425	Site investigation	52d	20-May-11	22-Jul-11	81d	52 nos	3d/no/rig	Site investigation
S6_8423	Set up bentonite silo/plants and equipments	24d	20-May-11	18-Jun-11	81d			Set up bentonite silo/plants and equipments
S6_7265	Install guide wall	31d	27-May-11	05-Jul-11	87d	308m	10m/d	Install guide wall
S6_8265	Diaphragm wall construction	78d	18-Jun-11	20-Sep-11	81d	52 panels	6d/panel @ 3d	Diaphragm wall construction
S6_8270	Install shear pins on diaphragm wall	63d	28-Jul-11	13-Oct-11	85d	156 nos	cycle 5nos/week/rig	Install shear pins on diaphragm wall
S6_7275	Diaphragm Wall Pile test	48d	08-Aug-11	06-Oct-11	105d			Diaphragm Wall Pile test
S6_8295	Carry out contact/fissure grouting	31d	03-Sep-11	13-Oct-11	204d	312 holes	10holes/d	Carry out contact/fissure grouting
TPCWAE- EL	LS Works & Soft Excavation							
Submission								
		041		40.14	04.1			
S6_7965	Prepare and submit CMC model for ELS at TPCWAE	24d	14-Apr-11	18-May-11	81d			Prepare and submit CMC model for ELS at TPCWAE
S6_7945	Submit MS for ELS at TPCWAE - (4 month for GEO comments&resolution)	12d	18-May-11	01-Jun-11	81d			Submit M\$ for ELS at TPCWAE - (4 month for GEO comments&resolution)
S6_7947	Engineers review and approval - MS for ELS at TPCWAE	18d	01-Jun-11	23-Jun-11	81d			Engineers review and approval - MS for ELS, at TPCWAE
S6_7935	GEO review and approval - MS for ELS at TPCWAE - (4 month for GEO comments&resolution)	96d	23-Jun-11	18-Oct-11	81d			GEO review and approval - MS for ELS at TPCWAE + (4 month for GEO comments&resc
S6_7950	Submit design for dewatering system	24d	25-Jun-11	25-Jul-11	81d			Submit design for dewatering system
S6_7960	Engineers review and approval - design for dewatering system	48d	25-Jul-11	20-Sep-11	81d			Engineers review and approval - design for dewatering system
S6_7955	Submit pumping test report	1d	17-Oct-11	18-Oct-11	81d			I Submit pumping test report
Remaini	ing Work 42 of 53				,		'	Prepared by William Caluza
	Danasinia a Marte	ta Constri	uction Engineering	r (Hong Kong) I	td		Date	Revision Checked Approved
♦ Mileston	ne						(p	ate prepared ST KL 中國建築工程(香港)有限公司
	Contract No. HY/2009/15 - Central N	Van Chai I	By Pass - Tunnel (Causeway Bay	Typhoon S	helter Section	\	17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD
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ctivity ID	Activity Name	Original	Start	Finish	Total Float	Quantity	Prod Rate	:	2011	2012	2013		2014	2015	2016
EL C Marks		Duration						111111111111111111111111111111111111111	114 111	JJ	7 4 7	4 1 9 1	JJA	1 1114	J
ELS Works															
S6_8280	Install dewatering wells and piezometers	48d	20-May-11	18-Jul-11	135d				Install dewat	ering wells and	d piezometers				
S6_8285	Install inclinometers inside D-wall	36d	29-Aug-11	13-Oct-11	85d				Install in	nclinometers in	side D÷wall				
S6_7280	Carry out pumping tests	21d	20-Sep-11	17-Oct-11	81d				Carry o	ut pumping te	sts				
S6_7285	1st Layer - Soft Excavation	14d	18-Oct-11	03-Nov-11	81d	21,576m3	2,000m3/d		■ 1st La	yer - Soft Exc	avation				
S6_8470	TPCWAE - ELS SUMMARY (EXCEPT ROCK EXCAVATION)	141d	18-Oct-11	07-Mar-12	101d					TPCWAE - E	ELS SUMMAR	Y (EXCEPT RO	CK EXCAVAT	ION)	
S6_7290	1st Layer - install lateral support	14d	22-Oct-11	08-Nov-11	81d				■ 1st La	yer - install late	eral support				
S6_7295	Install vibrating wire strain gauge	6d	27-Oct-11	03-Nov-11	81d			1	I Install	vibrating wire	strain gauge				
S6_7300	2nd Layer - Soft Excavation	14d	03-Nov-11	19-Nov-11	81d	26,970m3	2,000m3/d		■ 2nd L	ayer - Soft Ex	cavation				
S6_7305	2nd Layer - install lateral support	14d	08-Nov-11	24-Nov-11	81d				■ 2nd l	ayer - install la	ateral support				
S6_7310	3rd Layer - Soft Excavation	14d	24-Nov-11	10-Dec-11	81d	12,406m3	2,000m3/d	1	■ 3rd	Layer - Soft E	xcavation				
S6_7315	3rd Layer - install lateral support	14d	29-Nov-11	15-Dec-11	81d			1	■ 3rd	Layer - install	ateral support				
S6_7320	4th Layer - Soft Excavation	14d	15-Dec-11	04-Jan-12	81d	17,261m3	1,800m3/d	1	■ 4th	Layer - Soft B	Excavation				
S6_7325	4th Layer - install lateral support	14d	20-Dec-11	09-Jan-12	81d			1	■ 4th	Layer - instal	lateral suppo	t			
S6_7330	5th Layer - Soft Excavation	14d	09-Jan-12	28-Jan-12	81d	18,879m3	1,800m3/d	1	■ 5	th Layer - Sof	t Excavation				
S6_7335	5th Layer - install lateral support	14d	13-Jan-12	02-Feb-12	81d			1	■ 5	ith Layer - inst	al lateral supp	ort			
S6_7340	6th Layer - Soft Excavation	25d	02-Feb-12	02-Mar-12	81d	37,758m3	1,500m3/d	1	•	6th Layer - S	oft Excavation				
S6_7345	6th Layer - install lateral support	25d	07-Feb-12	07-Mar-12	81d			1		6th Layer - in	stall lateral sur	port			
S6_8290	Install tie back anchor to D- Walls (area on east side, near mined tunnel)	45d	12-Mar-12	09-May-12	186d	67 nos	3nos/week/rig			Install tie I	pack anchor to	D- Walls (area	on east side, n	ear mined tu	inel)
S6_8292	Install tie back anchor to D- Walls (area on west side, remainder)	53d	09-May-12	13-Jul-12	186d	53 nos	3nos/week/rig			Install	tie back ancho	r to D- Walls (ar	rea on west sid	de, remainder	,
TPCWAE - R	OCK EXCAVATION										1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1		1
S6_7360	Rock excavation west side (area near tunnel portal) (no rock ancho to be installed)	r 109d	12-Mar-12	26-Jul-12	81d	43,600 m3	400 m3/d	1		Rock	excavation we	st side (area nea	ar tunnel porta	ıl) (no rock ar	chor to be
S6_7365	Rock excavation east side (remainder)	57d	26-Jul-12	03-Oct-12	175d	22,700 m3	400 m3/d	1		- R	ock excavation	east side (rema	ainder)		
TPCWAE - A	S LOGISTICS AREA FOR MINED TUNNELING WORKS								1 1					1 1	
S6_7370	DURATION FOR USE OF TPCWAE AS ACCESS FOR MINED TUNNEL WORKS	341d	12-May-12	18-Apr-13	98d						DUF	ATION FOR US	SE OF TPCW	AE AS ACCE	S FOR MI
S6_7376	Commencement of MT works at SR8	0d	12-May-12		189d					◆ Commen	cement of MT	works at SR8			
S6_7372	Commencement of MT works at E/B	0d	07-Jul-12		423d					◆ Comm	encement of N	/IT works at E/B			
S6_7374	Commencement of MT works at W/B	0d	07-Jul-12		325d			1		◆ Comm	encement of N	/IT works at W/E	3		
TPCWAE- CO	CT RC Structure														
Remaini	ing Work 43 of 53							Prepared	by William Caluza	<u>. : : :</u>	<u> </u>	<u>i i </u>	i i	<u>i i i</u>	
	Domaining Work				4.1		Date	Revisi	ion Cl	hecked Appro	ved				
◆ Mileston	China Sta	ate Constr	uction Engineering	g (Hong Kong) L	.ta		15-Feb Da		ST	KL KL	000	中國建	建工 珍(華	に注)名 B	1八百
	Contract No. HY/2009/15 - Central	Wan Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	\ 	rogress update 17 December 2			chite	CHINA STATE CON			
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vity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011		2012 J .	2013 2014 2015 J	20°
Submission	n Deadline									1741111	 	1111
S6_7980	Submit formwork and falsework design for CCT - TPCWAE	24d	01-Nov-12	28-Nov-12	80d						Submit formwork and falsework design for CCT - TPCWA	AE
S6_7990	Prepare and submit CMC model for CCT-TPCWAE construction	n 24d	01-Nov-12	28-Nov-12	80d						Prepare and submit CMC model for CCT-TPCWAE const	truction
S6_7970	Engineers review and approval - formwork and falsework design CCT - TPCWAE -	for 48d	29-Nov-12	26-Jan-13	80d						Engineers review and approval - formwork and falsewo	ork desiç
S6_7985	Submit MS for CCT-TPCWAE construction	24d	29-Nov-12	28-Dec-12	80d						Submit MS for CCT-TPCWAE construction	
S6_7975	Engineers review and approval MS for CCT-TPCWAE construction	tion 24d	29-Dec-12	26-Jan-13	80d						■ Engineers review and approval MS for CCT-TPCWAE	i constr
TPCWAE - C	CCT (Half- West Side)											+
		054	00 100 40	00 5-1- 40	004	40 h a	Editor discount				= TD0 WF 0	
S6_7375	TPCWAE - Construct tunnel base slab	25d	28-Jan-13	28-Feb-13	80d	10 bays	5d/bay/formwork				TPCWAE - Construct tunnel base slab	
S6_8475	TPCWAE - CCT SUMMARY (EAST SIDE)	68d	28-Jan-13	05-Apr-13	98d						TPCWAE - CCT SUMMARY (EAST SIDE)	
S6_7380	TPCWAE - Construct tunnel wall & roof slab	40d	14-Feb-13	05-Apr-13	80d	10 bays	8d/bay/formwork				TPCWAE - Construct tunnel wall & roof slab	
TPCWAE - C	CCT (Remaining Half - near Mined Tunnel)											
S6_7385	TPCWAE Construct tunnel base slab	23d	19-Mar-13	18-Apr-13	80d	9 bays	5d/bay/formwork				■ TPCWAE Construct tunnel base slab	
S6_8480	TPCWAE - CCT SUMMARY (WEST SIDE)	80d	19-Mar-13	06-Jun-13	96d						TPCWAE - CCT SUMMARY (WEST SIDE)	
S6_7390	TPCWAE Construct tunnel wall & roof slab (incl. mucking out access at TZ5 area)	36d	06-Apr-13	20-May-13	80d	9 bays	8d/bay/formwork				TPCWAE Construct tunnel wall & roof slab (incl.	i. muckir
S6_7392	TPCWAE - external waterproofing on top of completed CCT bo (incl. screeding)	x 24d	27-Apr-13	27-May-13	83d						■ TPCWAE - external waterproofing on top of col	mpleted
S6_8410	TPCWAE - backfilling to sea bed level	30d	02-May-13	06-Jun-13	80d	89,850m3	3000m3/d				■ TPCWAE - backfilling to sea bed level	
TPCWAE - F	Removal of Temporary Reclamation									1 1 1 1 1 1 1 1		_
Submission	• •									1 1		
S6_8190	Prepare and submit CMC model for removal of temp reclamatio and TZ5 construction	n 24d	31-Jan-13	02-Mar-13	88d						Prepare and submit CMC model for removal of temp	redam د
S6_8180	Submit design of bulkhead at TZ5	24d	01-Feb-13	04-Mar-13	101d						■ Submit design of bulkhead at TZ5	
S6_8185	Submit MS for removal of temp reclamation	24d	04-Mar-13	03-Apr-13	88d						Submit MS for removal of temp reclamation	
S6_8170	Engineers review and approval - design of bulkhead at TZ5	48d	05-Mar-13	04-May-13	101d						Engineers review and approval - design of bulkhe	ead at 7
S6_8175	Engineers review and approval - MS for removal of temp	24d	05-Apr-13	03-May-13	88d						■ Engineers review and approval - MS for removal	
	reclamation	24u	υσ-Αρι-13	03-iviay-13	oou					1 1 1 1 1 1	Ligilieers review and approvar-ivis to retrieval	OI temp
Removal of	f Temporary Reclamation & Form TZ5											
S6_7510	DURATION OF TEMP. RECLAMATION TPCWAE (1003D)	894d	20-Feb-11	02-Aug-13	97d						DURATION OF TEMP. RECLAMATION TP	,CMAE
S6_4550	Drive box type sheet pile SW corner of TPCWAE (to form TZ5)	36d	18-Mar-13	03-May-13	88d						Drive box type sheet pile SW corner of TPCWAE	(to forr
S6_7490	REMOVAL OF TEMP. RECLAMATION SUMMARY	93d	02-May-13	02-Aug-13	97d						REMOVAL OF TEMP, RECLAMATION SUN	MMARY
						6 lovers	6d/lavor				Removal of ELS inside cofferdam	
S6_7830	Removal of ELS inside cofferdam	36d	02-May-13	14-Jun-13	80d	6 layers	6d/layer					
S6_7515	Remove general fill (between D Wall & seawall block)	6d	04-May-13	10-May-13	88d	16,726 m3	3,000 m3/d				Remove general fill (between D Wall & seawall bl	lock)
Remair	ining Work 44 of 53							Prepared by Willi				
Critical	I Remaining Work China	State Constr	uction Engineerin	g (Hong Kong) L	_td		Date 15-Feb Date	Revision e prepared	Chec ST	ked Appro	ved	
Milestor	one		•			Shalfor O4'	(pro	gress updated	01	11.	中國建築工程(香港)有限	
	Contract No. HY/2009/15 - Centr	ai wan Chai	By Pass - Tunnel	(Causeway Bay	ıypnoon S	neiter Section	to 1	7 December 2010)			CHINA STATE CONSTRUCTION ENGINEERING (HONG K	KONG) LT
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 2016
S6_7520	Remove seawall block	11d	06-May-13	18-May-13	101d	541 nos	50nos/d	■ Remove seawall block
S6_7525	Install seawall block for TZ5	10d	06-May-13	16-May-13	101d	472 nos	50nos/d	■ Install seawall block for TZ5
S6_4600	Install horizontal struts bet. conc. block(PCWA) & box type sheet	18d	11-May-13	01-Jun-13	88d			■ Install horizontal struts bet. conc. block(PCWA) & box type
	pile wall to form south side of TZ5 General fill for TZ5	2d	03-Jun-13	04-Jun-13	88d	2,906 m3	3,000 m3/d	I General fill for TZ5
S6_7530								
S6_7535	Saw cut diaphragm wall (nos.)	35d	15-Jun-13	26-Jul-13	80d	52 panels	2d/panell/rig	Saw cut diaphragm wall (nos.)
S6_7540	Reinstate vertical seawall	24d	15-Jun-13	13-Jul-13	97d			Reinstate vertical seawall
S6_7545	Reinstate seabed	22d	09-Jul-13	02-Aug-13	80d			■ Reinstate seabed
ST5_10165	Achievement of Stage 5 at TPCWAE Area	0d		21-Nov-13	0d			◆ Achievement of Stage 5 at TPCWAE Area
S6_7550	Completion of Section 6	0d		27-Jan-16	Od			─
Lateral Supp	port along PCWA for TZ5							
S6_4570	Mass concrete structure at PCWA	20d	17-Apr-13	10-May-13	88d			■ Mass concrete structure at PCWA
Phase 3 Mar	rine Traffic Arrangements							
CDS_1320	Phase 3 Mooring Re-arrangement + Components (PS 1.117) -	72d	04-Feb-13	07-May-13	80d			Phase 3 Mooring Re-arrangement + Components (PS 1.17
	design preparation and submission Design of Phase 3 Mooring Re-arrangement + Components (PS	24d			80d			■ Design of Phase 3 Mooring Re-arrangement + Compone
CDS_1330	1.117) - Engineers review and approval		08-May-13	05-Jun-13				
CDS_1340	Phase 3 Mooring Components - manufacture/ delivery to HK	48d	06-Jun-13	02-Aug-13	80d			Phase 3 Mooring Components - manufacture/ delivery
PG_1140	Method Statement - Phase 3 Mooring Re-Arrangement - preparation and submission	24d	14-Jun-13	12-Jul-13	80d			Method Statement - Phase 3 Mogring Re-Arrangemen
PG_1150	Method Statement - Phase 3 Mooring Re-Arrangement: Engineers review and approval	18d	13-Jul-13	02-Aug-13	80d			■ Method Statement - Phase 3 Mooring Re-Arrangeme
ST5_4410	Phase 3- marine traffic arrangements	12d	03-Aug-13	16-Aug-13	80d			■ Phase 3- marine traffic arrangements
ST5_4420	Achievement of Stage 5	0d		21-Nov-13	0d			◆ Achievement of Stage 5
TPCWAE - O	HVD / Cable Trough							
S5_7405	TPCWAE - Cable Trough (access through temp. opening at	72d	18-Feb-15*	22-May-15	8d			TPCWAE - Cab
S5_7400	Portion 19) TPCWAE - OHVD Slab (access through temp. opening at Portion	72d	22-May-15*	18-Aug-15	8d	120 panels	7 panels/d	TPCWAE
	ucking Out Access		,			· .	<u>'</u>	
		0.1	40 Ave 45		0.1			
S6_4455	Start reinstatement works	0d	18-Aug-15		8d			◆ Start reinst
S6_10140	Cast slab opening at top of CCT West bound	18d	18-Aug-15	08-Sep-15	8d			■ Cast slab.
S6_10145	Removal of vertical shaft and backfilling	48d	08-Sep-15	06-Nov-15	8d			Remo
S6_10150	Reinstatement of pavement	12d	06-Nov-15	20-Nov-15	8d			■ Reins
Works in T	PCWAW Area							
TPCWAW- P	ermits and/or Licenses							
Pemain	ing Work 45 of 53							Prepared by William Caluza
	Pompining Work	ite Constri	uction Engineerinເ	a (Hona Kona) I	td		Date 15 Feb	Revision Checked Approved Date prepared ST KL
◆ ◆ Mileston	ne l					Shaltar Saatic	, 🔲	(progress updated 中國建築工程(春港)有限公司
	Contract No. HY/2009/15 - Central				турпооп 8	onener Section	"	to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity F	Prod Rate	2011 2012 2013 2014 2015 2016
S6_8950	EPD approval of DASO Permit for type 1/2	28d	27-Oct-10 A	27-Nov-10 A				EPD approval of DASO Permit for type 1/2
S6_8945	Apply for DASO Permit for Type 1/2	24d	17-Dec-10	17-Jan-11	821d			Apply for DASO Permit for Type 1/2
TPCWAW -	Initial Works							
S6_9325	Initial hydrographic survey (echo sounding)	6d	17-Dec-10	23-Dec-10	839d			Initial hydrographic survey (echo sounding)
S6_9330	Detailed survey and record photo- existing seawall	6d	17-Dec-10	23-Dec-10	839d			Detailed survey and record photo- existing seawall
S6_9335	CEDD Agreement - Detailed survey and record photo- existing seawall	6d	11-Mar-15	17-Mar-15	6d			I CEDD Agreement
S6_9340	Submit reinstatement plan prior to demolition (45d prior to start of works)	6d	18-Mar-15	24-Mar-15	6d			Il Submit reinstateme
TPCWAW-	Marine Site Investigation				'	,		
S6_8925	MDN application for marine investigation	12d	27-Sep-10 A	11-Oct-10 A				MDN application for marine investigation
S6_8930	Issue of MDN for marine investigation works	18d	12-Oct-10 A	02-Nov-10 A				ssue of MDN for marine investigation works
S6_8935	Marine site investigation - CPPT and vibrocore works at TPCWAW	10d	03-Nov-10 A	13-Nov-10 A				Marine site investigation - CPPT and vibrocore works at TPCWAW
S6_8940	Marine site investigation - submissions of reports	4d	17-Dec-10	21-Dec-10	852d			Marine site investigation - submissions of reports
TPCWAW -	Temporary Reclamation					·		
Submissio	n Deadline							
S6_9190	Prepare and Submit Dredging plan for TPCWAW	12d	16-Nov-10 A	24-Nov-10 A				Prepare and Submit Dredging plan for TPCWAW
S6_9150	Engr review and approval - Dredging plan for TPCWAW	24d	24-Nov-10 A	06-Dec-10 A				Engr review and approval - Dredging plan for TPCWAW
S6_9175	Prepare and and submit Silt curtain proposal for TPCWAW works	12d	17-Dec-10	03-Jan-11	809d			Prepare and and submit Silt curtain proposal for TPCWAW works
S6_9185	Prepare and Submit MS for dredging works at TPCWAW	12d	17-Dec-10	03-Jan-11	809d			Prepare and Submit MS for dredging works at TPCWAW
S6_9145	Engr review and approval MS for dredging works at TPCWAW	24d	04-Jan-11	31-Jan-11	809d			■ Engr review and approval MS for dredging works at TPCWAW
S6_9165	Engr Review and Approval Silt curtain proposal for TPCWAW works	24d	04-Jan-11	31-Jan-11	809d			■ Engr Review and Approval Silt curtain proposal for TPCWAW works
S6_9180	Prepare and Submit Seawall block design for TPCWAW	24d	23-Apr-13	22-May-13	93d			■ Prepare and Submit Seawall block design for TPCWAW
S6_9205	Prepare and Submit CMC model for temporary reclamation - TPCWAW	24d	23-Apr-13	22-May-13	93d			■ Prepare and Submit CMC model for temporary reclamation
S6_9155	Engr review and approval - Seawall block design for TPCWAW	48d	23-May-13	19-Jul-13	93d			Engr review and approval - Seawall block design for Ti
S6_9195	Prepare and Submit MS for temporary reclamation (seawall block & general fill) - TPCWAW	24d	23-May-13	20-Jun-13	93d			■ Prepare and Submit MS for temporary reclamation (sea
S6_9160	Engr review and approval - MS for temporary reclamation (seawall block & general fill) - TPCWAW	24d	21-Jun-13	19-Jul-13	93d			■ Engr review and approval - MS for temporary redama
S6_9200	Submit Geotechnical Instrumentation Plan - TPCWAW	24d	18-Feb-14	17-Mar-14	25d			■ Submit Geotechnical Instrumentation Plat
S6_9170	Engr review and approval - Geotechnical Instrumentation Plan - TPCWAW	24d	18-Mar-14	15-Apr-14	25d			■ Engr review and approval - Geotechnic
Temporary	Reclamation -							
S6_8880	TPCWAW- dredge South side	13d	07-Jul-13	19-Jul-13	112d	23,631 m3 1	1,800 m3/d	I TPCWAW- dredge South side
Remai	ning Work 46 of 53					<u> </u>		Prepared by William Caluza
	Remaining Work China Stat	e Constr	uction Engineering	(Hong Kong) L	.td		Date 15-Feb.	Revision Checked Approved Date prepared ST KL
◆ Milesto	ne					Shaltar Castlers		(progress updated 中國建築工程(香港)有限公司
	Contract No. HY/2009/15 - Central V	van Chai	by Pass - Tunnel (Causeway Bay	ypnoon S	oneiter Section)	' 	to 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.
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Activity ID	Activity Name	Original	Start	Finish	Total Float	Quantity	Prod Rate	2011 2012 2013 2014 2015 201
00.0107		Duration			1101		1.500 011	
S6_9435	TPCWAW - place rockfill South side	3d	20-Jul-13	22-Jul-13	112d	3,796m3	1,500 m3/d	I TPCWAW - place rockfill South side
S6_9455	TPCWAW - dredge North side and remaining areas (middle area)	13d	20-Jul-13	01-Aug-13	112d	23,227 m3	1,850 m3/d	■ TPCWAW - dredge North side and remaining areas
S6_9460	TPCWAW - place rockfill North side	3d	02-Aug-13	04-Aug-13	112d	3,504 m3	1,500 m3/d	I TPCWAW - place rockfill North side
S6_9462	TPCWAW - place general fill up to sea bed only	12d	05-Aug-13	16-Aug-13	112d			■ TPCWAW - place general fill up to sea bed only
S6_9440	TPCWAW - place levelling stone South side	14d	17-Aug-13	30-Aug-13	112d			■ TPCWAW - place levelling stone South side
S6_9450	TPCWAW - place seawall block to +4 at South side	13d	31-Aug-13	12-Sep-13	113d	676 nos	50 nos/d	■ TPCWAW - place seawall block to +4 at South sid
S6_9465	TPCWAW - place levelling stone North side	14d	31-Aug-13	13-Sep-13	112d			■ TPCWAW - place levelling stone North side
S6_9470	TPCWAW - place seawall blocks to +4 North side but leave temporary opening to allow barge for filling	10d	14-Sep-13	23-Sep-13	112d	472 nos	50 nos/d	TPCWAW - place seawall blocks to +4 North side
S6_9495	TPCWAW - General fill to +2 within the seawall	20d	24-Sep-13	13-Oct-13	112d	58,500 m3	3,000 m3/d	■ TPCWAW - General fill to +2 within the seawall
S6_9490	TPCWAW - place seawall blocks to +4 at the temporary opening	4d	14-Oct-13	17-Oct-13	112d	200	50 nos/d	I TPCWAW - place seawall blocks to +4 at the ter
S6_9475	TPCWAW - Remaining General fill to +4 within the seawall	7d	18-Oct-13	24-Oct-13	112d	20,000 m3	3,000 m3/d	I TPCWAW - Remaining General fill to +4 within t
TPCWAW - I	Diaphragm Wall							
Submission	n Deadline							
S6_9220	Submit Diaphragm Wall Trench Stability and Guide Wall Design	24d	06-Aug-13	02-Sep-13	96d			■ Submit Diaphragm Wall Trench Stability and Guide
S6_9245	Submit ELS design TPCWAW (4 month for GEO	24d	20-Aug-13	16-Sep-13	24d			■ Submit ELS design TPCWAW (4 month for GEO
S6_9210	comments&resolution) Engineers review and approval -Diaphragm Wall Trench Stability	48d	03-Sep-13	31-Oct-13	96d			Engineers review and approval -Diaphragm Wa
	and Guide Wall Design		·	17-Oct-13	24d			
S6_9247	Engineers review and approval - ELS design TPCWAW	24d	17-Sep-13					■ Engineers review and approval - ELS design TF
S6_9235	GEO review and approval - ELS design TPCWAW - (4 months for GEO comments&resolution)	96d	18-Oct-13	13-Feb-14	24d			GEO review and approval - ELS design T
S6_9230	Prepare and submit CMC model for diaphragm wall construction - TPCWAW	24d	15-Nov-13	12-Dec-13	24d			Prepare and submit CMC model for diaphrag
S6_9225	Submit MS for diaphragm wall construction - TPCWAW	24d	13-Dec-13	13-Jan-14	24d			Submit MS for diabhragm wall construction
S6_9215	Engineers review and approval - MS for diaphragm wall construction - TPCWAW	24d	14-Jan-14	13-Feb-14	24d			■ Engineers review and approval - MS for o
Diaphragm '	Wall							
S6_8955	Curtain grout along proposed diaphragm wall	20d	25-Oct-13	16-Nov-13	96d	308 holes	16 holes/d	■ Curtain grout along proposed diaphragm wall
S6_8965	DIAPHRAGM WALL SUMMARY	171d	25-Oct-13	26-May-14	42d			DIAPHRAGM WALL SUMMARY
S6_9355	Install king posts	48d	25-Oct-13	19-Dec-13	154d	24 nos	3nos/week/rig	Install king posts
S6_9385	Site investigation	49d	25-Oct-13	20-Dec-13	92d	49 nos	3d/no/rig	Site investigation
S6_9382	Set up bentonite silo/plants and equipments	24d	25-Oct-13	21-Nov-13	90d			Set up bentonite silo/plants and equipments
S6_8960	Install guide wall	31d	01-Nov-13	06-Dec-13	96d	308m	10m/d	■ Install guide wall
S6_9345	Diaphragm wall construction (sea side)	69d	14-Feb-14	12-May-14	24d	46 panels	6d/panel @ 3d	Diaphragm wall construction (sea sig
	sing Work 47 of 53						cycle	Prepared by William Caluza
	Pomoining Work						Date	Revision Checked Approved
◆ ◆ Milestor	cnina Sta	ite Constru	uction Engineering	g (Hong Kong) L	_td		15-Feb Dat	一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一
	Contract No. HY/2009/15 - Central	Wan Chai I	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section	2n\	rogress updated 17 December 2010) CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD
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ctivity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate	2011)12	2013	20	14 JA J	2015	2016
S6_8970	Diaphragm Wall Pile test	48d	25-Mar-14	26-May-14	42d							Diaphragm Wa	Il Pile test	
S6_9350	Install shear pins on diaphragm wall	47d	02-Apr-14	03-Jun-14	25d	78 nos	5nos/week/rig					Install shear pi	ns on diaphra	agm wall
S6_9375	Carry out contact/fissure grouting	29d	28-Apr-14	03-Jun-14	119d	288 holes	10holes/d					Carry out cont	act/fissure gr	outing
S6_9347	Provisional Barettes construction + D Wall (land side)	18d	13-May-14	03-Jun-14	6d	5 panels	6d/panel @ 3d cycle					Provisional Ba	ettes constru	uction + E
TPCWAW- E	ELS Works						,		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Submission	n Deadline									1 1 1 1 1 1				
S6_9270	Prepare and submit CMC model for ELS at TPCWAW	24d	27-Nov-13	24-Dec-13	6d						Prepare	and submit CM	C model for	ELS at T
S6_9250	Submit MS for ELS at TPCWAW - (4 month for GEO comments&resolution)	24d	27-Dec-13	24-Jan-14	6d						Submi	MS for ELS a	TPCWAW -	· (4 mon
S6_9252	Engineers review and approval - MS for ELS at TPCWAW	24d	25-Jan-14	25-Feb-14	6d						Engi	neers review ar	d approval -	MS for I
S6_9240	GEO review and approval - MS for ELS at TPCWAW - (4 month for GEO comments&resolution)	96d	26-Feb-14	25-Jun-14	6d							GEO review a	nd approval	- MS for
S6_9255	Submit design for dewatering system	24d	04-Mar-14	31-Mar-14	6d						■ Su	omit design for	dewatering s	ystem
S6_9265	Engineers review and approval - design for dewatering system	48d	01-Apr-14	03-Jun-14	6d							Engineers revi	ew and appr	oval - de
S6_9260	Submit pumping test report	1d	25-Jun-14	25-Jun-14	6d							Submit pump	ng test repor	rt
ELS Works									1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
S6_9360	Install dewatering wells and piezometers	48d	25-Oct-13	19-Dec-13	135d						Install de	watering wells	and piezome	ters
S6_9365	Install inclinometers inside D-wall	36d	16-Apr-14	03-Jun-14	25d			_				Install inclinom	eters inside [)-wall
S6_8975	Carry out pumping tests	18d	04-Jun-14	24-Jun-14	6d			_				Carry out pur	nping tests	
S6_8980	1st Layer - Soft Excavation	11d	26-Jun-14	09-Jul-14	6d	20,224m3	2,000m3/d					l 1st Layer -	oft Excavation	on
S6_9400	TPCWAW - ELS SUMMARY (EXCEPT ROCK EXCAVATION)	115d	26-Jun-14	18-Oct-14	7d							TPCW	AW - ELS S	SUMMAR
S6_8985	1st Layer - install lateral support	11d	30-Jun-14	12-Jul-14	6d							1st Layer - ii	stall lateral s	support
S6_8990	Install vibrating wire strain gauge	6d	05-Jul-14	11-Jul-14	6d							Install vibrati	ng wire strair	າ gauge
S6_8995	2nd Layer - Soft Excavation	13d	10-Jul-14	24-Jul-14	6d	25,820m3	2,000m3/d					■ 2nd Layer -	Soft Excavat	tion
S6_9000	2nd Layer - install lateral support	13d	14-Jul-14	28-Jul-14	6d							2nd Layer -	install latera	I support
S6_9005	3rd Layer - Soft Excavation	11d	26-Jul-14	07-Aug-14	6d	11,629m3	2,000m3/d	$-\parallel \parallel \parallel \parallel \parallel$				■ 3rd Layer	Soft Excava	ation
S6_9010	3rd Layer - install lateral support	11d	30-Jul-14	11-Aug-14	6d			$-\parallel \parallel \parallel \parallel \parallel \parallel$				■ 3rd Layer	install latera	ıl support
S6_9015	4th Layer - Soft Excavation	11d	09-Aug-14	21-Aug-14	6d	16,179m3	1,800m3/d	_				■ 4th Layer	Soft Excava	ation
S6_9020	4th Layer - install lateral support	11d	13-Aug-14	25-Aug-14	6d			_				4th Layer		
S6_9025	5th Layer - Soft Excavation	12d	23-Aug-14	05-Sep-14	6d	17,696m3	1,800m3/d	_				■ 5th Layer		
S6_9030	5th Layer - install lateral support	12d	27-Aug-14	10-Sep-14	6d	,0001110	.,					■ 5th Layer		
	140 - 450	120	Li nug-17	10 оср-14	Ju				1 1	<u> </u>		i cur Laye	i iotali latel	и зарро
	Contract No. HY/2009/15 - Central	Wan Chai I		Causeway Bay		helter Sectio	n\	Prepared by Willia Revision Date prepared (progress updated to 17 December 2010)	 ed Approved KL	cSUEc	中國建築 CHINA STATE CONST	工程(唇)RUCTION ENGINE	美)有阻 RING (HONG K	公司 ONG) LTD.
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Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate			2011		2012		2013		20	14	,,,,	2015	2016
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S6_9035	6th Layer - Soft Excavation	23d	08-Sep-14	07-Oct-14	6d	35,000m3	1,500m3/d										6	th Layer	- Soft Exc	avation
S6_9040	6th Layer - install lateral support	30d	12-Sep-14	18-Oct-14	6d												= 6	6th Laye	r - install lat	eral sup
S6_9045	Special ELS - at area 20m from west side	24d	18-Oct-14	14-Nov-14	6d													Special	ELS - at ar	ea 20m
S6_9415	Install tie back anchor to D- Walls (east area)	20d	20-Oct-14	11-Nov-14	16d	20 ;	3nos/week/rig											Install tie	e back and	nor to D
S26180	Rock excavation - east side	59d	20-Oct-14	29-Dec-14	16d	23,600 m3	400 m3/d										_	Rock	excavation	ı - east s
S6_9370	Install tie back anchor to D- Walls (area on west side, near Portion 11)	25d	15-Nov-14	13-Dec-14	6d	25	3nos/week/rig										•	Install	tie back ar	ichor to
S6_9050	Rock excavation - west side	50d	15-Dec-14	13-Feb-15	6d	20,000 m3	400 m3/d								1			R	ock excavat	ion - we
S6_9055	Provide Access to WDII Contractor for demolition of bulkhead at Portion 11	0d	14-Feb-15		6d													♦ Pr	ovide Acce	ss to WI
TPCWAW- C	CCT RC Structure			J																
Submission	n Deadline														1					
S6_9285	Submit formwork and falsework design for CCT - TPCWAW	24d	04-Oct-14	31-Oct-14	16d												•	Submit f	ormwork a	nd falsev
S6_9295	Prepare and submit CMC model for CCT-TPCWAW construction	24d	04-Oct-14	31-Oct-14	16d												•	Prepare	and submi	t CMC m
S6_9275	Engineers review and approval - formwork and falsework design for	48d	01-Nov-14	29-Dec-14	16d													■ Engir	neers revie	w and ar
S6_9290	CCT - TPCWAW Submit MS for CCT-TPCWAW construction	24d	01-Nov-14	28-Nov-14	16d											1 1		Submit	t MS for CC	CT-TPC
S6_9280	Engineers review and approval MS for CCT-TPCWAW construction	24d	29-Nov-14	29-Dec-14	16d												ı	■ Engir	neers revie	w and ar
TPCWAW - 0	CCT (Half- East Side)			<u></u>																
S6_9060	TPCWAW - Construct tunnel base slab	28d	30-Dec-14	31-Jan-15	16d	11 bays	5d/bay/formwo	rk										TP	CWAW + C	construct
S6_9405	TPCWAW - CCT SUMMARY (EAST SIDE)	70d	30-Dec-14	09-Mar-15	18d													Т	PCWAW -	сстѕ
S6_9065	TPCWAW - Construct tunnel wall & roof slab	44d	14-Jan-15	09-Mar-15	16d	11 bays	8d/bay/formwo	ork										т	PCWAW -	Constru
TPCWAW - (CCT (Remaining Half - near Portion 11)																			
S6_9070	TPCWAW Construct tunnel base slab	25d	14-Feb-15	18-Mar-15	21d	10 bays	5d/bay/formwo	rk										-	TP¢WAW	Constru
S6_9410	TPCWAW - CCT SUMMARY (WEST SIDE)	97d	14-Feb-15	21-May-15	8d														TPCW	AW - CC
S6_9075	TPCWAW Construct tunnel wall & roof slab	40d	21-Mar-15	12-May-15	6d	10 bays	8d/bay/formwo	rk										-	TPCWA	W Cons
S6_9077	TPCWAW - external waterproofing on top of completed CCT box (incl. screeding)	26d	15-Apr-15	15-May-15	6d								1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						TPCWA	W - exte
S6_9380	TPCWAW - backfilling to sea bed level	28d	18-Apr-15	21-May-15	6d	81,800m3	3,000m3/d						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						■ TPCW	۱W - bad
TPCWAW - F	Removal of Temporary Reclamation				1								1							
Submission	n Deadline												1 1							
S6_9315	Submit MS for removal of temp reclamation	24d	16-Feb-15	18-Mar-15	6d														Submit MS	for remo
S6_9305	Engineers review and approval - MS for removal of temp reclamation	24d	19-Mar-15	20-Apr-15	6d														Engineers	s review
Remain	ning Work 49 of 53		<u> </u>	J					_		illiam Calu		1		ı				1 1	
	Pomojning Work	e Constr	uction Engineering	(Hong Kong) I	td		Date 15 Feb	Doto -		Revision		Checked /		4						
♦ Milestor	ne						15-Feb	Date pre				T K	L	ppr	中國	建架	工程(香港)有阻	公司
	Contract No. HY/2009/15 - Central V	Van Chai	By Pass - Tunnel (Causeway Bay	Typhoon S	Shelter Section)			ber 2010)				caute					NG (HONG KO	
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Activity ID	Activity Name	Original	Start	Finish	Total Float	Quantity	Prod Rate	2011	2012	2013	2014	2015 2016
Dames de la f		Duration								1		
Removal of	Temporary Reclamation											
S6_9500	DURATION OF TEMP. RECLAMATION TZ5 (1668D)	1599d	20-Feb-11	07-Jul-15	118d							DURATION
S6_9095	DURATION OF TEMP. RECLAMATION TPCWAW (616D)	676d	31-Aug-13	07-Jul-15	118d							DURATION
S6_9090	REMOVAL OF TEMP. RECLAMATION SUMMARY	81d	18-Apr-15	07-Jul-15	118d							REMOVAL O
S6_9140	Removal of ELS inside cofferdam	36d	18-Apr-15	01-Jun-15	6d	6 layers	6d/layer					Removal of ELS
S6_9100	Remove general fill (between D Wall & seawall block)	8d	21-Apr-15	29-Apr-15	6d	23,086 m3	3,000 m3/d					■ Remove general
S6_9105	Remove seawall block	9d	22-Apr-15	02-May-15	6d	541 nos	64nos/d					■ Remove seawall
S6_9107	Remove box type sheet pile & struts (at south east side)	24d	04-May-15	01-Jun-15	6d							Remove box tyr
S6_9120	Saw cut diaphragm wall (nos.)	33d	22-May-15	02-Jul-15	6d	49 panels	2d/panel/rig					Saw cut diaph
S6_9125	Start reinstate vertical seawall at Portion 11	0d	22-May-15		6d							◆ Start reinstate v
S26185	Remove mass concrete block at PCWA	6d	02-Jun-15	08-Jun-15	121d							■ Remove mass
S6_9130	Reinstate seabed	22d	10-Jun-15	07-Jul-15	98d							Reinstate sea
S6_9135	Completion of Section 5	0d		02-Nov-15	Od						1 1	◆ Compl
TPCWAW - 0	OHVD / Cable Trough											
S6_9085	TPCWAW - Cable Trough (access through temp. opening at Portion 19)	120d	22-May-15*	15-Oct-15	86d							TPCW/
S6_9080	TPCWAW - OHVD Slab (access through temp. opening at Por 19)	tion 120d	18-Aug-15*	11-Jan-16	14d	172 panels	7 panels/d					ТР
Works in V	Van Chai PCWA (Portion 11)											
Interface wi	th Other Contractor - WDII(2)											
S4_2740	Bulkhead completed by WDII/2	0d		04-May-14	8d						♦ Bulkh	ead completed by WDII/2
S4_2780	132kV cable diverted by WDII/2	0d		04-May-14	8d						♦ 132k\	/ cable diverted by WDII/2
S4_2790	Temporary outfall for Culvert O completed by WDII/2	0d		04-May-14	8d						◆ Temp	orary outfall for Culvert O compl
Initial Works	& Utilities Works										1 1	
CD_5580	Site Possession - Portion XI (11), Day 1316	0d	05-May-14		8d						◆ Site F	Possession - Portion XI (11), Day
CD_5585	Site Possession - Portion XII (12), Day 1316	0d	05-May-14*		Od						◆ Site F	Possession - Portion XII (12), Day
S4_2720	Remove existing rock mound	24d	05-May-14	03-Jun-14	6d						Rer	move existing rock mound
S4_2701	Commencement of works at Portion 11	0d	05-May-14		6d						◆ Comi	mencement of works at Portion 1
S4_2750	Carry out Site Investigation for BW1/BW2	6d	05-May-14	12-May-14	6d	2 nos					I Carr	y out Site Investigation for BW1/E
S4_2800	Install instrumentation (GSM, Incl. , Piezometer, or Ext.)	24d	05-May-14	03-Jun-14	36d	2 nos	6d/no				■ Inst	all instrumentation (GSM, Incl. , I
S4_2810	Installation of Hoarding	24d	05-May-14	03-Jun-14	36d						■ Inst	allation of Hoarding
Remain	ning Work 50 of 53							Prepared by William				· · · · · · · · · · · · · · · · · · ·
Critical	Remaining Work China	State Constru	ıction Engineerin	a (Hona Kona) L	.td		Date 15-Feb	Revision Date prepared	Checked A			
◆ Milestor	ne							(progress updated		_000_		程(善港)有阻公司
	Contract No. HY/2009/15 - Centr	al Wan Chai I	By Pass - Tunnel	(Causeway Bay	Typhoon S	helter Section	on)	to 17 December 2010)				ION ENGINEERING (HONG KONG) LTD.
		WORKS	PROGRAMME	REV. B								

S4_2755 BW1/BW2 Engineers confirmation of provisional Barrettes 0d 12-May-14 6d S4_2700 Existing drainage pipe/manholes to be temp. supported 12d 19-May-14 31-May-14 21d S4_2730 Existing watermain to be temp. supported 12d 28-May-14 11-Jun-14 21d S4_2710 Existing LV cable to be temp. supported 12d 07-Jun-14 20-Jun-14 21d Reinstatement of Seawall (After Completion of TPCWAW) S4_2770 Reinstatement of vertical seawall 24d 22-May-15 19-Jun-15 6d S4_2770 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d Interface works with other Contracts	♦ BW1/BW2 Engineers confirmation o Existing drainage pipe/manholes to Existing watermain to be temp. supp Existing LV cable to be temp. supp Backfill utilities Complete Se Handover Bulk Head at CCT/EV Adit at East V. Adit to CVVB(IEC) Handover TZ2/TZ3 to CWB(T1) TS1/TS2 Ar
S4_2700 Existing drainage pipe/manholes to be temp. supported 12d 19-May-14 31-May-14 21d S4_2730 Existing watermain to be temp. supported 12d 28-May-14 11-Jun-14 21d S4_2710 Existing LV cable to be temp. supported 12d 07-Jun-14 20-Jun-14 21d Reinstatement of Seawall (After Completion of TPCWAW) S4_2770 Reinstatement of vertical seawall 24d 22-May-15 19-Jun-15 6d S4_2775 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d	Existing drainage pipe/manholes to Existing watermain to be temp. supp Existing LV cable to be temp. supp Reinstatemer Backfill utilities Complete Se
S4_2730 Existing watermain to be temp. supported 12d 28-May-14 11-Jun-14 21d S4_2710 Existing LV cable to be temp. supported 12d 07-Jun-14 20-Jun-14 21d Reinstatement of Seawall (After Completion of TPCWAW) S4_2770 Reinstatement of vertical seawall 24d 22-May-15 19-Jun-15 6d S4_2775 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d	■ Existing watermain to be temp. supp ■ Existing LV cable to be temp. supp Reinstatemen ■ Backfill utilities Complete Se ◆ Complete Se ◆ CWB(IEC) Provide access to CWB(T1) T\$1/T\$2 And the complete sees to CWB(T1) T\$1/T\$3/T\$3/T\$3/T\$3/T\$3/T\$3/T\$3/T\$3/T\$3/T\$3
S4_2710 Existing LV cable to be temp. supported 12d 07-Jun-14 20-Jun-14 21d Reinstatement of Seawall (After Completion of TPCWAW) S4_2770 Reinstatement of vertical seawall 24d 22-May-15 19-Jun-15 6d S4_2775 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d	■ Reinstatemer ■ Backfill utilities ◆ Complete Se ◆ Handover Bulk Head at CCT/EV Adit at East V: Adit to CWB(IEC) ◆ CWB(IEC) Provide access to CWB(T1) TS1/TS2 Ar
Reinstatement of Seawall (After Completion of TPCWAW) S4_2770 Reinstatement of vertical seawall 24d 22-May-15 19-Jun-15 6d S4_2775 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d	■ Reinstatemer ■ Backfill utilities ◆ Complete Se ◆ Handover Bulk Head at CCT/EV Adit at East V. Adit to CWB(IEC) ◆ CWB(IEC) Provide access to CWB(T1) TS1/TS2 Ar
S4_2770 Reinstatement of vertical seawall 24d 22-May-15 19-Jun-15 6d S4_2775 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d	■ Backfill utilitie:
S4_2775 Backfill utilities and reinstate pavement at Portion 11 11d 10-Jun-15 23-Jun-15 6d S4_2785 Complete Section 4 0d 01-Jul-15 0d	■ Backfill utilitie:
S4_2785	◆ Handover Bulk Head at CCT/EV Adit at East V: Adit to CWB(IEC) ◆ CWB(IEC) Provide access to CWB(T1) TS1/TS2 Ar
	 ◆ Handover Bulk Head at CCT/EV Adit at East V: Adit to CWB(IEC) ◆ CWB(IEC) Provide access to CWB(T1) TS1/TS2 Ar
Interface works with other Contracts	◆ CWB(IEC) Provide access to CWB(T1) T\$1/T\$2 Ar
	◆ CWB(IEC) Provide access to CWB(T1) T\$1/T\$2 Ar
S6_5278 Handover Bulk Head at CCT/EV Adit at East V. Adit to CWB(IEC) 0d 27-Feb-12* 0d	
S6_5279 CWB(IEC) Provide access to CWB(T1) TS1/TS2 Area from East 0d 07-Aug-13* 0d Section of CWB Tunnel	◆ Handover TZ2/TZ3 to CWB(T2)
S6_5282 Handover TZ2/TZ3 to CWB(T2) 0d 22-Nov-13* 0d	
S6_5283 Handover TZ4/TZ6 to CWB(T2) 0d 22-Nov-13* 0d	◆ Handover TZ4/TZ6 to CWB(T2)
S6_5275 Provide access to CWB (RW) Contractor- TS1 & TS2 0d 15-May-14* 0d	◆ Provide access to CWB (RW) Contr
S6_5276 Provide access to CWB (TCSS) Contractor - TS1 & TS2 0d 15-May-14* 0d	◆ Provide access to CWB (TCSS) Cor
S6_5277 Tree Transplanting to CWB (CI) Contract, start date to be 48d 15-May-14* 11-Jul-14 0d re-confirmed	Tree Transplanting to CWB (CI)
S6_5280 Provide access to CWB (RW) Contractor- TS4, TPCWA, Mined 0d 02-Jul-15* 0d Tunnel	◆ Provide acce
S6_5281 Provide access to CWB (TCSS) Contractor- TS4, TPCWA, Mined 0d 02-Jul-15* 0d Tunnel	◆ Provide acce
Stage and Section Completion	
KD_5660 KD1- Achievement of Stage 1, (67d) 0d 04-Dec-10 A	KD1- Achievement of Stage 1, (67d)
KD_5805 KD2 - Achievement of Stage 2, (142d) 0d 15-Feb-11* 0d	◆ KD2 - Achievement of Stage 2, (142d)
KD_5710 KD3 - Achievement of Stage 3, (493d) 0d 01-Feb-12* 0d	♦ KD3 - Achievement of Stage 3, (493d)
KD_5715 KD4 - Achievement of Stage 4, (517d) 0d 25-Feb-12* 0d	♦ KD4 - Achievement of Stage 4, (517d)
KD_5725 KD6 - Completion of Section 1, (517d) 0d 25-Feb-12* 0d	♦ KD6 - Completion of Section 1, (517d)
KD_5720 KD5 - Achievement of Stage 5, (1152d) 0d 21-Nov-13* 0d	◆ KD5 - Achievement of Stage 5, (1152d)
KD_5730 KD7 - Completion of Section 2, (1152d) 0d 21-Nov-13* 0d	◆ KD7 - Completion of Section 2, (1152d)
KD_5755 KD12 - Completion of Section 7A, (1152d) 0d 21-Nov-13* 0d	◆ KD12 - Campletion of Section 7A, (1152d)
KD_5760 KD13 - Completion of Section 7B, (1152d) 0d 21-Nov-13* 0d	◆ KD13 - Campletion of Section 7B, (1152d)
KD_5735 KD8 - Completion of Section 3, (1326d) 0d 14-May-14* 0d	♦ KD8 - Completion of Section 3, 132
Remaining Work 51 of 53	Prepared by William Caluza
Critical Remaining Work	Date Revision Checked Approved
◆ Milestone China State Construction Engineering (Hong Kong) Ltd	15-Feb Date prepared ST KL
Contract No. HY/2009/15 - Central Wan Chai By Pass - Tunnel (Causeway Bay Typhoon Shelter Secti	ion) (progress updated
WORKS BROOK BROOK	
WORKS PROGRAMME REV. B	

			Original Duration	Start	Finish	Total Float	Quantity Pro	od Rate	2011	201	2	2013	2014	2015	, 2010
KD_5740	KD9 - Completion of	Section 4, (1739d)	0d		01-Jul-15*	0d			<u> </u>	111911119	<u> </u>	1997	911119971	1 9 1 1 1 9 9	KD9 - Comple
KD_5745	KD10 - Completion of	of Section 5, (1863d)	0d		02-Nov-15*	Od			-						◆ KD10
- KD_5750	KD11 - Completion of		0d		27-Jan-16*	Od			-						♦ K
		, ,													
	andover Date														
CD_5660	Portion Handover - F	Portion I (1), KD6 +28	Od		24-Mar-12*	0d				◆ Porti	on Handover - Po	ortion I (1), KI	D6 +28		
CD_5675	Portion Handover - F	Portion II (2),KD6 +28	0d		24-Mar-12*	Od				◆ Porti	on Handover - Po	ortion II (2),KI	D6 +28		
CD_5705	Portion Handover - F	Portion VIII (8), KD7 +28	0d		19-Dec-13*	Od						•	Portion Handov	er - Portion VIII	(8), KD7 +28
CD_5720	Portion Handover - F	Portion XIIIA (13A), KD7 +28	0d		19-Dec-13*	0d			1			•	Portion Handov	er - Portion XIII/	۱ (13A), KD7
CD_5730	Portion Handover - F	Portion XIVA (14A), KD7 +28	0d		19-Dec-13*	Od						•	Portion Handov	er - Portion XIV	A (14A), KD7
CD_5740	Portion Handover - F	Portion XV (15), KD7 +28	0d		19-Dec-13*	Od			1			•	Portion Handov	er - Portion XV	(15), KD7 +28
CD_5805	Portion Handover - F	Portion XXIII (23), KD7 +28	0d		19-Dec-13*	Od						•	Portion Handov	er - Portion XXII	I (23), KD7 +
CD_5670	Portion Handover - F	Portion III (3), KD8 +28	0d		11-Jun-14*	0d			-				◆ Portio	n Handover - Po	ortion III (3), F
CD_5685	Portion Handover - F	Portion IV(4), KD8 +28	0d		11-Jun-14*	Od			-				◆ Portio	n Handover - Po	ortion IV(4), K
CD_5680	Portion Handover -	Portion V (5), KD8 +28	0d		11-Jun-14*	Od			-				◆ Portio	n Handover - P	ortion V (5), I
CD_5695	Portion Handover - F	Portion VI (6), KD8 +28	0d		11-Jun-14*	Od			-				◆ Portio	n Handover - Po	ortion VI (6), I
CD_5735	Portion Handover - F	Portion XIIIB (13B), KD8 +28	0d		11-Jun-14*	Od			-				◆ Portio	n Handover - Po	ortion XIIIB (1
CD_5790	Portion Handover - F	Portion XXII (22), KD8 +28	0d		11-Jun-14*	Od			-				◆ Portio	n Handover - Po	ortion XXII (22
CD_5710	Portion Handover - F	Portion XI (11), KD9 +28	0d		29-Jul-15*	Od			-					•	Portion Han
CD_5700	Portion Handover - F	Portion IX (9), KD10 +28	0d		30-Nov-15*	0d			-						◆ Porti
CD_5745	Portion Handover - F	Portion XIVB (14B), KD10 +28	0d		30-Nov-15*	Od			-						◆ Porti
CD_5755		Portion XVI (16), KD10 +28	0d		30-Nov-15*	Od			-						◆ Porti
CD_5750	Portion Handover - F	Portion XVII (17), KD10 +28	0d		30-Nov-15*	0d									◆ Porti
CD_5775	Portion Handover - F	Portion XVIII (18), KD10 +28	0d		30-Nov-15*	0d									◆ Porti
CD_5760	Portion Handover - F	Portion XIX (19), KD10 +28	0d		30-Nov-15*	Od									◆ Porti
CD_5780	Portion Handover - F	Portion XXB (20B), KD10 +28	0d		30-Nov-15*	0d									◆ Porti
CD_5690	Portion Handover -	Portion VII (7), KD11 +28	0d		24-Feb-16*	Od									•
CD_5715	Portion Handover - F	Portion X (10), KD11 +28	0d		24-Feb-16*	Od			1						•
CD_5725	Portion Handover - F	Portion XII (12), KD11 +28	0d		24-Feb-16*	Od			1						•
CD_5785	Portion Handover - F	Portion XXA (20A), KD11 +28	0d		24-Feb-16*	0d									•
Damain!	ning Work	52 of 53							Prepared by Willia	ım Caluza	<u>; ; </u>	: :	1 1 1		-
	ning Work Remaining Work		.		_			Date	Revision		Approved				
◆ Milestone	•	Chir	na State Construc	tion Engineering (F	long Kong) L	.td		15-Feb Da		ST	KL	र्म संग्रह	津田十二	((新珠))	問いる
	-	Contract No. HY/2009/15 - Ce	ntral Wan Chai By	/ Pass - Tunnel (Ca	useway Bav	Typhoon S	Shelter Section)		rogress updated		65		建架工程 TATE CONSTRUCTION		
			_	•		,,		to	17 December 2010)		 	CHINAS	THE CONSTRUCTION	LAGINEERING (IIC	AND ROING/ LID.
			WORKS P	ROGRAMME R	EV. B						'				

ity ID	Activity Name	Original Duration	Start	Finish	Total Float	Quantity	Prod Rate		2011		2012		2013		2014		2015	
								J		1 1	JJ	J	4 1114	J	JJA	J	JJA	
CD_5795	Portion Handover - Portion XXI (21), KD11 +28	0d		24-Feb-16*	0d													
									<u>i i</u>	i	<u>i i </u>	i	i i	i	i i	<u>i i</u>	<u> i i </u>	

Critical Remaining Work

♦ Milestone

China State Construction Engineering (Hong Kong) Ltd

Contract No. HY/2009/15 - Central Wan Chai By Pass - Tunnel (Causeway Bay Typhoon Shelter Section)

WORKS PROGRAMME REV. B

		Prepared by William Caluza														
	Date	Revision	Approved													
	15-Feb	Date prepared	ST	KL												
		(progress updated														
		to 17 December 2010)			C											



C SAN FEB MAN APP APP JULY JULY AND SEP OCT NOV DEC JAN FEB MAN																											e rina nyongrapino suwey	Confirmation Hydrographic survey					Bornd Piles Constitution and Testino	Drive Sheet piles along Bored piles	Dismantle Temporary Piling Platform	Dive sheet piles beyond precast eeswall	Trim pilehead to cut-off level	Out sheet piles to design level for box units	JAN FEB MAR APR	2013	Works Schedule of Marine Works for Childal bar	EP-356/2009 Start milestone point Prints milestone point Finish milestone point
FEB MAR APH MAY JUN JUL AUG SEP OCT NOV DEC		♦ Commencement of Section I of works		Apply manne notice to manne Department (orect)	Apply FEP under EP356/2009	Submission of Works Schedule for FEP	Submission of Location Plan for FEP	Submission of Silt Screen Deployment Plan Submission of Silt Screen Deployment Plan	Submission Noise Management Plan	Apply Dumping Permit	Apply CNP	Apply C&D waste disposal	Apply Olscharge licence	Notification of chemical waste Producer Notification to Labor Deat-Works Commencement	Submit Rick Ass to MTR	Erect Hoarding	Demarcation of Marine Site Boundary	Working Site Office establishment		◆ Taleover monitoring system from C1	◆ Commence Monitoring- ADMS, etc		Submit Dredging MS	Accpetance of Dredging MS	Intital Hydrographic Survey	Initial Dreaging Works for Pilling				Submit stage platform MS	Submit piling MS	Erect temporary Pilling Platform	Builting						FEB MAR APH MAY JUN JUL AUG SEP OCT NOV DEC	1102	GAMMON-LEADER JV	Wan Line
Early JAN Finish		•		19FEB11	20MAR11	21 MAR11	21MAR11	21MAR11	21MAR11	19MAR11	01MAR11	18FEB11	19MAR11	18FEB11	20MAR11	29MARI 1	21MAR11	09FEB11 0					19MAR11	19MAR11	20MAR11	05APR11	09MAY12	25JUL12		11MAR11	11MAR11	03AUG11	02NOV11	21MAR12	14APR12	15APR12	25APR12	06MAY12	Early Jan			over MTR Tsuen
Orig Early Dur Start		0 20JAN11 *		30 21JAN11	21 28FEB11		05MAR11	14 05MAR11	05MAR11	18FEB11		20JAN11		30 20JAN11	28FEB11	Т	01MAR11	14 27JAN11		0 21MAR11 *	0 21MAR11		30 18FEB11		20MAR11		07MAY12	70 17MAY12		30 10FEB11		06APR11	150 06JUN11	1_	25FEB12		29SEP11	120 08JAN12				iral-Wan Chai Bypass
Description	bligation	Commencement of Section I of works		Apply Marine notice to Marine Department Apply Marine notice to Marine Dept. Pilling	Apply FEP under EP356/2009	Submission of Works Schedule for FEP	Submission of Location Plan for FEP	Submission of Silt Curtain Deployment Submission of Silt Screen Deployment Plan	Submission Noise Management Plan	Apply Dumping Permit	Apply CNP	Apply C&D waste disposal	Apply Discharge licence	Notification of chemical waste Producer	Submit Risk Ass to MTR	Erect Hoarding	Demarcation of Marine Site Boundary	Working Site Office establishment		Takeover monitoring system from C1	Commence Monitoring- ADMS,etc	Works	Submit Dredging MS	Acceptance of Dredging MS	Initial Hydrographic Survey	Initial Dredging Works for Piling	Final Hydrographic survey	Confirmation Hydrographic survey	ks	Submit stage platform MS		orary Piling Platform	Pre-drilling	ĺ	E	ist seawall		Cut steel casing of bore piles Cut sheet piles to deskin level for box units	and the same		Start date zoJAN11 Finish date 19DEG12 Data date zoJAN11	IA A SEEMS, Inc. Wan Chai Devalopment Phase II- Cent
Aet	Section I	1000	N N N N N N N N N N N N N N N N N N N	1050	1080	1081	1082	1083	1085	1090	1100	1110	1120	1130	1150	1260	1270	1280	Monitoring	1160	1180	Dredging V	1070	1075	1078	1200	1210	1230	Piling Works	1240	1250	P1000	P1020	P1060	P1080	P1100	P1120	P1140	Act		Start date 2 Finish date 1 Data date 2	Page number 1 © Primavera Sy