

ENVIRONMENTAL MONITORING AND AUDIT REPORT

FOR

CONTRACT NO. CV/2004/02

RECONSTRUCTION OF WONG SHEK AND KO LAU WAN PUBLIC PIERS

Wong Shek Report
March - May 2005

Certified by: _____
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Date: _____

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Independent Checker (Environment)

Date: _____

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EXECUTIVE SUMMARY

This is the 1st quarterly Environmental Monitoring and Audit (EM&A) report for Contract No. CV/2004/02 – Reconstruction of Wong Shek and Ko Lau Wan Public Piers and it covers the monitoring works conducted from March 2005 to May 2005.

Construction activities at the Wong Shek pier site during the reporting period includes:

- Ground Investigation
- Erection of temporary cover
- Erection of Project signboard
- Installation of silt curtain
- Piling work for temporary berth

Water Quality Monitoring

Water quality monitoring in terms of turbidity, dissolved oxygen, suspended solids, temperature, and salinity was carried out on 26 occasions at MW1, MW2, CW1 and CW2 for Wong Shek Pier. Due to the thunderstorm signal was hosted for whole day on 19 May 2005, the water quality monitoring was cancelled and therefore only two monitoring were conducted on that week. There were no exceedances to the Action Levels and Limit Levels for all parameters except the dissolved oxygen level on 3 occasions at Wong Shek Pier in which the dissolved oxygen concentrations exceeded the action and limit levels. It was concluded that the exceedances were not caused by the construction works but the temperature and current variations with comparison to baseline period.

Waste Management

No C&D material, general refuse or chemical waste was transported off site in this reporting period.

Complaints and Notifications of Summonses and Successful Prosecutions

No complaints, notifications of summons and successful prosecutions were received during this reporting period.

Site Inspections

A total of twelve weekly site inspections were conducted by the Environmental Specialist (ES) during the reporting period. Major observations and outcomes by the ET are summarized in the following table

Observations by ET	Environmental Outcome
Coral Exclusion Zone mark was removed by the sea wave (4 April 2005).	Buoys mark the Coral Exclusion Zone have been mount by the contractor
Little diesel oil was found floating on the sea surface near the Wong Shek pier (4 April 2005).	Unidentified source of Diesel oil was observed but it was not generated from the construction works.
Environmental Permit was not displayed at the site entrance (27 April 2005).	Environmental Permit has been displayed at the site entrance by the contractor

An audit by the Independent Environmental Checker (IEC) was conducted on 27 May 2005 with the CEDD Representative and the Environmental Team. No major comment was made by IEC during the course of inspection.

1. INTRODUCTION

1.1 Background

Stanger Asia Ltd. has been commissioned by Kin Shing Construction Company Limited to provide an Environmental Specialist (ES) to carry out the environmental monitoring and audit works for the Contract No. CV/2004/02 Reconstruction of Wong Shek and Ko Lau Wan Public Piers. The team is to take a pro-active role in all issues, which may be of environmental concern during the construction period of the Project.

In this report, the water quality monitoring works conducted during the period March to May 2005 will be detailed and reviewed. This report has been produced with reference to the Section 26 of the Particular Specification, Project Profile (PP-191/2003) and Environmental Permit (EP-186/2004) produced for this Project.

1.2 Report Structure

The purpose of this report is to detail and review the water quality monitoring works undertaken from March to May 2005. The impact forecast for the next reporting month is also given.

The report follows the format given below:

Section 1	Introduction and background information to the content of this report.
Section 2	This section gives the information of the project.
Section 3	This section summarises all the environmental permits and licenses.
Section 4	Summary of the EM&A requirements is presented.
Section 5	This section details the implemented mitigation measures.
Section 6	This section details monitoring results.
Section 7	The site environmental audits are summarized in this section.
Section 8	The status for solid and liquid waste management for the site is overviewed.
Section 9	Complaints, notifications of summons and successful prosecutions are summarized in this section.
Section 10	This section gives a conclusion in relation to all monitoring activities.

. PROJECT INFORMATION

2.1 Site Description

The construction works, Contract No. CV/2004/02, is to be carried out under the direction of the Civil Engineering Office, Civil Engineering and Development Department. It comprises demolition of the existing piers and construction of reinforced concrete piers with roof covers at Wong Shek and Ko Lau Wan.

The construction of the Project is scheduled to commence in November 2004 for completion in August 2006. The construction period is 630 days for the entire construction.

The site layout plan is shown in Figure 2.1, Figure 2.2 and Figure 2.2 a.

2.2 Project Organization

The Project Proponent and the Engineer is Civil Engineering Office, Civil Engineering and Development Department. The Resident Engineer is Mr. W H Lee.
(Tel: 2760 5737; Fax: 2714 2054; Mobile Phone No: 9630 1235)

The Main Contractor for this project is Kin Shing Construction Company Limited. The Site Agent is Mr. Simon Fok
(Tel: 2729 6779; Fax: 2729 7858; Mobile Phone No: 6010 8730).

The Independent Checker (Environment) is MaterialLab Consultants Limited. The Manager is Mr. Joseph T L Poon.
(Tel: 2452 7140; Fax: 2450 6138; Mobile Phone No: 9450 1968)

The Environmental Specialist proposed for this project is Stanger Asia Limited. The Environmental Specialist is Mr. Wilson Fok.
(Tel: 2682 1203; Fax: 2682 0046; Mobile Phone No: 6105 4260)
The environmental organization chart is attached in Appendix I

2.3 Construction Programme

The overall construction programme is given in Appendix VI. Details of the construction activities for Wong Shek Pier carried out in this quarter are listed below.

- Ground Investigation
- Erection of temporary cover
- Erection of Project signboard
- Installation of silt curtain
- Piling work for temporary berth

3. ENVIRONMENTAL PERMITS AND LICENSES

The summary of the status of all environmental permits, licenses and notification for this project as in this quarter is summarized in the following table.

Table 3.1 Summary of the Environmental Permits and Licenses

Description	Licence/ Permit No.	Issued Date	Expiry Date	Status
Environmental Permit	EP-186/2004	16 Mar 04	--	Issued
Registration of Chemical Waste Producer	WPN5213-742-K1081-05	12 May 04	--	Issued

4. SUMMARY OF EM&A REQUIREMENTS

4.1 Water Quality Monitoring Locations

For Wong Shek, MW1 and MW2 are the two designated monitoring stations whereas CW1 and CW2 are the two designated control stations. CW1 is the control station during flood tides whereas CW2 is the control station during ebb tides.

The locations of each station are given Figure 4.1, their coordinates are given in Table 4.1 below.

Table 4.1 Coordinates of Water Quality Monitoring Locations

Station	HK Metric Grid – Easting	HK Metric Grid - Northing
<i>Wong Shek Public Pier</i>		
MW1	852 789.231	832 978.476
MW2	852 844.187	832 878.676
CW1	852 922.540	833 067.718
CW2	852 992.314	832 853.794

4.2 Water Quality Monitoring Parameters

The water quality monitoring parameters includes dissolved oxygen (mg/L and % saturation), salinity (ppt), turbidity (NTU), and suspended solids (mg/L).

The parameters of dissolved oxygen, salinity and turbidity were measured on-site with portable instruments. Other relevant data was also recorded, including monitoring location / position, time, water depth, salinity, temperature, tidal stages, weather conditions and any special phenomena or work underway at the construction site.

The measurement of suspended solids was carried out in the laboratory of Stanger Asia Ltd. within 24 hours of sampling. The laboratory is HOKLAS accredited to determine suspended solids content in accordance with APHA Method No. 2540D, 20th Edition.

4.3 Water Quality Monitoring Frequency

Impact Monitoring – piling and demolition works

Monitoring shall be undertaken three days per week, at mid-flood and mid-ebb. The interval between two sets of monitoring shall not be less than 36 hours except where there are exceedances of Action and /or Limit levels, in which case the monitoring frequency shall be increased.

Impact Monitoring – marine works other than piling and demolition works

Monitoring shall be undertaken one day per week, at mid-flood and mid-ebb. The interval between two sets of monitoring shall not be less than 36 hours except where there are exceedances of Action and /or Limit levels, in which case the monitoring frequency shall be increased.

4.4 Water Quality Monitoring Equipment

Monitoring of marine water quality shall be carried out employing the following equipment.

Dissolved Oxygen, Salinity and Temperature Measuring Equipment

A YSI model 85 Handheld Dissolved Oxygen, Conductivity, Salinity and Temperature System was employed.

The instrument is portable, weatherproof instrument complete with cable, sensor, comprehensive operation manuals and operates from a DC power source. It is capable of measuring:

- (a) dissolved oxygen in the range of 0-20mg/L and 0-200% saturation
- (b) temperature in the range of 5 - 65°C
- (c) salinity in the range of 0-80ppt

The instrument has a membrane electrode with automatic temperature and salinity compensation, complete with a cable of sufficient length. Sufficient stocks of spare electrodes and cables are available for replacement where necessary.

Turbidity Measurement Instrument

A Hach 2100P turbidimeter shall be employed

This instrument measures turbidity on-site by the nephelometric method. The instrument is portable, weatherproof turbidity-measuring instrument complete with comprehensive operation manual. The equipment operates from a DC power source and has a photoelectric sensor capable of measuring turbidity between 0-1000NTU.

Suspended Solids

A Kahlisco Water Sampler 135WB203 was employed. This is a “Van Dorn” type of sampler, which has a transparent PVC cylinder (of a capacity not less than 2 litres) and can be effectively sealed with cups at both ends, shall be used for sampling. The

sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler is to the selected water depth.

Water samples for suspended solids measurements shall be collected in high-density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to the laboratory as soon as possible after collection.

Water Depth

A Hummingbird 100SX digital echo-sounder was employed. This is a portable, battery-operated Echo Sounder to be used for the determination of water depth at each water quality monitoring and control station. This unit can be either be hand-held or affixed to the bottom of the work boat if the same vessel is used throughout the monitoring programme.

Vessel Positioning Device

A Trimble NT200D Differential Global Positioning (DGPS) was employed. This is a portable or boat fixed and has an accuracy of $\pm 1\text{m}$ and can be programmed with waypoints to ensure the correct and repeated positioning of a vessel at a given monitoring location.

The Event and Action Plans for air, noise and water are attached in Appendix II of this report. Since the Discharge Standards for Water Quality were not applicable, as detailed in Section 4.3 above, another Event and Action Plan for Water Quality was derived according to the “*EM&A Guidelines for Development Projects in Hong Kong*” published in February 1998 issued by EPD as a substitute to Table 4.7b of the EM&A Manual.

4.5 Monitoring Equipment Calibration Requirements

All on-site monitoring equipment shall be checked, verified and calibrated by Stanger Asia Limited, a HOKLAS accredited laboratory, prior to use on the Works and subsequently thereafter every three months throughout all stages of the water quality monitoring. Responses of the sensors and electrodes shall be checked with certified standard solutions before each use. Wet bulb calibration for a DO meter shall be carried out before measurement.

For on-site calibration of field equipment, the BS 1427: 1993 “Guide to Field and on-site test methods for the analysis of waters” shall be observed.

A set of backup monitoring instruments and equipment shall be made available so that the monitoring can proceed uninterrupted in case of apparatus malfunction or if equipment has been returned to the laboratory for calibration.

4.6 Monitoring Methodology

Measurements were be taken under two tidal conditions (mid-flood and mid-ebb) at 3 water depths, namely 1m below the water surface, mid-depth and 1m above the seabed, except where the water depth is less than 6m, the mid-depth sample may be omitted. If the water depth is less than 3m, only the mid-depth will be monitored.

Replicate in-situ measurements and samples were collected from each independent sampling event are required for all parameters to ensure a robust statistical interpretable dataset.

For the measurement of dissolved oxygen the probe shall be removed from the water column between each duplicate measurement. If the difference between each duplicate measurement is greater than a 25% then the two sets of data shall be rejected and the measurements re-taken.

4.7 Action and Limit Levels

Water quality criteria, namely Action and Limit levels were based on the results of the baseline monitoring programme. The Action and Limit levels were calculated according to the following table.

Table 4.2 Action and Limit Levels for Water Quality Monitoring

Parameter	Action Level for Wong Shek	Limit Level for Wong Shek
Dissolved Oxygen in mg/L (Surface, Middle & Bottom)	<u>Surface & Middle</u> 6.96	<u>Surface & Middle</u> 6.69
	<u>Bottom</u> 6.93	<u>Bottom</u> 6.71
SS in mg/L (depth-averaged)	6.85 or 120% of upstream control station's SS at the same tide of same day, whichever is lower	8.85 or 130% of upstream control station's SS at the same tide of same day, whichever is lower
Turbidity (Tby) in NTU (depth-averaged)	1.47 or 120% of upstream control station's Tby at the same tide of same day, whichever is lower	4.05 or 130% of upstream control station's Tby at the same tide of same day, whichever is lower

- Notes: (a) "depth-averaged" is calculated by taking the arithmetic means of reading all three depths.
 (b) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
 (c) For SS and Tby, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
 (d) All the figures given in the table are used for reference only and the Engineer may amend the figures whenever it is considered as necessary.

4.8 Event and Action Plans

The Event and Action Plans for water quality monitoring are attached in Appendix III of this report.

5. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

The contractor implemented various environmental mitigation measures as recommended in the EIA report, EM&A Manual and Environmental Permit. The implementation status during this quarter is attached in Appendix III.

6. MONITORING RESULTS

6.1 Water Quality Monitoring

Water quality monitoring in terms of turbidity, dissolved oxygen, suspended solids, temperature, and salinity was carried out on 26 occasions at MW1, MW2, CW1 and CW2 for Wong Shek Pier during the reporting period.. Results for water quality monitoring are summarised in the following tables. Graphical presentations of the results are shown in Figure 6.1 – Figure 6.8.

Table 6.1 Summary of Water Quality Monitoring Data

Sample Location	Surface & Middle Averaged DO, mg/L	Bottom Averaged DO, mg/L	Averaged Turbidity, NTU	Averaged Suspended Solids, mg/L
Wong Shek - Flood Tide				
MW1	7.39	7.31	1.08	4.5
MW2	7.47	7.30	1.11	4.8
CW1	7.37	7.32	1.20	5.4
CW2	7.42	7.33	1.25	5.4
Wong Shek- Ebb Tide				
CW1	7.27	7.29	1.17	5.7
CW2	7.26	7.29	1.30	5.8

Table 6.2 Summary of Water Quality Monitoring Exceedances

Parameters	Number of Monitoring (Wong Shek MW1 and MW2)	Number of Exceedance due to construction	
		Action Level	Limit Level
Dissolved Oxygen, mg/L	26	0	0
Turbidity, NTU	26	0	0
Suspended Solids, mg/L	26	0	0

7. ENVIRONMENTAL AUDIT

7.1 Site Inspections

Twelve weekly Site Inspections were conducted jointly by the Environmental Specialist. The major observations / non-conformance, actions by the Contractor and outcomes are summarised in the following tables.

Table 7.1 Summary of Findings, Actions and Outcomes of Site Inspection by the Environmental Specialist

Observations by ET	Environmental Outcome
Coral Exclusion Zone mark was removed by the sea wave (4 April 2005).	Buoys mark the Coral Exclusion Zone have been mount by the contractor
Little diesel oil was found floating on the sea surface near the Wong Shek pier (4 April 2005).	Unidentified source of Diesel oil was observed but it was not generated from the construction works.
Environmental Permit was not displayed at the site entrance (27 April 2005).	Environmental Permit has been displayed at the site entrance by the contractor

8. WASTE MANAGMENT STATUS

No C&D materials, general refuse and chemical wastes were transported off site during the reporting quarter.

9. COMPLAINTS, NOTIFICATIONS OF SUMMONSES AND SUCCESSFUL PROSECUTIONS

No complaint, notifications of summons and successful prosecutions were received in this reporting period.

Complaint Log is attached in Appendix IX. Cumulative statistics on complaint, is attached in Appendix X.

10. CONCLUSIONS

This Quarterly Environmental Monitoring and Audit Report details the water quality monitoring works carried out during the period from March to May 2005.

All of results for the water quality monitoring conducted in this quarter were acceptable with no exceedance to set Action or Limit levels except the dissolved oxygen at Wong Shek for 3 occasions, which has exceeded the action and limit levels. The exceedances were due to temperature and current variation rather than construction activities. An investigation report had been submitted on 29 June 2005 addressing this issue.

In addition, no complaint, notification of summons and successful prosecutions were received this month.

Figures

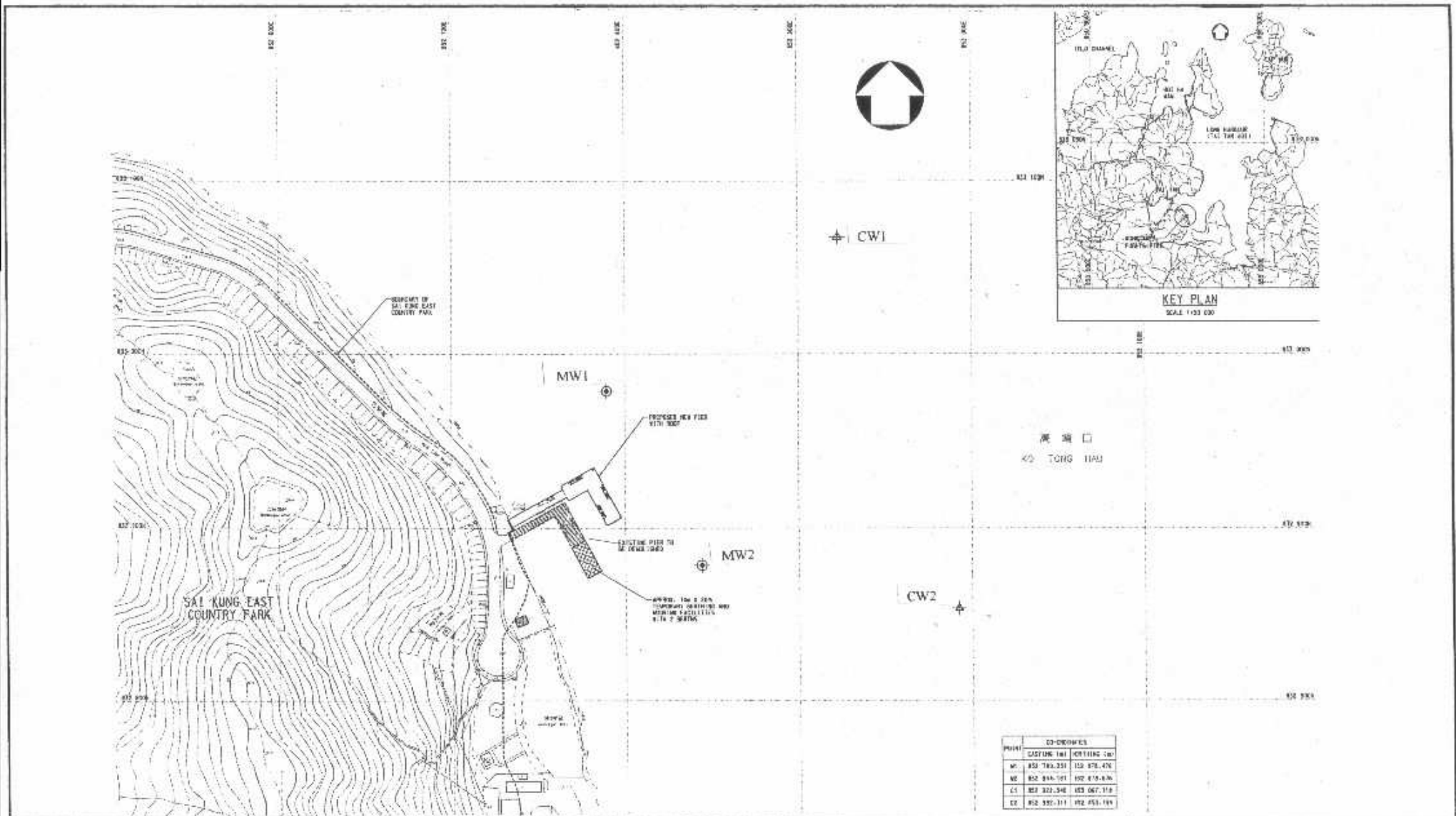


Figure 4.1 - Water Quality Monitoring Stations (Wong Shek)

Figure 6.1 - Surface and Middle Averaged Dissolved Oxygen - Mid-Flood
(Wong Shek)

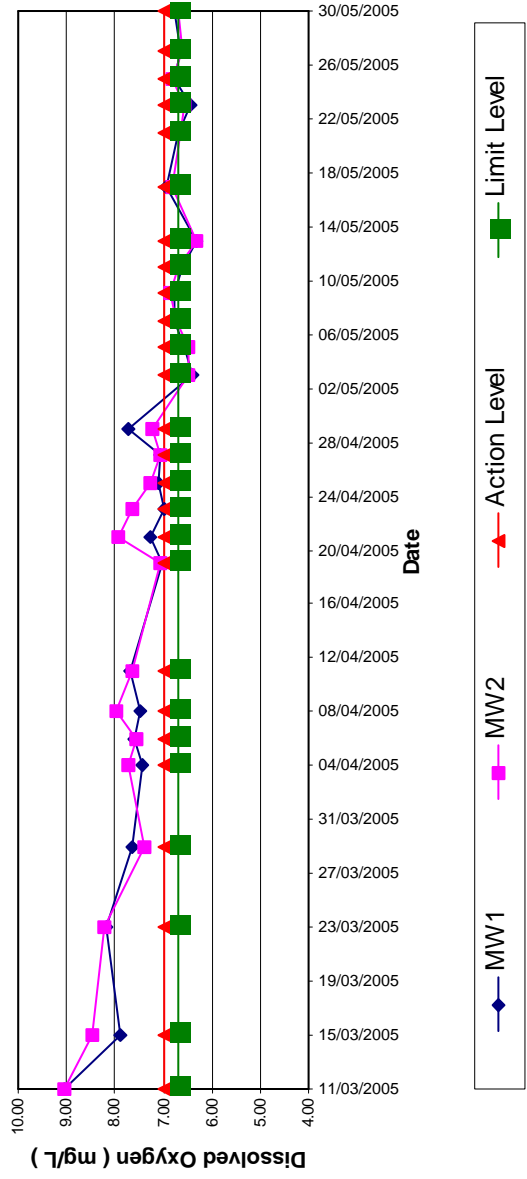


Figure 6.2 - Bottom Averaged Dissolved Oxygen - Mid-Flood
(Wong Shek)

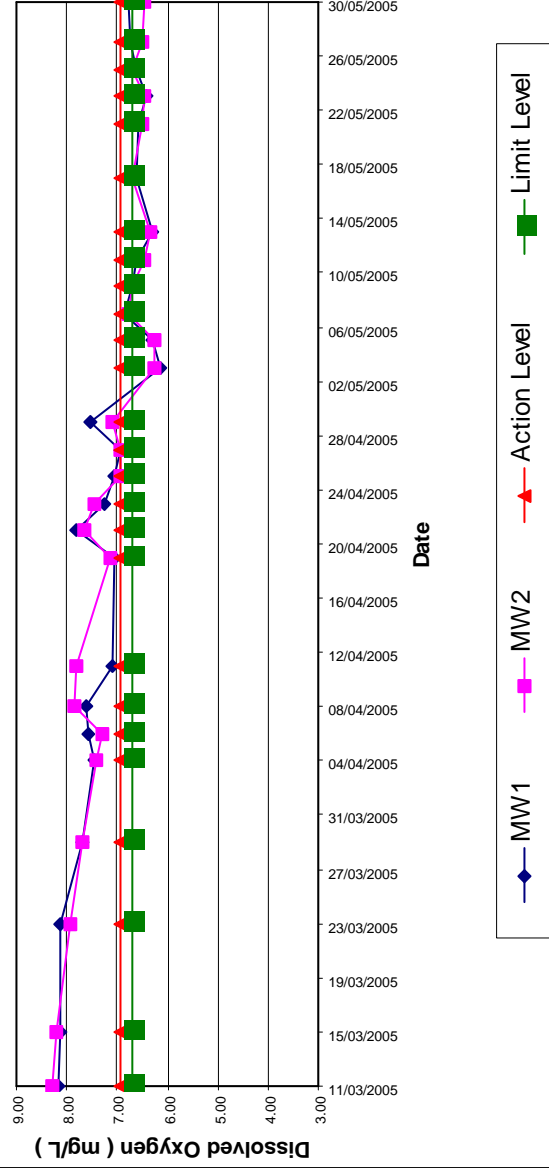


Figure 6.5 - Surface and Middle Averaged Dissolved Oxygen - Mid-Ebb
(Wong Shek)

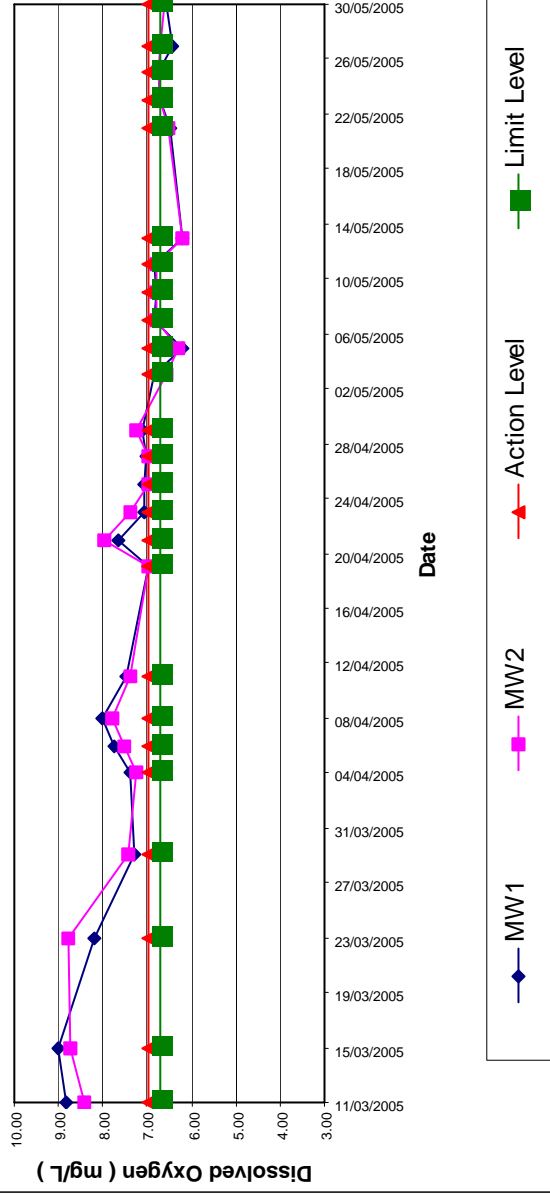


Figure 6.4 - Depth Averaged Suspended Solids - Mid-Flood
(Wong Shek)

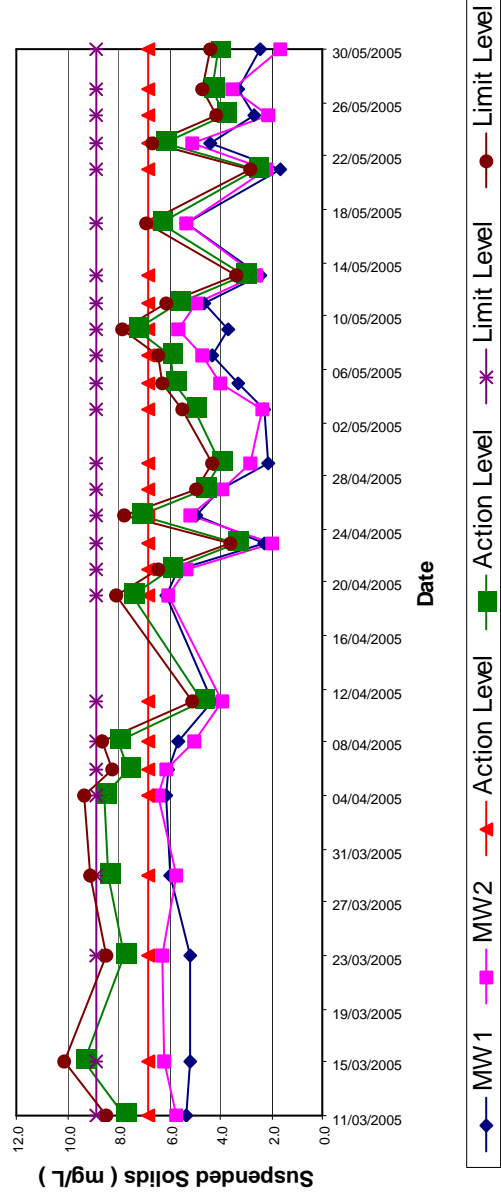


Figure 6.5 - Surface and Middle Averaged Dissolved Oxygen - Mid-Ebb
(Wong Shek)

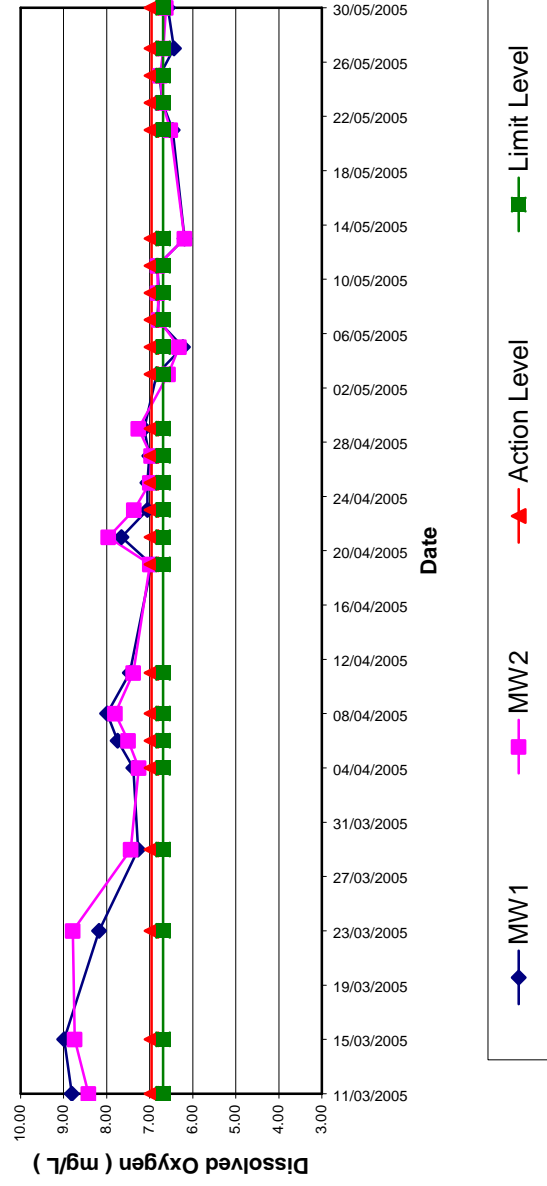


Figure 6.6 - Bottom Averaged Dissolved Oxygen - Mid-Ebb
(Wong Shek)

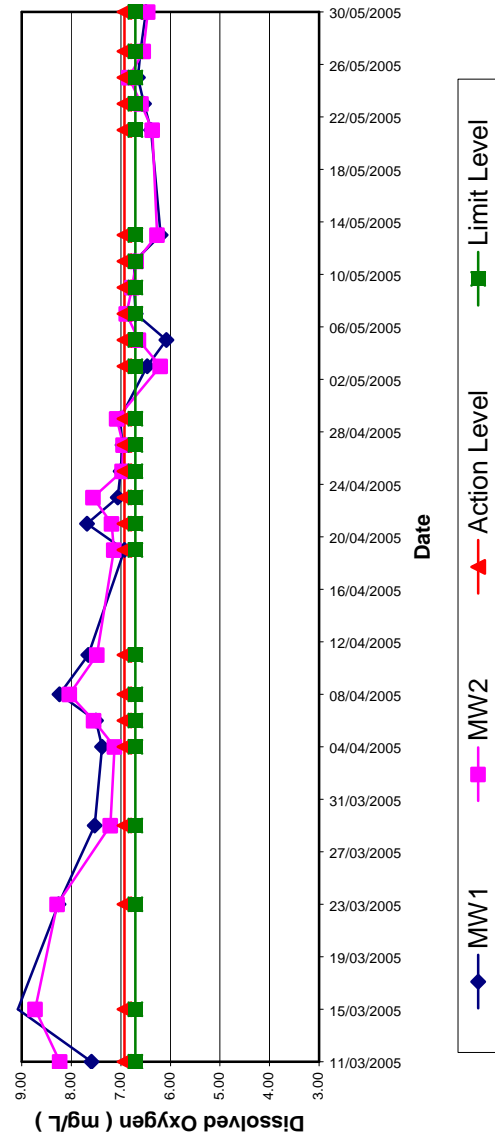


Figure 6.7 - Depth Averaged Turbidity - Mid-Ebb
(Wong Shek)

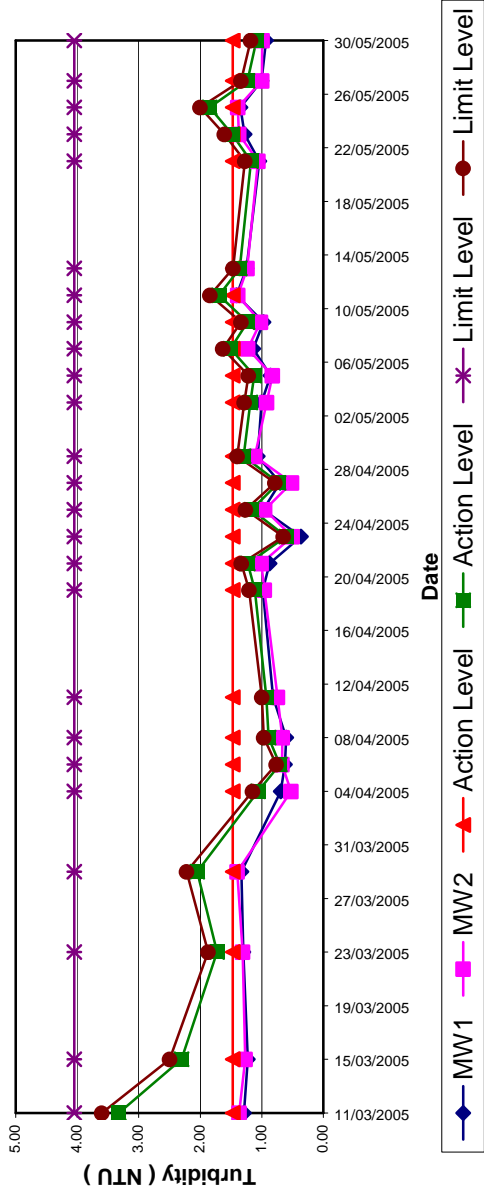
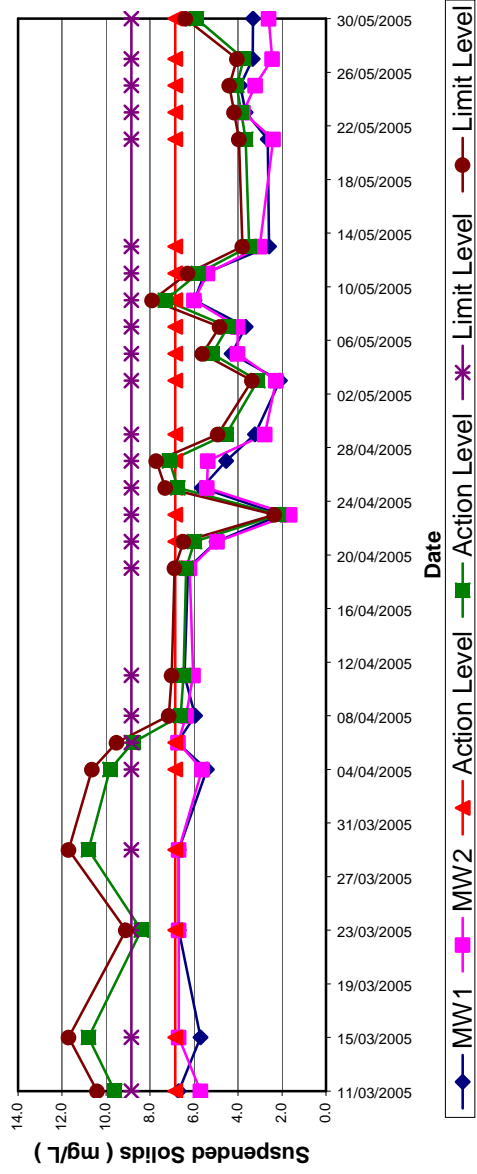
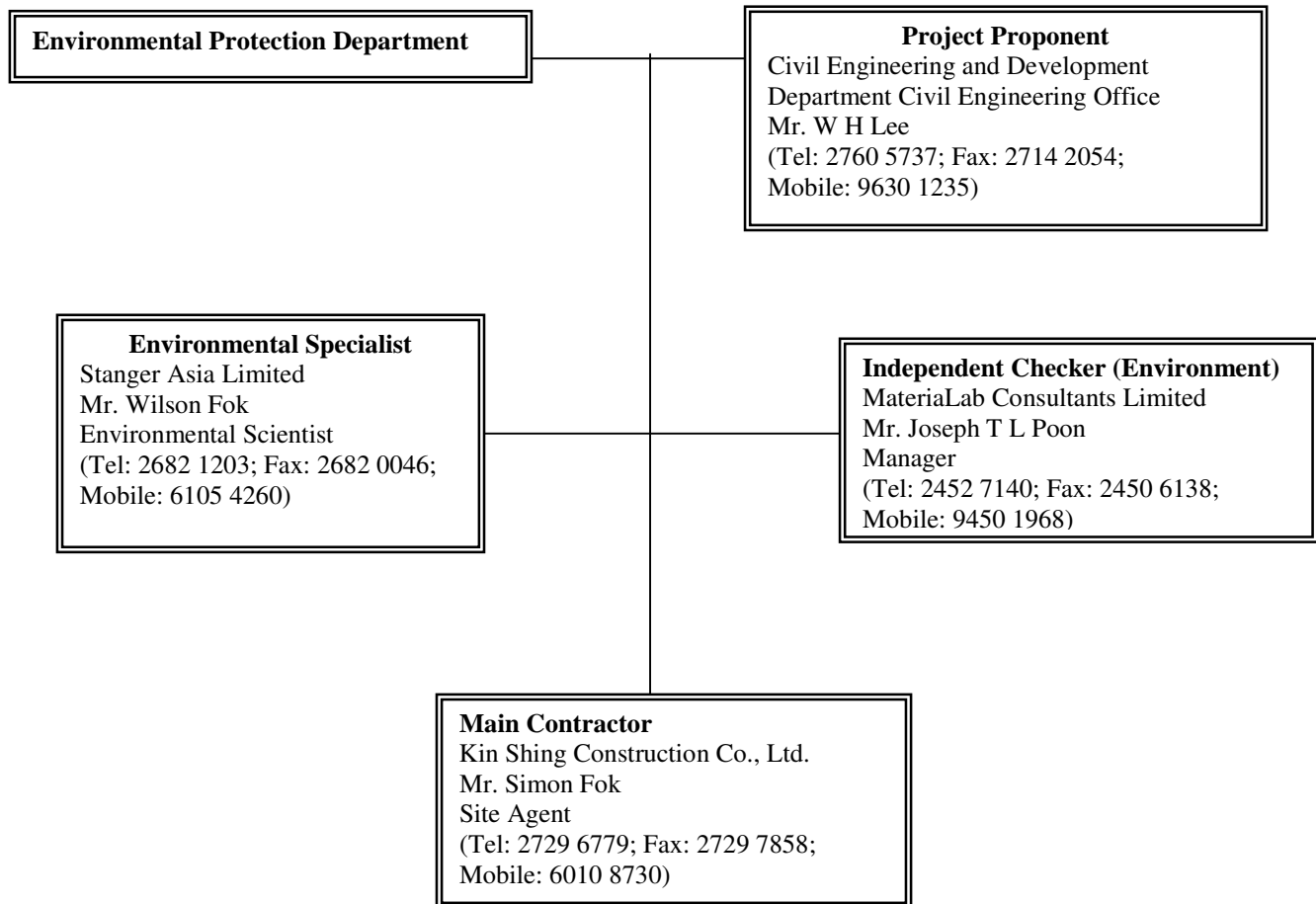


Figure 6.8 - Depth Averaged Suspended Solids - Mid-Ebb
(Wong Shek)



Appendix I
Organization Chart

Contract No. CV/2004/02
Reconstruction of Wong Shek and Ko Lau Wan Public Piers
Environmental Organization Chart



Appendix II

Event and Actions Plans

Event/Action Plan for Water Quality

EVENT	ACTION			
	ES	IC(E)	ER	CONTRACTOR
Action level				
Action level being exceeded by one sampling day.	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify source(s) of impacts; 3. Inform IC(E) and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Repeat measurements on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ES and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor and advise ER accordingly; 3. Assess the effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the ER and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with ES and IC(E) and propose mitigation measures to IC(E) and ER; 6. Implement the agreed mitigation measures.
Action level being exceeded by more than one consecutive sampling day.	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify source(s) of impact; 3. Inform contractor, IC(E) and ER 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Prepare to increase the monitoring frequency to daily; 8. Repeat measurements on next day of exceedance. 	<ol style="list-style-type: none"> 1. Discuss with ES and Contractor on the proposed mitigation measures; 2. Review proposals on mitigation measures submitted by Contractor advise ER accordingly; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E) on the proposed mitigation measures; 2. Make agreement on the mitigation measures to be implemented; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ES and IC(E) and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures.

Event/Action Plan for Water Quality (Cont'd)

<u>EVENT</u>	<u>ACTION</u>			
	<u>ES</u>	<u>IC(E)</u>	<u>ER</u>	<u>CONTRACTOR</u>
Limit level				
Limit level being exceeded by one sampling day.	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify source(s) of impact; 3. Inform contractor IC(E) and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Discuss with ES and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise the ER accordingly; 3. Assess the effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E), ES and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ES IC(E) and ER and Propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures.
Limit level being exceeded by more than one consecutive sampling day.	<ol style="list-style-type: none"> 1. Repeat in-situ measurements to confirm findings; 2. Identify source(s) of impact; 3. Inform contractor, IC(E) and ER; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Discuss mitigation measures with IC(E), ER and Contractor; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 	<ol style="list-style-type: none"> 1. Discuss with ES and Contractor on the mitigation measures; 2. Review proposals on mitigation measures submitted by the Contractor and advise ER accordingly; 3. Assess the effectiveness of implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IC(E) ES and Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Assess the effectiveness of the implemented mitigation measures. 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or marine work until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Inform the Engineer and confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Discuss with the ES, IC(E) and ER and propose mitigation measures to IC(E) and ER within 3 working days; 6. Implement the agreed mitigation measures; 7. As directed by the Engineer, slow down or stop all or part of the marine works or construction activities.

Appendix III

Implementation Status of Mitigation Measures

IMPLEMENTATION STATUS OF MITIGATION MEASURES

Area	Mitigation Measures	Implementation Status
Air Quality	Provide a washpit or a wheel washing and/or vehicle cleaning facility at the exits.	Not applicable in this stage
	Provide a hard surfaced road between the wheel washing facilities and any finished road.	Not applicable in this stage
	No burning of construction wastes or vegetation shall be allowed on the Site.	Implemented
	In the process of material handling, any material which has the potential to create dust shall be treated with water or sprayed with wetting agent.	Not applicable in this stage
	Any vehicle with an open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards.	Not applicable in this stage
	Materials having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	Not applicable in this stage
	Stockpiles of sand, aggregate and construction and demolition material greater than 20m ³ shall be enclosed on three sides, with walls extending above the pile and 2 meters beyond the front of the pile.	Not applicable in this stage
	Water sprays shall be provided and used both to dampen stored materials and when receiving raw materials.	Not applicable in this stage
	Clean and water the Site to minimize the fugitive dust emissions.	Implemented
	Furnace, boiler or other plant or equipment or use any fuel that might in any circumstances produce smoke or any other air pollution should not be installed.	Implemented
Noise	All plant and equipment to be used on Site are properly maintained in good operating condition and noisy construction activities shall be effectively sound-reduced by means of silencers, mufflers, acoustic linings or shields, acoustic sheds or screens or other means to avoid disturbance to any nearby noise sensitive receivers.	Implemented
	No excavator mounted breaker shall be used within 125m from any nearby noise sensitive receivers. Use hydraulic concrete crusher whenever applicable.	Implemented
	All construction works should stop on Sundays and General Holidays.	Implemented
Water Quality	Water in wheel washing facilities shall be changed at frequent intervals and sediments shall be removed regularly.	Not applicable in this stage
	The polluted water from the wheel washing facilities would not be discharged into all existing stream courses/drains and nearby waterbodies.	Not applicable in this stage
	All existing stream courses and drains within, and adjacent to the Site should be kept free from any debris and any excavated materials arising from the Works	Implemented
	Chemicals and concrete agitator washings should not be deposited in watercourses.	Implemented
	The effluent shall comply with the standards stated in the "Technical Memorandum on Standards and Effluent discharges into Drainage and Sewerage Systems, Inland and Coastal Waters" for the appropriate Water Control Zone.	Implemented
	No spoil or debris of any kind is allowed to be pushed, washed down, fall or be deposited on land or on the seabed adjacent to the Site.	Implemented

IMPLEMENTATION STATUS OF MITIGATION MEASURES

Area	Mitigation Measures	Implementation Status
	Maintain any existing site drainage system at all times including removal of solids in sand traps, manholes and stream beds.	Implemented
	Material from any earthworks should not be washed into the drainage system.	Implemented
	Silt curtain shall be provided during all demolition works and piling works with the Site.	Not applicable in this stage
	Silt curtain shall be formed from tough, abrasion-resistant permeable membranes suitable for the purpose, supported on floating booms in such a way as to ensure that the passage of turbid water to the surrounding water shall be restricted.	Not applicable in this stage
	No dredging and spoil dumping shall be conducted.	Not applicable in this stage
Ecology	Marker buoys shall be set up to indicate the location of the "Coral Exclusion Zone". All working vessels shall be restricted to encroach the "Coral Exclusion Zone"	Implemented
	No overloading of the working barges during operation and no movement of the working barges, particularly close to the pier and shallow areas, during low tide should be allowed.	Not applicable in this stage
	No coral shall be enclosed by the silt curtain.	Not applicable in this stage
Waste	All excavated materials should be sorted to recover the inert portions for reuse on site or disposal to designated outlets.	Not applicable in this stage
	All metals should be recovered on site for collection by recycling contractors.	Not applicable in this stage
	All cardboard and paper packaging should be recovered on site, properly stockpiled in dry condition and covered to prevent cross contamination by other C&D materials.	Not applicable in this stage
	All demolition debris from demolition works should be sorted to recover on site broken concrete, reinforcement bars, mechanical and electrical fittings as well as other building services fittings/materials that have established recycling outlets.	Not applicable in this stage

Appendix IV
Complaint Log

APPENDIX V

Cumulative Statistics on Complaints and Successful Prosecutions

Contract No. CV/2004/02 Reconstruction of Wong Shek and Ko Lau Wan Public			
Cumulative Statistics on Complaints			
Environmental Parameters	Cumulative No. Brought Forward	No. of Complaints This Month	Cumulative Number to Date
Air	-	-	-
Noise	-	-	-
Water	-	-	-
Waste	-	-	-
Total	-	-	-

Contract No. CV/2004/02 Reconstruction of Wong Shek and Ko Lau Wan Public			
Cumulative Statistics on Successful Prosecutions			
Environmental Parameters	Cumulative No. Brought Forward	No. of Successful Prosecutions this month (Offence Date)	Cumulative Number to Date
Air	-	-	-
Noise	-	-	-
Water	-	-	-
Waste	-	-	-
Total	-	-	-

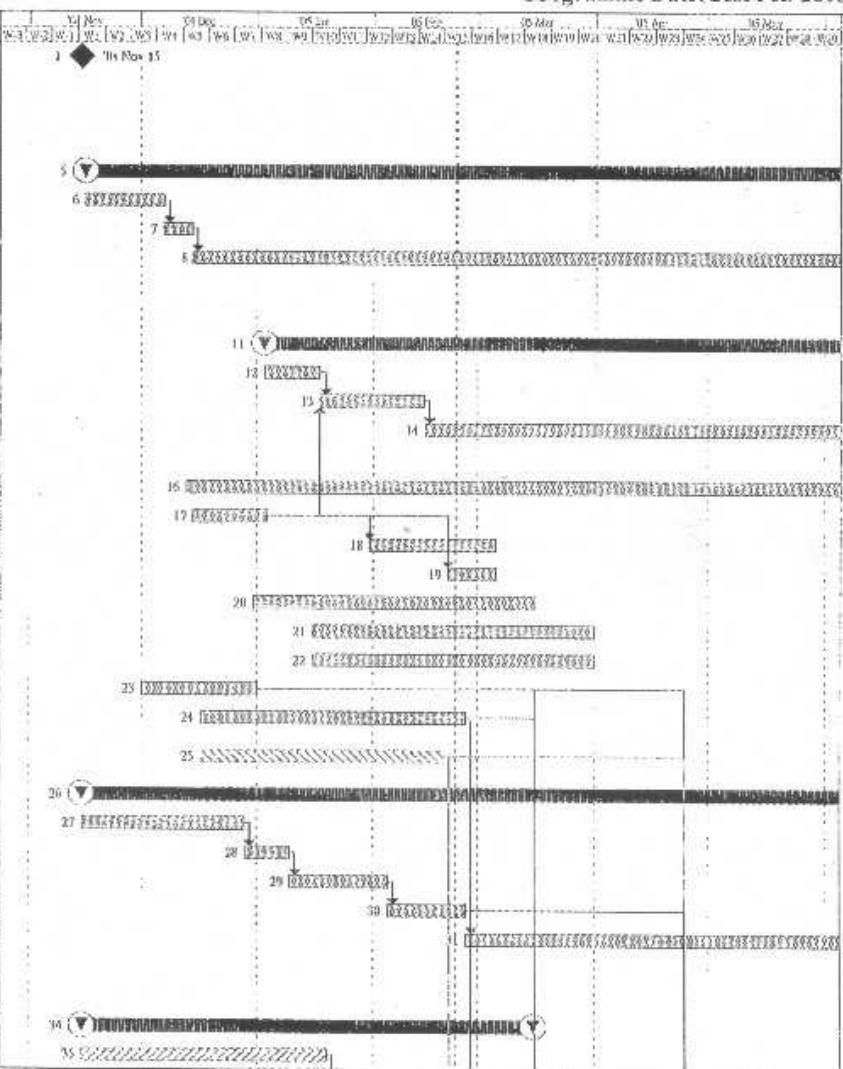
Contract No. CV/2004/02 Reconstruction of Wong Shek and Ko Lau Wan Public			
Cumulative Statistics on Notification of Summons			
Environmental Parameters	Cumulative No. Brought Forward	No. of Notification of Summons	Cumulative Number to Date
Air	-	-	-
Noise	-	-	-
Water	-	-	-
Waste	-	-	-
Total	-	-	-

APPENDIX VI

Master Construction Programme

Master Programme (Version 2)

Sl. No.	Task Name	Duration	Start	Finish	Predecessors
1	Commencement of the Works	1 day	Mon 04/11/15	Mon 04/11/15	
2	Completion of Section 1 (Wong Shek Public Pier)	1 day	Sun 06/8/6	Sun 06/8/6	
3	Completion of Section 2 (Ko Lau Wan Public Pier)	1 day	Sun 06/8/6	Sun 06/8/6	
Preliminary					
4	Establishment of Engineer's Principal Site Office	994 days	Tue 04/11/16	Mon 07/8/6	
5	Submission and approval	21 days	Tue 04/11/16	Mon 04/12/6	
6	Provision	8 days	Tue 04/12/7	Tue 04/12/7	
7	Servicing during construction period	600 days	Wed 04/12/15	Sun 06/8/6	
8	Servicing during maintenance period	364 days	Mon 06/8/7	Sun 07/8/5	
9	Decommissioning	1 day	Mon 07/8/6	Mon 07/8/6	
Secondary Office					
10	Submission and approval	15 days	Mon 05/1/3	Mon 05/1/17	
11	Provision	28 days	Tue 05/1/18	Mon 05/2/14	
12	Servicing	538 days	Tue 05/2/15	Sun 06/8/6	
13	Decommissioning	1 day	Mon 06/8/7	Mon 06/8/7	
Provision of Contractor's accommodation					
14	Initial survey	20 days	Wed 04/12/15	Mon 05/1/3	
15	Erection of hoarding and project signboard at Pier A	34 days	Mon 05/1/31	Sat 05/3/5	
16	Erection of hoarding and project signboard at Pier B	13 days	Mon 05/2/21	Sat 05/3/5	
17	Application and installation of electrical system	75 days	Fri 04/12/31	Tue 05/3/15	
18	Application and installation of water supply system	75 days	Sun 05/1/15	Thu 05/3/31	
19	Application and installation of telephone lines	75 days	Sun 05/1/15	Thu 05/3/31	
20	Notification of parties in concern	34 days	Wed 04/12/14	Fri 04/12/31	
21	Application for promulgation of Marine Department Notice for Wong Shek	71 days	Fri 04/12/17	Fri 05/2/25	
22	Application for promulgation of Marine Department Notice for Ko Lau Wan	65 days	Fri 04/12/17	Sat 05/2/19	
Environmental Monitoring					
23	Submission and approval of ES and IC (Proc)	44 days	Mon 04/11/15	Tue 04/12/28	
24	Endorsement of EM&A proposal	12 days	Wed 04/12/29	Sun 05/1/9	
25	Baseline water quality monitoring	26 days	Mon 05/1/10	Fri 05/2/4	
26	Preparation and approval of baseline report	21 days	Sat 05/2/5	Fri 05/2/25	
27	Impact monitoring	527 days	Sat 05/2/26	Sun 06/8/6	
28	Pre-construction monitoring	28 days	Mon 06/8/7	Sun 06/9/3	
Section 1 (Wong Shek Public Pier)					
29	Temporary cover to existing pier	121 days	Mon 04/11/15	Tue 05/3/15	
30	Design and ICF checking	66 days	Mon 04/11/15	Wed 05/1/19	



CV/2004/02/200502
 Master Programme (Version 2)

Round Task: [Pattern] Legend: [Symbol] Summary: [Symbol]
 Split: [Pattern] Commencement Milestone: [Symbol] Completion Milestone: [Symbol]

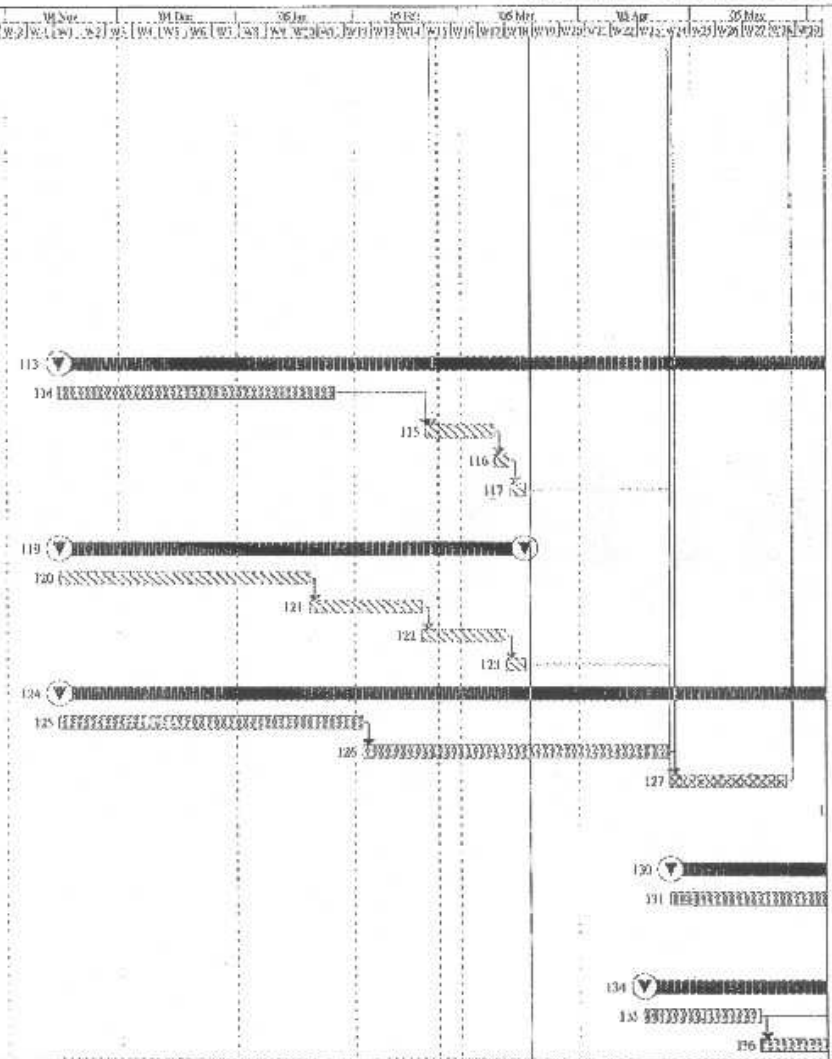
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Master Programme (Version 2)

Task Name	Duration	Start	Finish	Predecessors
Relocation	1 day	Fri 06/7/7	Fri 06/7/7	105,106,107,108
Commissioning of the pier	1 day	Sat 06/7/8	Sat 06/7/8	109
Demolition of the temporary berth and the existing pier	151 days	Thu 06/3/9	Sun 06/8/6	
Survey of existing structures	31 days	Thu 06/3/9	Sat 06/4/8	
Design and ICF checking of demolition plan	61 days	Sun 06/4/9	Thu 06/6/8	108
Submission for Engineer's comments	30 days	Fri 06/6/9	Sat 06/7/8	107
Obtain consent from Country and Marine Park Authority	30 days	Fri 06/6/9	Sat 06/7/8	107
Demolition	29 days	Sun 06/7/9	Sun 06/8/6	104,109,108
Maintenance Period for the Works	365 days	Mon 06/8/7	Mon 07/8/6	110
Section 2 (Ko Lau Wan Public Pier)				
Canal Survey	626 days	Mon 04/11/15	Wed 06/8/02	
Submission and approval of specialist and method statement	73 days	Mon 04/11/15	Wed 05/1/26	
Initial cross survey and approval by AFCD	18 days	Sun 05/2/20	Wed 05/3/9	113,28
Canal translocation	4 days	Thu 05/3/10	Sun 05/3/13	115
Post translocation survey	4 days	Mon 05/3/14	Thu 05/3/17	116
Post pier construction survey	15 days	Wed 06/7/19	Wed 06/8/2	107
Temporary cover to existing pier	123 days	Mon 04/11/15	Thu 05/3/17	
Design and ICF checking	60 days	Mon 04/11/15	Wed 05/1/19	
Submission for Engineer's comment	30 days	Thu 05/1/20	Fri 05/2/13	120
Erection	22 days	Sat 05/2/19	Sat 05/3/12	121
Certified by ICE and commissioning	5 days	Sun 05/3/13	Thu 05/3/17	122
Provision of temporary berth				
Design and ICF checking of temporary berth	80 days	Mon 04/11/15	Wed 05/2/2	
Submission for Engineer's comment	81 days	Thu 05/2/3	Sun 05/4/24	125
Piling (Phase 1)	31 days	Mon 05/4/25	Wed 05/5/25	123,126,117,13,10,25,42
Piling (Phase 2)	9 days	Fri 05/6/10	Sat 05/6/18	56
Deck construction and installation of fenders	25 days	Sat 05/6/19	Wed 05/7/13	128
Relocation of navigation light by Marine Dept.	81 days	Mon 05/4/25	Thu 05/7/14	
Application to Marine Department	80 days	Mon 05/4/25	Wed 05/7/13	
Relocation works	1 day	Thu 05/7/14	Thu 05/7/14	138,131
Certified by ICE, testing and commissioning of berth	5 days	Fri 05/7/15	Tue 05/7/19	132
Demolition of part of the existing pier	115 days	Mon 05/4/18	Wed 05/8/10	
Survey of existing structures	31 days	Mon 05/4/18	Wed 05/5/18	
Design and ICF checking of demolition plan	32 days	Thu 05/5/19	Sun 05/6/19	134



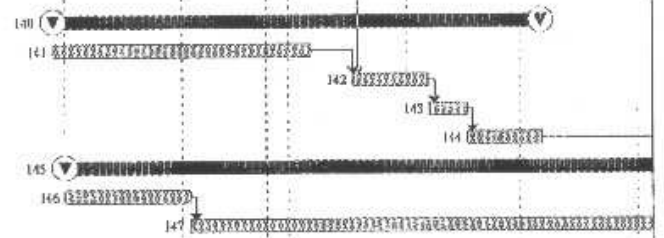
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ID	Task Name	Duration	Start	Finish	Predecessor	Gantt Chart													
						1st Dec	2nd Dec	3rd Dec	4th Dec	5th Dec	6th Dec	7th Dec	8th Dec	9th Dec	10th Dec	11th Dec	12th Dec		
157	Submission for Engineer's comments	30 days	Mon 05/6/20	Tue 05/7/19	136														
158	Liasons with local residents	30 days	Mon 05/6/20	Tue 05/7/19	135														
159	Demolition	22 days	Wed 05/7/20	Wed 05/8/10	133,133,137														
160	Ground investigation	129 days	Wed 04/12/29	Fri 05/5/6															
161	Submission for Engineer's comment	68 days	Wed 04/12/29	Sun 05/3/6															
162	Ground investigation works on site	20 days	Fri 05/3/18	Wed 05/4/6	141,261,17														
163	Preparation and approval of reports	10 days	Thu 05/4/7	Sat 05/4/16	142														
164	Submission of reports to determine pile founding levels	20 days	Sun 05/4/17	Fri 05/5/6	143														
165	Piling for permanent pier	342 days	Sat 05/1/1	Thu 05/12/8															
166	Compilation of method statement for piling	33 days	Sat 05/1/1	Wed 05/2/2															
167	Submission for Engineer's comment	189 days	Thu 05/2/3	Wed 05/8/10	146														
168	Vertical preliminary pile and testing	15 days	Thu 05/8/11	Thu 05/8/25	147,139,65,144														
169	Vertical main piles (EL. E4, D1, D4, C1, C4)	20 days	Fri 05/8/26	Wed 05/9/14	149														
170	Temporary platform for raking pile	21 days	Thu 05/9/15	Wed 05/10/5	149														
171	Vertical main pile (remaining 15 nos)	45 days	Thu 05/9/15	Sat 05/10/29	148														
172	Raking preliminary piles and testing	16 days	Thu 05/10/6	Fri 05/10/21	150,62														
173	Raking main piles (remaining 9 nos)	33 days	Sat 05/10/22	Wed 05/11/23	152														
174	Pile tests for main piles	15 days	Thu 05/11/24	Thu 05/12/8	151,153														
175	Construction of pile cap and deck	201 days	Wed 05/8/10	Sun 06/2/26															
176	Submission and approval of precast yard	60 days	Wed 05/8/10	Sat 05/10/8															
177	Casting of precast units at precast yard	60 days	Mon 05/10/10	Thu 05/12/8	156														
178	Design and ECE checking of falsework for pile cap and deck construction	60 days	Sat 05/9/16	Tue 05/11/8															
179	Submission of calculation and method statement for Engineer's approval	30 days	Wed 05/11/9	Thu 05/12/8	158														
180	Erection of falsework for installation of precast units	20 days	Fri 05/12/9	Wed 05/13/28	159,164														
181	Installation of precast units with in-situ pile caps	55 days	Fri 05/12/9	Wed 06/2/1	160,164														
182	Casting of in-situ pier deck	25 days	Thu 06/2/2	Sun 06/2/26	161,164														
183	Construction of bollards	25 days	Thu 06/2/2	Sun 06/2/26	161														
184	Installation of corrosion monitoring system	85 days	Sun 05/12/4	Sun 06/2/26															
185	Approval of specialist contractor and method statement	60 days	Sun 05/12/4	Wed 06/2/1															
186	Installation of corrosion monitoring system	25 days	Thu 06/2/2	Sun 06/2/26	161,165														
187	Construction of vihan	110 days	Fri 06/2/17	Tue 06/6/6															
188	Concrete structure	50 days	Mon 06/2/27	Mon 06/4/17	162														
189	Finishing	110 days	Fri 06/2/17	Tue 06/6/6															
190	Material submission	60 days	Fri 06/2/17	Mon 06/4/17															
191	Construction	50 days	Tue 06/4/18	Tue 06/6/6	158,159														



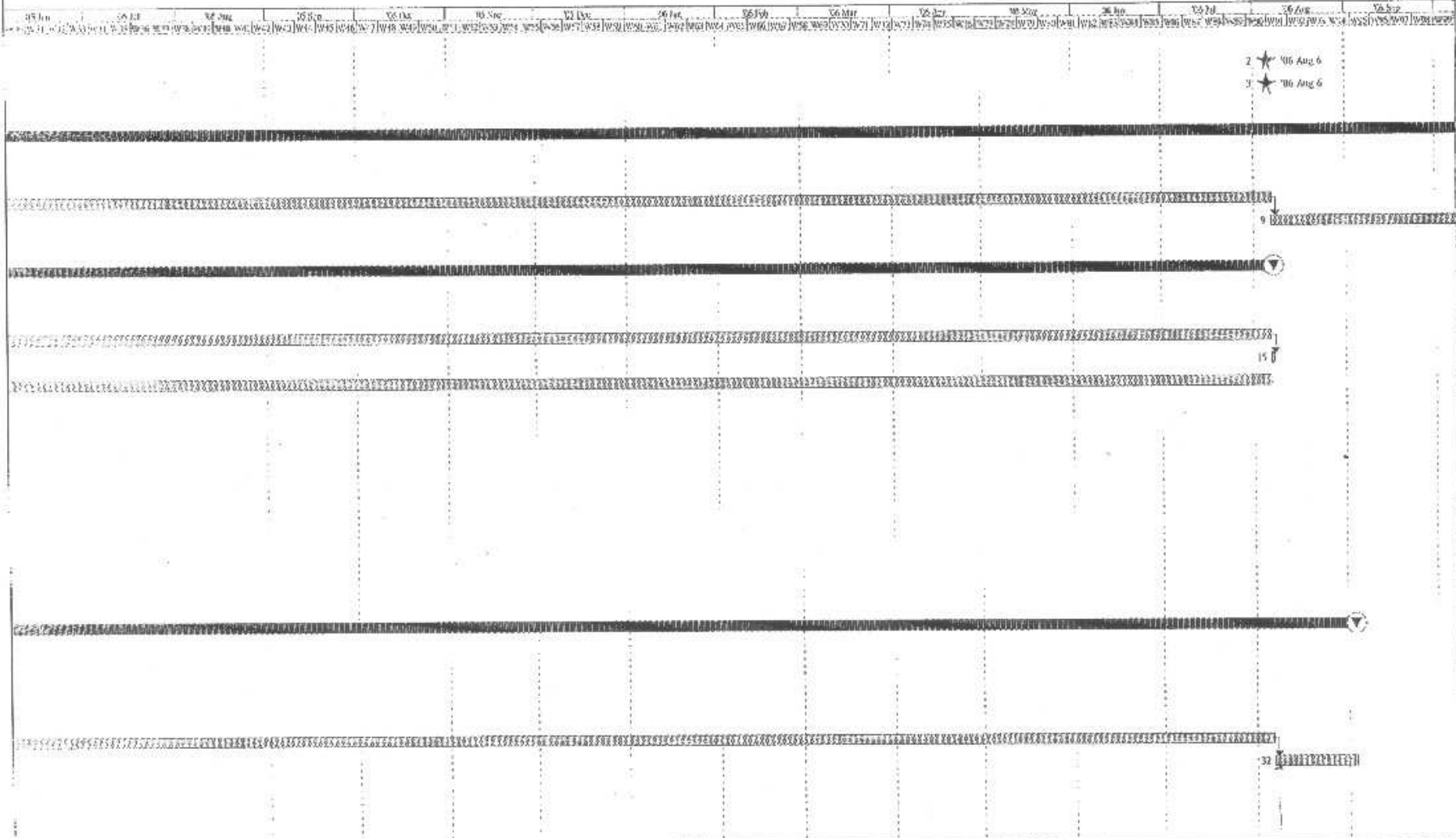
Contract No.: CV/2004/02
 Reconstruction of Wong Shek and
 Ko Lau Wan Public Piers

Master Programme

(Version 2)

Contractor: Kin Shing Construction Co. Ltd.
 Commencement Date: 15th Nov 2004
 Completion Date: 6th Aug 2006
 Programme Date: 21st Feb 2005

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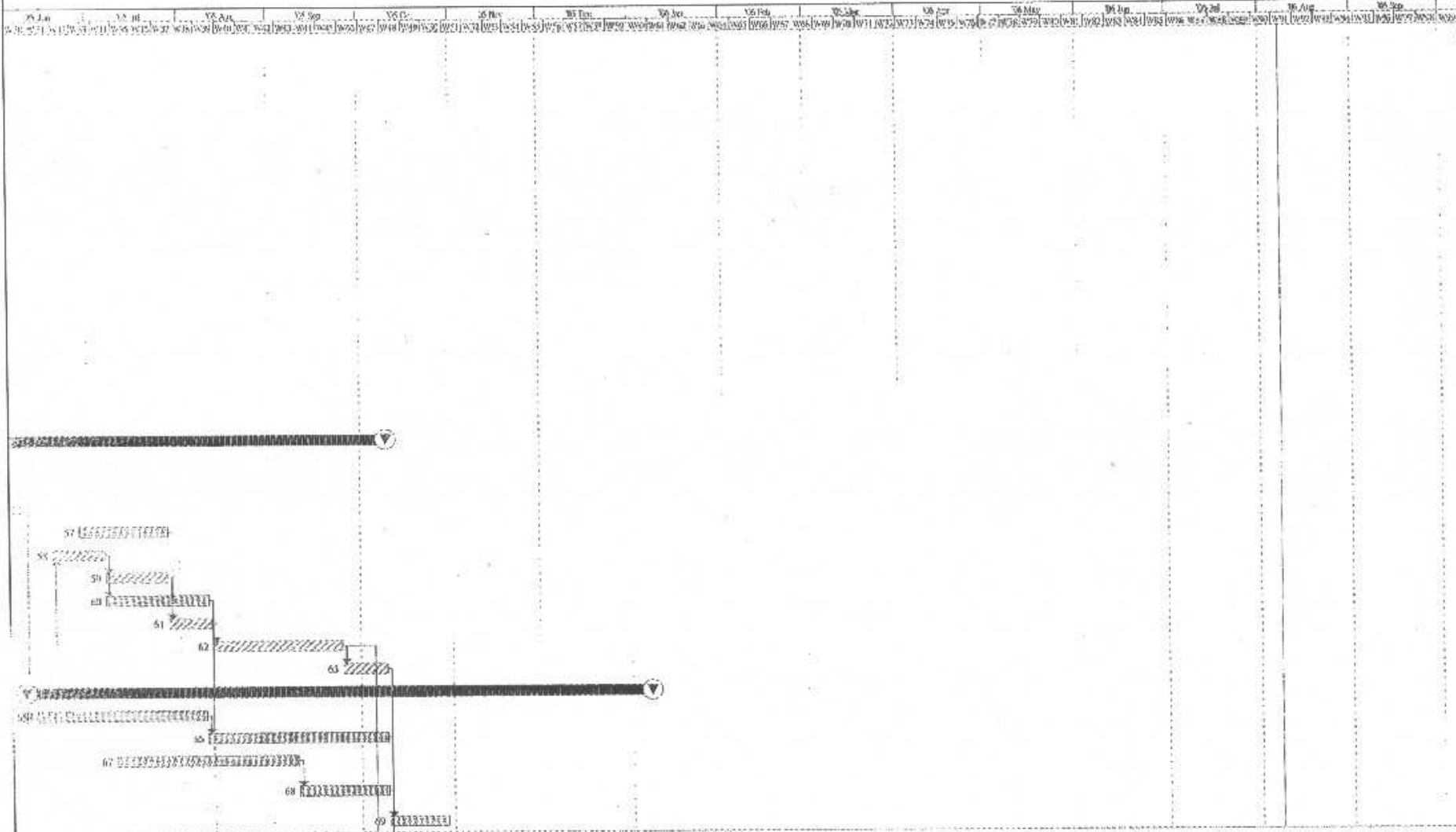
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Contract No.: CV/2004/02
 Reconstruction of Wong Shek and
 Ko Lan Wan Public Piers

Master Programme

(Version 2)

Contractor: Kin Shing Construction Co. Ltd.
 Commencement Date: 15th Nov 2004
 Completion Date: 6th Aug 2006
 Programme Date: 21st Feb 2005

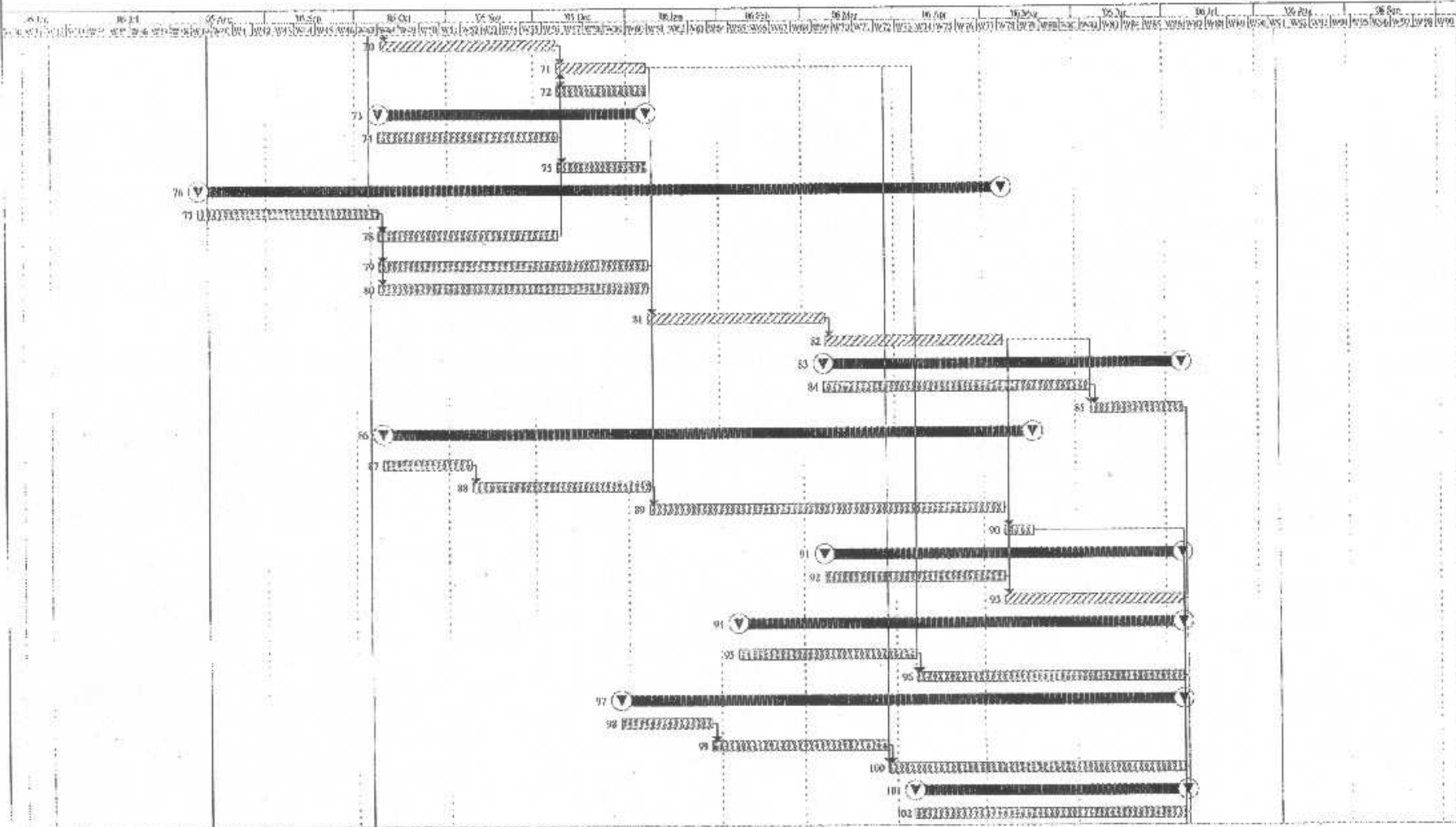


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Master Programme
 (Version 2)



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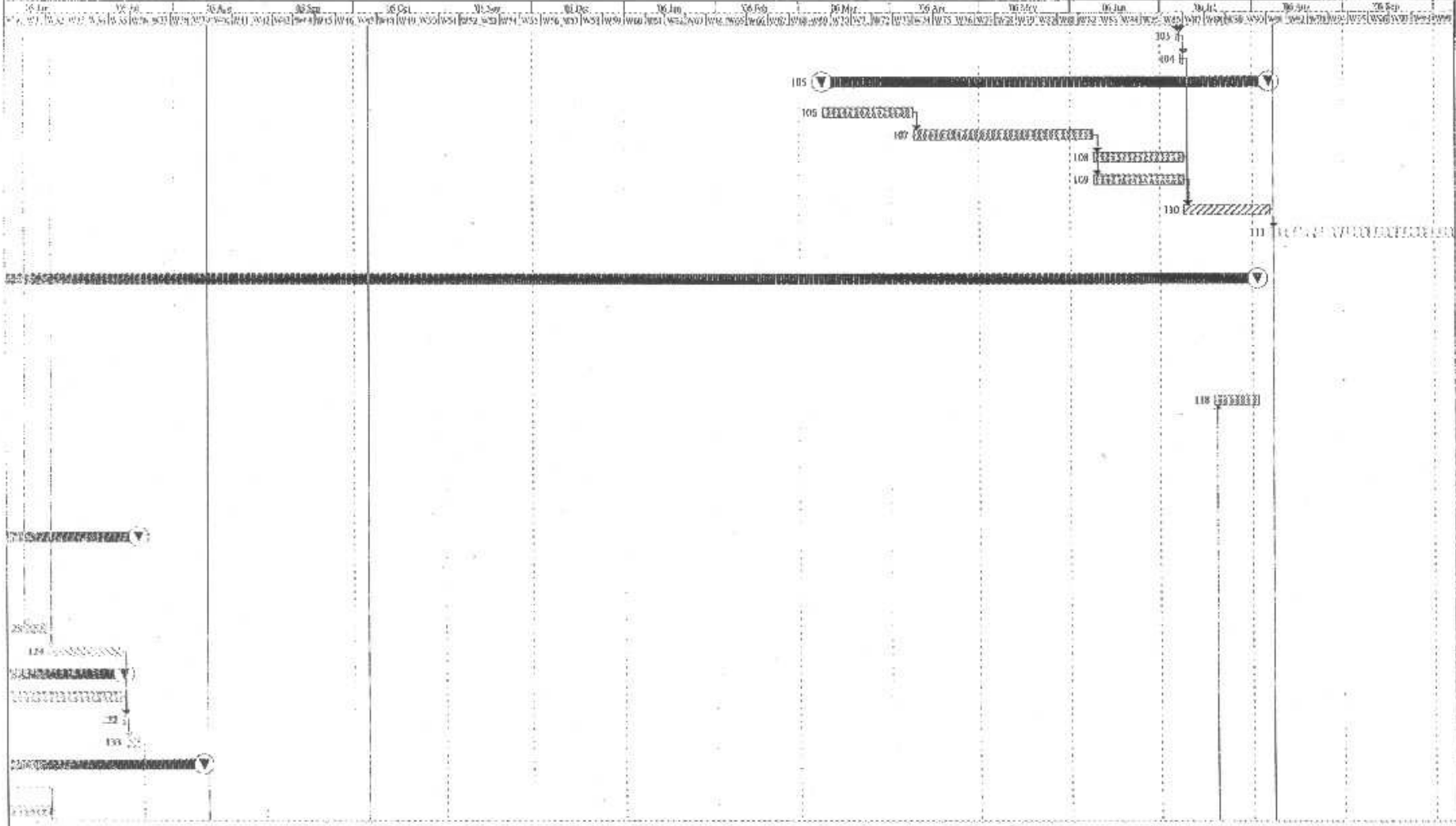
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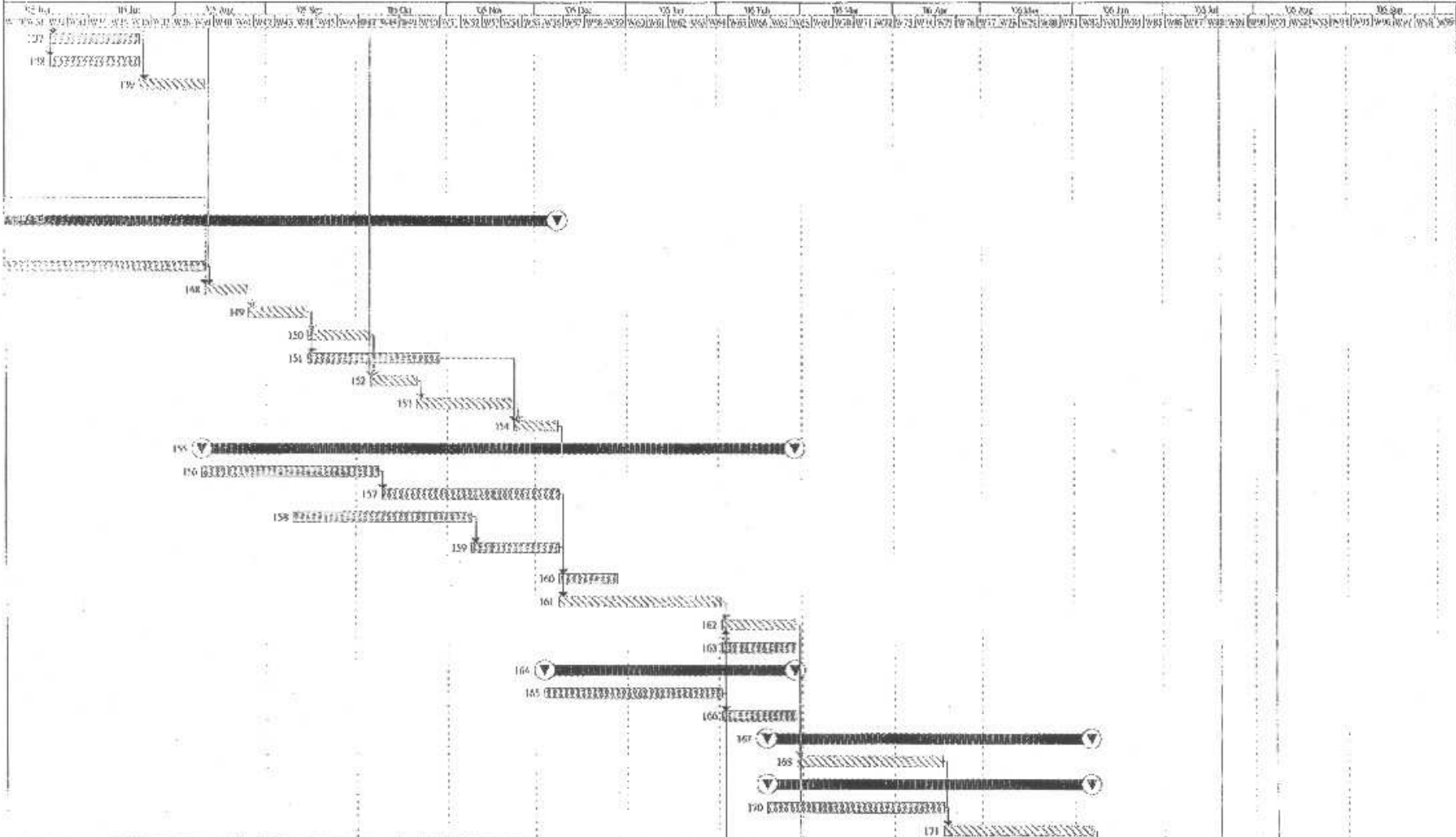
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Master Programme

(Version 2)



Contract No.: CV/2004/02 Master Programme - Version 2	Normal Task:	Progress:	Summary:	Global Task (Sec 1 & 2):	Critical Task (Sec 2):	Milestone:
Sp.A:	Commencement Milestone:	Completion Milestone:	Global Task (Sec 3):	Maintenance Period:		



Contract No.: CV/2004/02
 Master Programme Version 21

Master Task

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Page 009

Summary

Critical Task (Sec 1 & 2)

Critical Task (Sec 2)

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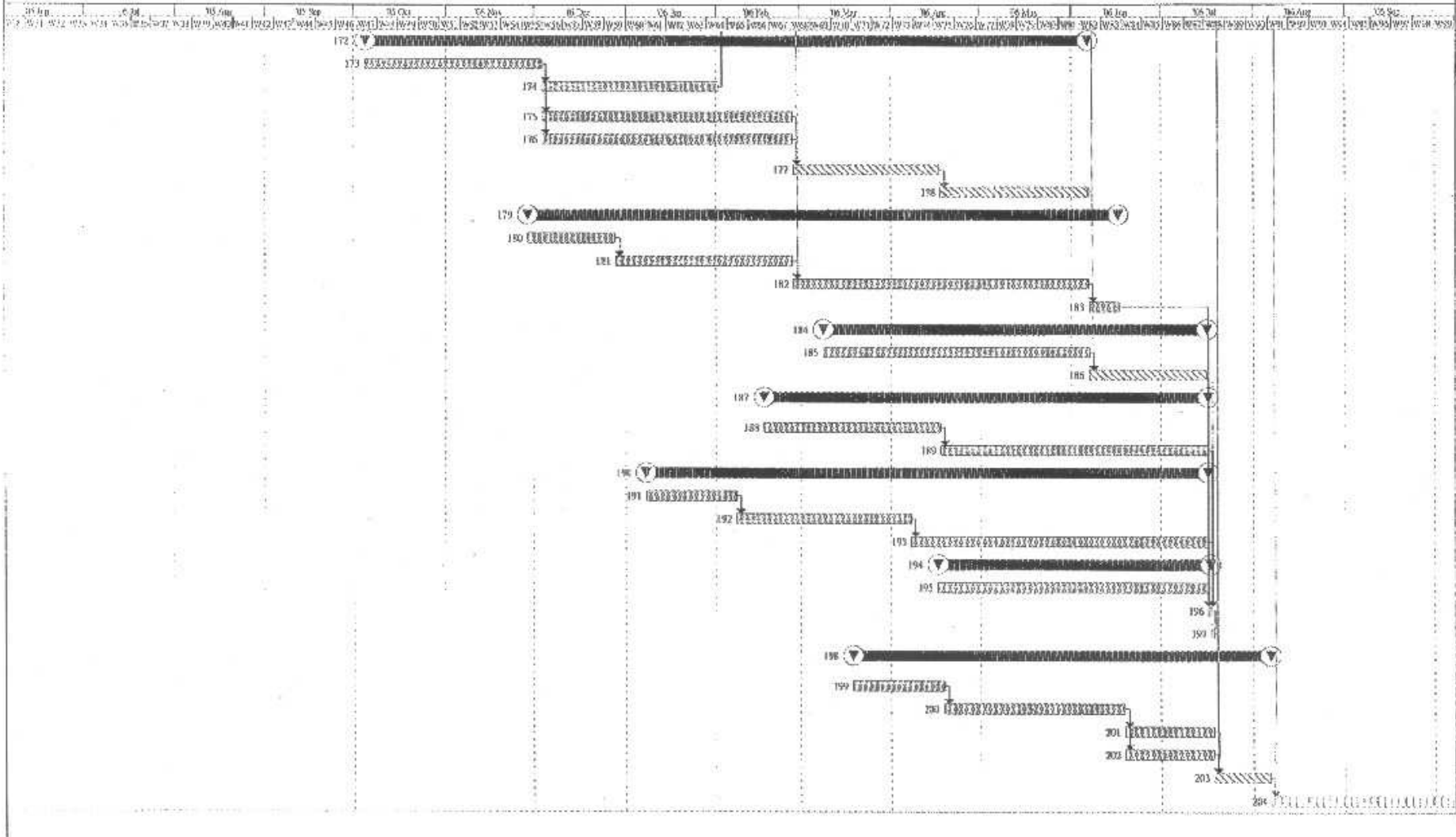
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Completion M.Cast

Critical Task (Sec 1)

Maintenance Period

Master Programme (Version 2)



Normal Task		Progress		Summary		Critical Task (Sec. 1 & 2)		Critical Task (Sec. 2)	
Split		Commencement Milestone		Completion Milestone		Critical Task (Sec. 1)		Milestone Point	

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