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**TEST REPORT**

**WO HING – PENTA-OCEAN JOINT VENTURE**

**CONTRACT NO. 9/WSD/08  
LAYING OF WESTERN CROSS  
HARBOUR MAIN AND ASSOCIATED  
LAND MAINS FROM WEST KOWLOON  
TO SAI YING PUN  
QUARTERLY EM&A SUMMARY REPORT  
NO.3  
(FROM NOVEMBER 2010 TO JANUARY 2011)**

Prepared by:

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Checked by:

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Report No.: ENA10153

**ENVIRON**

Ref.: WSDWHCMSEI00\_0\_0133L.11

21<sup>st</sup> Feb, 2011

Water Supplies Department  
Sha Tin Office  
6/F Sha Tin Government Offices  
1 Sheung Wo Che Road  
Sha Tin, NT

By Post

Attention: Ms. Candy Wong

Dear Ms. Wong

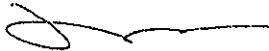
**Re: Contact No. 9/WSD/08  
Laying of Western Cross Harbour Main and Associated Land Mains from West  
Kowloon to Sai Ying Pun  
Quarterly Environmental Monitoring and Audit Report No. 3  
(for Nov 2010 to Jan 2011)**

Reference is made to Environment Team's submission of the Quarterly Environmental Monitoring and Audit Report No. 3 by Email on 15<sup>th</sup> Feb 2011 (entitled "9/WSD/08 - Draft Quarterly Report (Nov 10 to Jan 11)") and the subsequent revision of the report by Email on 19<sup>th</sup> Feb 2011.

We are pleased to inform you that we have no comment on the revised captioned report.

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

Yours sincerely,



David Yeung  
Independent Environmental Checker

c.c.	Mott MacDonald Hong Kong Limited	Mr. Kelvin Ho	Fax: 2377 2900
	Wo Hing – Penta-Ocean Joint Venture	Mr. Danny Ho	Fax: 2572 4080
	ETS-TESTCONSULT LIMITED	Mr. C.L. Lau	Fax: 2695 3944

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## **EXECUTIVE SUMMARY**

This is the third Quarterly Environmental Monitoring and Audit (EM&A) Summary Report prepared by ETS-Testconsult Ltd (ET) for the "Contract No. 9/WSD/08 Laying of Western Cross Harbour Main and Associated Land Main from West Kowloon to Sai Ying Pun" (the Project) under the requirements of "Environmental Monitoring & Audit Manual – Agreement No. CE42/2005(W.S) Laying of Western Cross Harbour Main and Associated Land Main from West Kowloon to Sai Ying Pun" (the EM&A Manual).

This report documents the findings of EM&A Works conducted during the Project from November 2010 to January 2011.

### **Site Activities**

As informed by the Contractor, the site activities in this reporting quarter were as below:

November 2010	<ul style="list-style-type: none"><li>• Dredging of Type 1 marine sediment (between CH0 and CH1560 at Portion I);</li><li>• Drilling of pipe piles (Portion J);</li><li>• Preparation of construction joint of the coated and lined pipe (Portion H1 &amp; H2); and</li><li>• Outfitting of the launching barge (Portion H1 &amp; H2).</li></ul>
December 2010	<ul style="list-style-type: none"><li>• Dredging of Type 1 marine sediment (between CH330 and CH1200 &amp; CH1560 and CH1950 at Portion I);</li><li>• Drilling of pipe piles (Portion J);</li><li>• Excavation inside the cofferdam (Portion J);</li><li>• Installation of the strutting system of the cofferdam (Portion J);</li><li>• Outfitting of the launching barge (Portion H1 &amp; H2); and</li><li>• Take down existing armouring rock from the sloping seawall at the sea front (Portion H1).</li></ul>
January 2011	<ul style="list-style-type: none"><li>• Dredging of Type 1 marine sediment (between CH0 and CH1900 at Portion I);</li><li>• Placing of granular material for restoring over-dredging between CH1300 and CH1900, CH210, CH310 and CH320;</li><li>• Drilling of pipe piles (Portion J);</li><li>• Excavation inside the cofferdam (Portion J);</li><li>• Installation of the strutting system of the cofferdam (Portion J); and</li><li>• Outfitting of the launching barge (Portion H1 &amp; H2).</li></ul>

### **Environmental Monitoring Works**

#### **Noise Monitoring**

No exceedances of Action Level of noise monitoring were recorded in this quarter since no complaint on noise issue was received.

In this quarter, totally twenty-one exceedances in Limit Level were recorded according to the results from night-time noise monitoring. However, all of the exceedances were considered to be invalid (not project related) and no further actions were required. Interim notifications of exceedance (NOEs) for all exceedances were issued to EPD, ER, IEC and the Contractor by ET.

#### **Marine Water Quality Monitoring**

Marine water quality monitoring was conducted in accordance with the EM&A Manual.

According to the summary of marine water monitoring results, no exceedances of Action and Limit Level were recorded in this quarter.

#### **Environmental Complaints, Notification of summons and successful prosecutions**

No complaints, notification of summons and prosecutions with respect to environmental issues were received in this quarter.

## 1.0 INTRODUCTION

Wo Hing – Penta-Ocean Joint Venture (WHPOJV) appointed Environmental Team of ETS-Testconsult Limited (ETL) to undertake the Environmental Impact Monitoring for “Contract No. 9/WSD/08 Laying of Western Cross Harbour Main and Associated Land Main from West Kowloon to Sai Ying Pun” (the Project) under the requirements of the “Environmental Monitoring & Audit Manual – Agreement No. CE42/2005(W.S) Laying of Western Cross Harbour Main and Associated Land Main from West Kowloon to Sai Ying Pun” (the EM&A Manual) of the approved EIA report (Registration No. AEIAR-109/2007) in accordance with the Environmental Permit (No.: EP-273/2007) (the EP).

This quarterly report documented the findings of EM&A Works conducted during the impact monitoring from November 2010 to January 2011.

## 2.0 PROJECT INFORMATION

### 2.1 Scope of the Project

The construction works of the Project are located in West Kowloon, across the Victoria Harbour and in Sai Ying Pun.

The construction works under this Project are briefly described, without limitation, as follow:

- Laying of about 1.5km of 1200mm diameter steel fresh water mains at West Kowloon;
- Laying of about 2.1km of 1200mm diameter steel submarine pipeline from West Kowloon to Sai Ying Pun including dredging, cathodic protection system and other associated works;
- Laying of about 0.4km of 1200mm diameter steel fresh water main at Sai Ying Pun;
- Laying of about 0.5km of 800mm diameter steel salt water main at West Kowloon;
- Construction of motorized butterfly valve (MBV) and the associated facilities in the vicinity of Sun Yat Sen Memorial Park at Sai Ying Pun;
- Construction of all chambers associated with pipeworks;
- Making service connections;
- Ancillary works including but not limited to reinstatement of roads, landscaping works.

Areas of the Project present in Appendix H. Locations of environmental monitoring stations and sensitive receivers are shown in Figures 1, 2, 3, 1.2a, 1.2b and 1.2c

### 2.2 Work Programme

Details of work programme are shown in Appendix F.

### 2.3 Project Organization and Management Structure

The organization chart and lines of communication with respect to the on-site environmental management and monitoring program are shown in Appendix A.

### 2.4 Contact Details of Key Personnel

The key personnel contact names and telephone numbers are shown in Table 2.1.

Table 2.1 Contact Details of Key Personnel

<i>Project Role</i>	<i>Organization</i>	<i>Name of Key Staff</i>	<i>Tel. No.</i>	<i>Fax No.</i>
<i>Engineer's Representative</i>	<i>Mott MacDonald</i>	<i>Mr. Kelvin HO</i>	<i>2377 2823</i>	<i>2377 2900</i>
<i>IEC</i>	<i>Environ</i>	<i>Mr David Yeung</i>	<i>3743 0788</i>	<i>3548 6988</i>
<i>Contractor's Agent</i>	<i>WHPOJV</i>	<i>Mr. Danny HO</i>	<i>2695 8318</i>	<i>2957 8213</i>
<i>ET Leader</i>	<i>ET (ETL)</i>	<i>Mr C. L. Lau</i>	<i>2946 7791</i>	<i>2695 3944</i>

The proponents' contact and hotline telephone number for the Public to make enquiries by the Contractor is Mr. Peter Yung (Telephone No.: 61137660).

### **3.0 SUMMARY OF EM&A REQUIREMENTS**

#### **3.1 EM&A Programme**

The EM&A programme required environmental monitoring for noise, marine water quality and environmental site inspections for air quality, noise, marine water quality and waste management. The EM&A requirements for each parameter described in the following sections include:

- *All monitoring parameters;*
- *Action and Limit levels for all environmental parameters;*
- *Event/Action Plans;*
- *Environmental mitigation measures, as recommended in the Project EIA report; and*
- *Environmental requirements in contract documents.*

The advice on implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 4 of the Report.

#### **3.2 Monitoring Stations and Parameters**

The EM&A Manual designates several locations to monitor environmental impacts in terms of noise and marine water quality due to the Project. The description and detailed locations of monitoring stations for noise and marine water quality are shown in Figures 1, 2 and 3 and relevant sections of this Report.

#### **3.3 Monitoring Methodology and Calibration Details**

All monitoring works were conducted and monitoring equipment was calibrated in according with the EM&A Manual and the manufacturer's instruction.

#### **3.4 Environmental Quality Performance Limits (Action/Limit Levels)**

The environmental quality performance limits, i.e. Action/Limit Levels (AL Levels) were derived from the baseline monitoring results. If the measured environmental quality parameters exceed the AL Levels, the respective action plan will be implemented. The AL Levels for each monitoring parameter are given in Appendix D. The event action plan is given in Appendix E.

#### **3.5 Environmental Mitigation Measures**

Relevant mitigation measures were recommended in the EM&A Manual for the Contractor to implement. A list of mitigation measures is given in Appendix G.

### **4.0 MONITORING RESULTS**

#### **4.1 Noise**

As the requirement in the EM&A Manual, impact noise monitoring was conducted for a weekly basis in four different time periods, day-time, evening-time, night-time and holiday-time, at designated monitoring locations. The noise levels in the past three months are plotted in Appendix B.

In this quarter, the impact noise monitoring was carried out weekly in the absence of fog, rain, storm, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s. As a result, all impact noise monitoring data was considered to be unaffected by the weather condition.

In this quarter, totally twenty-one exceedances in Limit Level were recorded according to the results from night-time noise monitoring. After ET investigation, all of the exceedances were considered to be invalid (not project related) and hence no further actions were required. Interim notifications of exceedance (NOEs) for all exceedances were issued to EPD, ER, IEC and the Contractor by ET.



Table 4.1 presents the summary of impact noise monitoring results in the reporting quarter.

Table 4.1 Summary of Impact Monitoring results of Impact Noise Monitoring in the Quarter

<i>Exceedance Level</i>	<i>Daytime</i>	<i>Evening-time</i>	<i>Night-time</i>	<i>Holiday-time</i>
<i>Action (November 2010)</i>	0	0	0	0
<i>Action (December 2010)</i>	0	0	0	0
<i>Action (January 2011)</i>	0	0	0	0
<i>Cumulative</i>	0	0	0	0
<i>Limit (November 2010)</i>	0	0	21	0
<i>Limit (December 2010)</i>	0	0	0	0
<i>Limit (January 2011)</i>	0	0	0	0
<i>Cumulative</i>	0	0	119	0

In this quarter, the major noise source at KS6 was from local traffic along West Kowloon Highway and human activities from the Element. Besides, local traffic along Connaught Road West and Western Harbour Crossing and human activities was also the major noise source at KY3, RWM and CGa.

#### 4.2 Marine Water Quality

In accordance with the EM&A Manual, the marine water quality monitoring was conducted at four control stations and nine impact monitoring stations in the reporting quarter. Impact marine water quality monitoring was conducted three days per week. Measurements were taken at both mid-ebb and mid-flood tides at three depths (i.e. 1m below surface, mid depth and 1m above seabed). The AL Levels are included in Appendix D.

Table 4.2 presents the total number of marine water quality exceedances in the reporting quarter. The trend of marine water quality in the past three months is depicted in Appendix C.

Table 4.2 Total Number of Marine Water Quality Exceedances in the Quarter

<i>Parameter</i>	<i>Exceedance Level</i>	<i>November 2010</i>	<i>December 2010</i>	<i>January 2011</i>
<i>Dissolved Oxygen, DO</i>	<i>Action</i>	0	0	0
	<i>Limit</i>	0	0	0
	<i>Total</i>	0	0	0
<i>Turbidity (Depth-average)</i>	<i>Action</i>	0	0	0
	<i>Limit</i>	0	0	0
	<i>Total</i>	0	0	0
<i>Suspended Solids, SS (Depth-average)</i>	<i>Action</i>	0	0	0
	<i>Limit</i>	0	0	0
	<i>Total</i>	0	0	0
<i>Cumulative Exceedances</i>	<i>Action</i>	0	0	0
	<i>Limit</i>	0	0	0
	<i>Total</i>	0	0	0

A comparison between the quarterly mean of impact stations (including WSD Seawater Intakes R15 and other eight Impact Stations R5, R6, R7, R8a, R16, R17, R28 and R29) and the 1.3 times of the ambient mean (e.g. 130% of Baseline Mean) of impact stations was made for Dissolved Oxygen, Turbidity and Suspended Solids.

The statistical analysis results are given in Appendix H and it shows that there is no significant difference ( $p > 0.05$ ) between the quarterly mean and 1.3 times of ambient mean on Dissolved Oxygen and Turbidity but except Suspended Solids. Table 4.3 summarizes the statistical analysis between quarterly mean and ambient mean on Dissolved Oxygen, Turbidity and Suspended Solids.



Table 4.3 Summary of statistical analysis between Quality Mean and 1.3 times of Ambient Mean

Parameter	Groups involved	P-value	Significant Difference between quarterly mean and 1.3 times of ambient mean (Y or N)
DO (Surface, Middle and Bottom)	Quarterly mean and 1.3 times of ambient mean	1	N
SS	Quarterly mean and 1.3 times of ambient mean	0	Y
Turbidity	Quarterly mean and 1.3 times of ambient mean	1	N

## 5.0 INSPECTION RESULTS

### 5.1 Implementation Status of Environmental Mitigation Measures

ET conducted weekly site inspections to monitor the Contractor's implementation of environmental mitigation measures. After each site inspection, the Contractor was notified of ET's observations and recommendations. A site inspection checklist detailing the environmental observations was prepared by ET and the Contractor then completed this plan to propose/report their remedial works. A summary of implementation status of mitigation measures on site inspections is presented in Appendix G

### 5.2 Status of Environmental Licensing and Permitting

The status of licences and permits is summarized in Table 5.1.

Table 5.1 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Remarks
		From	To	
Environmental Permit	EP-273/2007	31/07/07	End of Project	Whole Project
Water Discharge Licence (West Kowloon)	WT0000534-7-2009	07/01/10	31/01/15	Effluent and all other wastewater arising from the construction site through Screen & Sedimentation Tank
Water Discharge Licence (Sai Yung Pun)	WT0000580-0-2010	14/01/10	31/01/15	Effluent arising from the construction site through Sedimentation Tank
Chemical Waste Producer	5213-217-W3086-01	13/10/09	End of Project	Spent oil, surplus flammable liquid, surplus paint, soil, rags & containers contaminated with lubricating oil, diesel, flammable liquid & paint, & used batteries
Construction Noise Permit (Sai Ying Pun)	GW-RS0756-10	12/09/10	11/03/11	One dredger, grab (CNP 063) Two Guard boat One Tug boat (CNP 221) Hopper barge
Construction Noise Permit (Sai Ying Pun)	GW-RS1143-10	23/12/10	19/06/11	One Crane, mobile(diesel) (CNP 048) One Air compressor with Noise Emission Label showing a sound power level of $\leq 98$ dB(A) One Generator, silenced, 71dB(A) at 7m
Construction Noise Permit (Sai Ying Pun)	GW-RS0053-11	14/01/11	03/04/11	One Derrick barge (CNP 061) Two Guard boat One Tug boat (CNP 221)
Construction Noise Permit (West Kowloon)	GW-RE0502-10	21/10/10	20/04/11	One Dredger, grab (CNP 063) Two Guard boat One Tug boat (CNP 221) One Generator, standard (CNP 101)
Construction Noise Permit (West Kowloon)	GW-RE0730-10	04/01/11	03/04/11	One Dredger, grab (CNP 063) One Derrick barge (CNP 061) Two Guard boat One Tug boat (CNP 221) One Generator, standard (CNP 101)

Description	Permit No.	Valid Period		Remarks
		From	To	
Dumping Licence	EP/MD/10-085	30/04/10	30/09/10	Bulk quantity of material approved for dumping at the East Ninepin Mud Disposal Ground within permit validity period: 293800 cu.m. (for Type 1 – Open Sea Disposal)
Dumping Licence	EP/MD/11-039	26/07/10	30/09/10	Bulk quantity of material approved for dumping at the East Ninepin Mud Disposal Ground denoted "LWCHMALM" within permit validity period: 251160 cu.m. (for Type 1 – Open Sea Disposal)
Dumping Licence	EP/MD/11-053	06/08/10	05/09/10	Bulk quantity of material approved for dumping at the East Sha Chau Contaminated Mud Disposal Site within permit validity period: 159653 cu.m. (for Type 1 – Open Sea Disposal (Dedicated Site) and Type 2 – Confined Marine Disposal)
Dumping Licence	EP/MD/11-069	01/10/10	31/03/11	Bulk quantity of material approved for dumping at the South Cheung Chau Spoil Disposal Area denoted "LWCHMALM" within permit validity period: 130,000 cu.m. (for Type 1 – Open Sea Disposal)
Notification under APCO	Application had been submitted to EPD on 25/09/09 and approved from 29/09/09.			

### 5.3 Advice on Solids and Liquid Waste Management Status

Summary of waste disposal in this quarter is present in Table 5.2.

Table 5.2 Summary of Waste Disposal in this Quarter

Type of Waste		Quantity	Disposal Location	Cumulative Quantity
Inert C&D Materials	Total Quantity Generated (in m <sup>3</sup> )	3934.61		9432.9
	Broken Concrete (in m <sup>3</sup> )	0	---	0
	Reused in the Contract (in m <sup>3</sup> )	0	---	0
	Reused in other Projects (in m <sup>3</sup> )	0	---	0
	Disposal as Public Fill (in m <sup>3</sup> )	3934.61	SENT Landfill	9432.9
C&D Waste	Metals (in kg)	0	---	0
	Paper/Cardboard Packaging (in kg)	26	Collected by recycling company	91
	Plastics (in kg)	0	---	0
	Chemical Waste (in kg)	0	---	0
	Other, e.g. General Refuse (in m <sup>3</sup> )	9.5	SENT Landfill	59.00
Dredged Materials	Type 1 (in m <sup>3</sup> )	44100	East Ninepin Mud Disposal Ground	160500
	Type 2 (in m <sup>3</sup> )	0	The East Sha Chau	104990

The Contractor should provide sufficient preventive measures during equipment maintenance works so as to avoid oil leakage on the ground. In the event of any oil leakage, the Contractor should clean up the polluted soil and handle all the materials used for this cleaning works as chemical waste.

Besides, pre-cast drip trays were provided for oil drums at several areas, such as barge and chemical storage area. The Contractor should collect and dispose of any stagnant water accumulated in the drip trays and handle them as chemical waste.

The Contractor should use suitable containers with proper labels to store chemical wastes in accordance with Code of Practice on the Packaging, Labeling and Storage of Chemical Waste. The Contractor should also advise their workers of the proper procedures in handling the chemical waste. All the trip tickets for chemical waste disposal were properly kept in the site office. No chemical waste disposal was undertaken in the reporting quarter.

The Contractor was reminded to increase the frequency of inspection and cleaning of the site drainage system, including desilting facilities. Moreover, the Contractor should apply approved pesticides in the stagnant water.

## 6.0 NON-COMPLIANCE OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMITS

### 6.1 Summary of Non-compliance

No exceedances of Action and Limit Level of marine water quality monitoring results were recorded in this quarter.

No exceedances of Action Level of noise monitoring were recorded in this reporting quarter since no complaint on noise issue was received.

Totally twenty-one exceedances in Limit Level were recorded according to the results from night-time noise monitoring in this quarter.

### 6.2 Review of the Reasons for and the Implications of Non-compliance

Refer to Interim notifications of exceedance (NOEs) by ET, all exceedances of night-time noise monitoring recorded in this quarter were due to the noise from local traffic and human activities near the noise monitoring stations and considered to be invalid (not project related).

### 6.3 Summary of Actions Taken

Since all exceedances of night-time noise monitoring were considered to be invalid (not project related), no further actions were required.

### 6.4 Summary of Environmental Complaint, Notifications of Summons and Successful Prosecutions Handling

No complaints, notifications of summons and successful prosecutions were received. A summary of environmental complaints and prosecutions was given in Table 6.1.

Table 6.1 Summary of Environmental Complaints and Prosecutions

<i>Period</i>	<i>Complaints logged</i>	<i>Summon served</i>	<i>Successful Prosecution</i>
<i>November 2010</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>December 2010</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>January 2011</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Cumulative</i>	<i>0</i>	<i>0</i>	<i>0</i>

## 7.0 COMMENTS, CONCLUSIONS AND RECOMMENDATION

Impact monitoring of noise and water quality were carried out at designated locations in accordance with the EM&A Manual in this reporting quarter.

According to the ET weekly site inspections carried out in this quarter, the Contractor generally implemented sufficient environmental mitigation measures.

In this quarter, totally twenty-one exceedances in Limit Level were recorded according to the results from night-time noise monitoring. However, all of the exceedances were considered to be invalid (not project related) and no further actions were required.

No exceedances of Action Level of noise monitoring were recorded in this reporting quarter since no complaint on noise issue was received.

No exceedances of Action and Limit Level of water quality monitoring results were recorded during the reporting quarter.

No complaints, prosecutions or notifications of summons were received in this quarter.

According to the environmental site inspections performed in this quarter, the following recommendations were provided:

**Air Quality**

- Ensure the frequency of water spraying on unloading areas and stockpiles to be sufficient to suppress the dust sources;
- Provide proper maintenance for the powered mechanical equipment and barges to avoid emission of dark smoke; and
- Implement the dust mitigation measures for the site activities.

**Noise**

- Conduct noisy activities at a farther location from the NSRs.

**Water Quality**

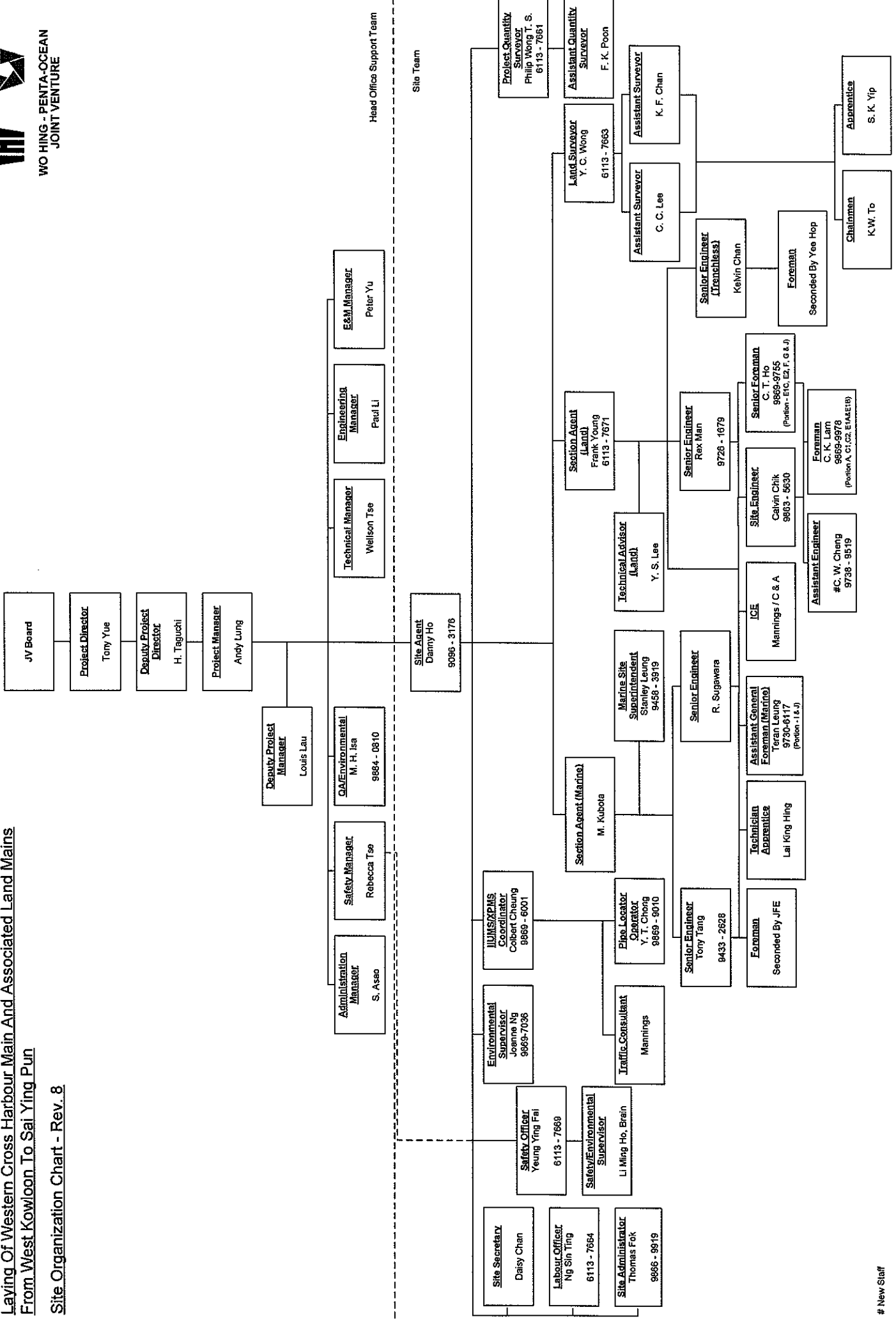
- Maintain the drainage system regularly;
- Operate and maintain the silt curtains and silt screen regularly;
- Operate the cleaning vessel regularly;
- Provide proper treatment for the wastewater discharge;
- Clean up the fill material on the barge frequently; and
- Remove the stagnant water or provide approved pesticides for the stagnant water, if any.

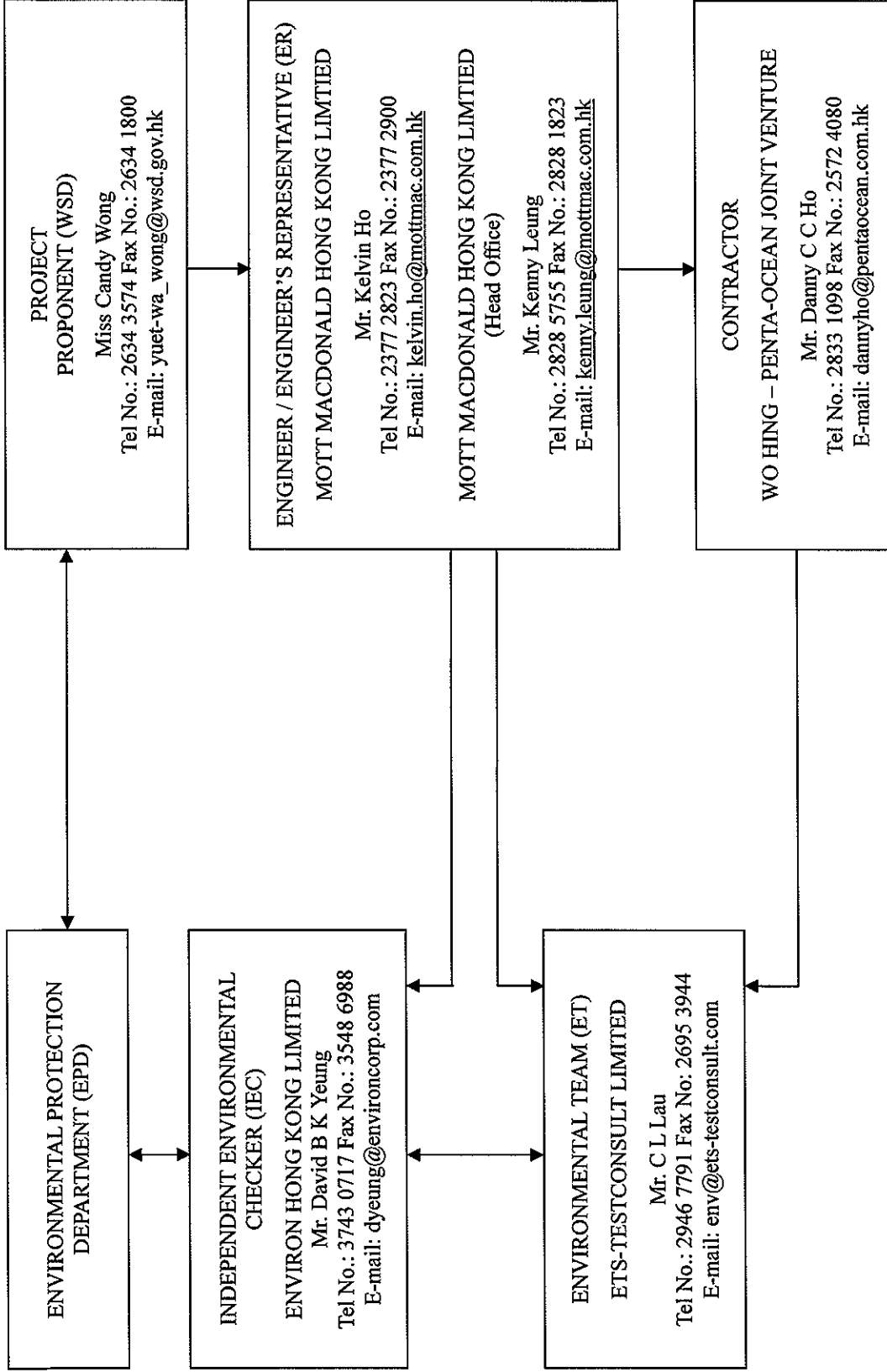
**Chemical and Waste Management**

- Remove waste materials from the site to avoid accumulation regularly;
- Handle and store chemical wastes properly;
- Remove unwanted material in the existing stockpiles and avoid further dumping of such material;
- Provide and maintain sufficient drip trays for diesel drums, chemical containers, chemical waste storage drums and diesel operated generator set;
- Maintain good housekeeping at the works area;
- Avoid soil being polluted during oil filling and equipment maintenance; hence, properly remove and store the contaminated soil, if any.

## **Appendix A**

### **Organization Chart and Lines of Communication**





Project Laying of Western Cross Harbour Main and Associated Land Mains From West Kowloon to Sai Ying Pun - Investigation

Title Project Organization and Line of Communication

Date Dec 2009

Figure 1.3a

## **Appendix B**

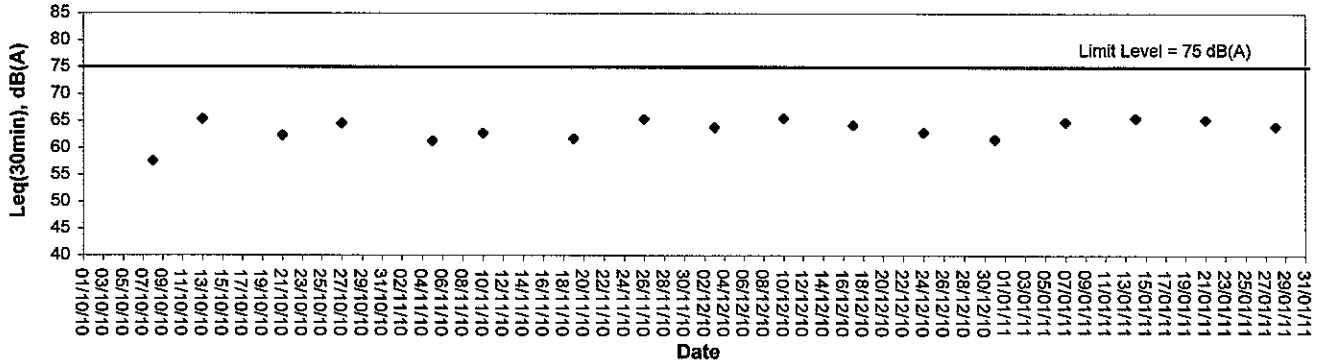
### **Graphical Plots of Noise Monitoring Data**



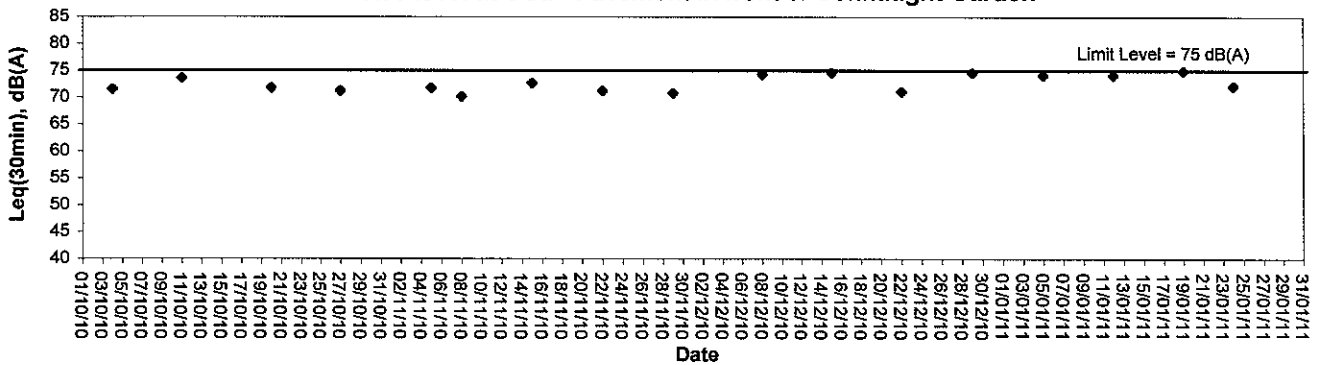


### Noise Monitoring (Day-time)

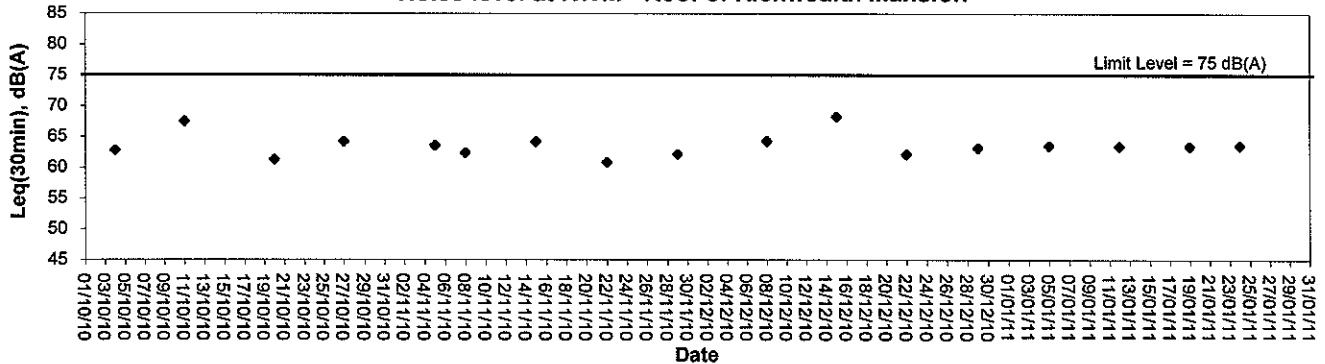
Noise level at KS6 - Podium at the Culliman



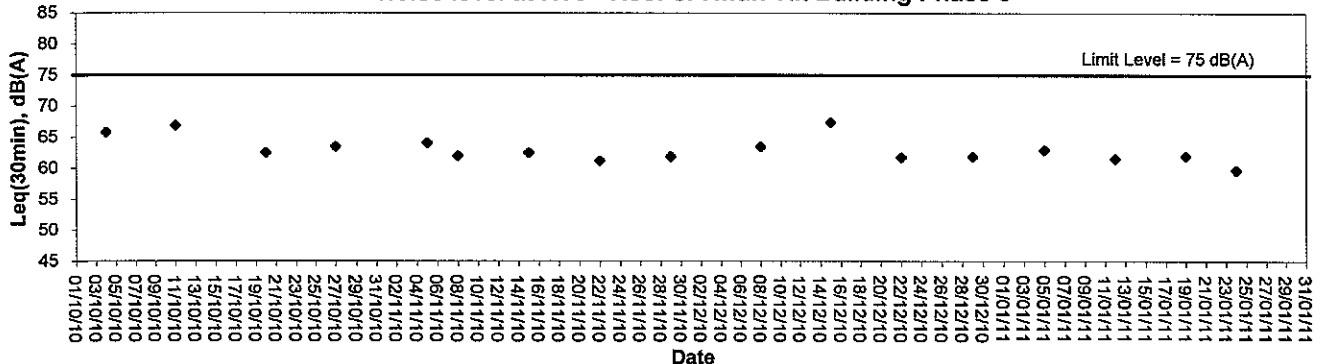
Noise level at CGA - Pavement in front of Connaught Garden



Noise level at RWM - Roof of Richwealth Mansion



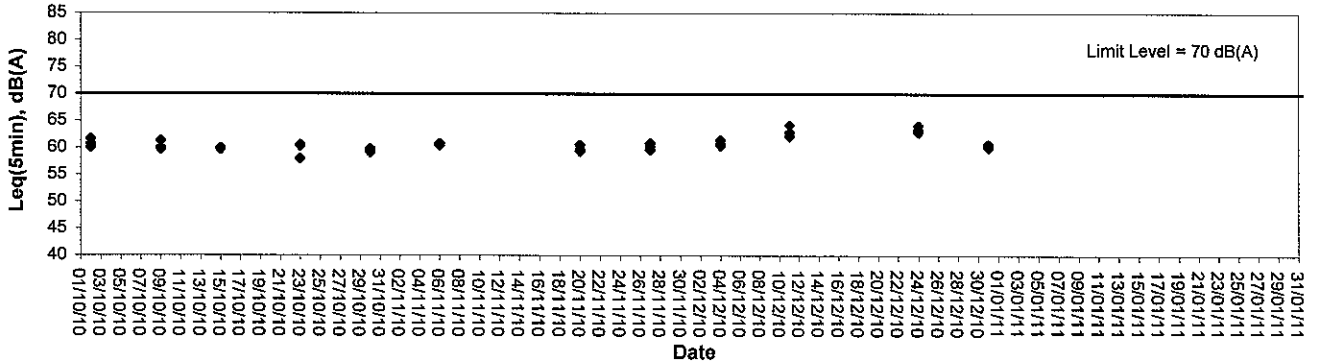
Noise level at KY3 - Roof of Kwan Yik Building Phase 3



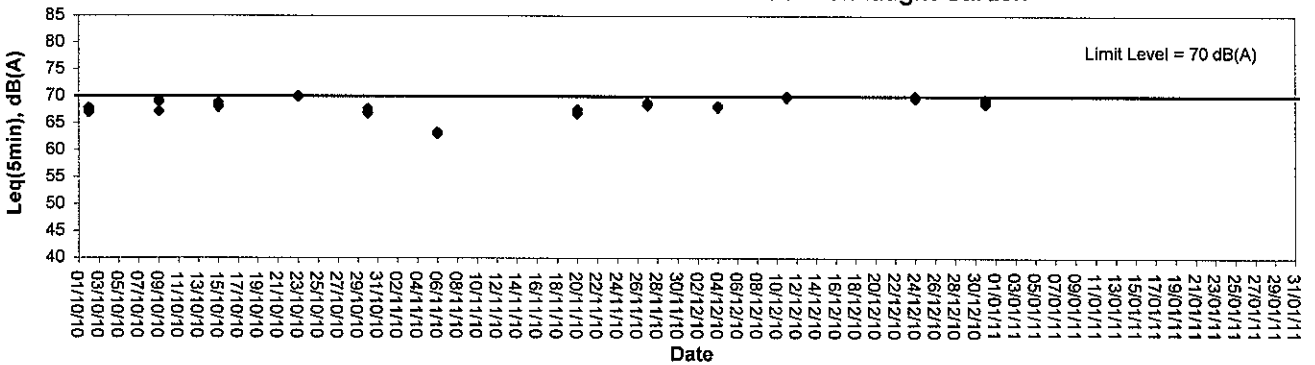


### Noise Monitoring (Evening-time)

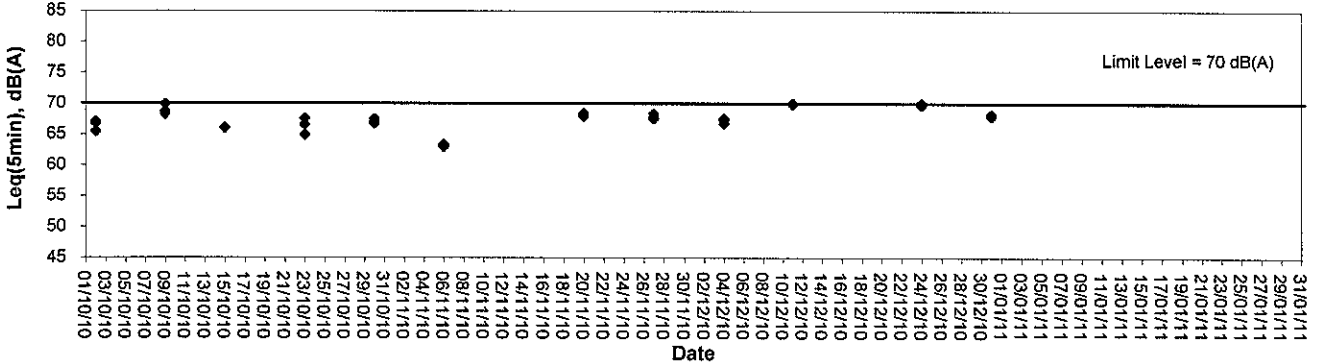
Noise level at KS6 - Podium at the Culliman



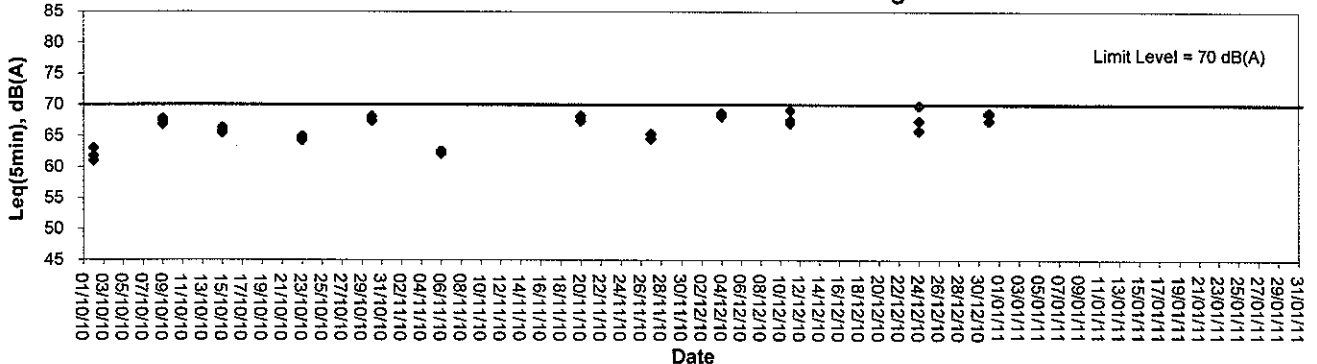
Noise level at CGa - Pavement in front of Connaught Garden



Noise level at RWM - Roof of Richwealth Mansion



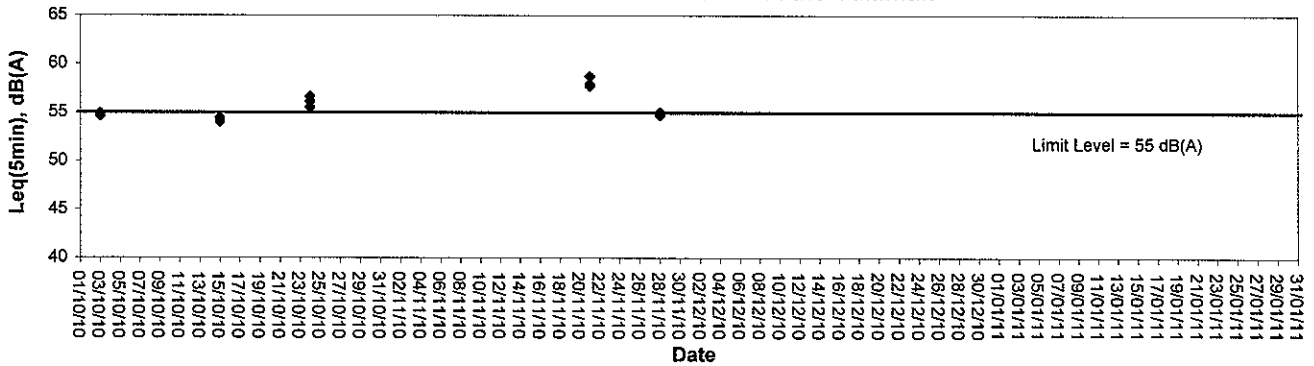
Noise level at KY3 - Roof of Kwan Yik Building Phase 3



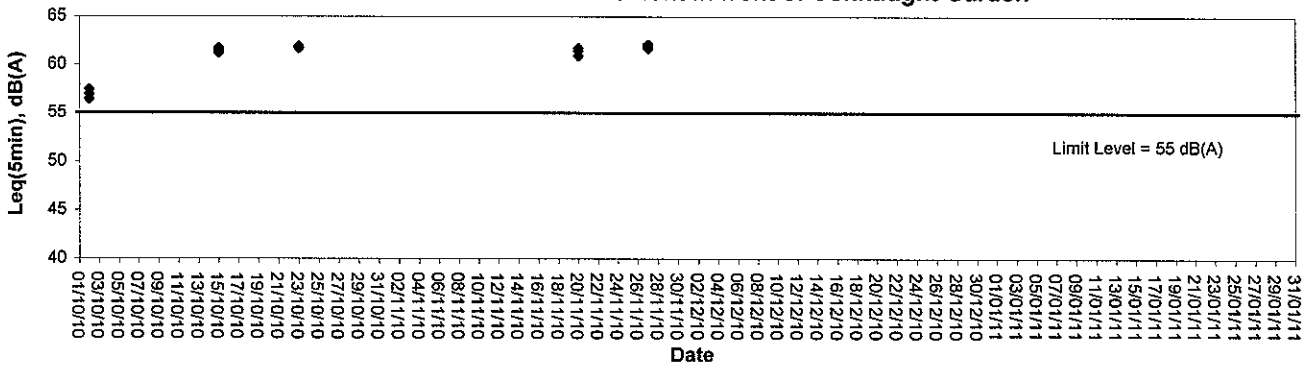


### Noise Monitoring (Night-time)

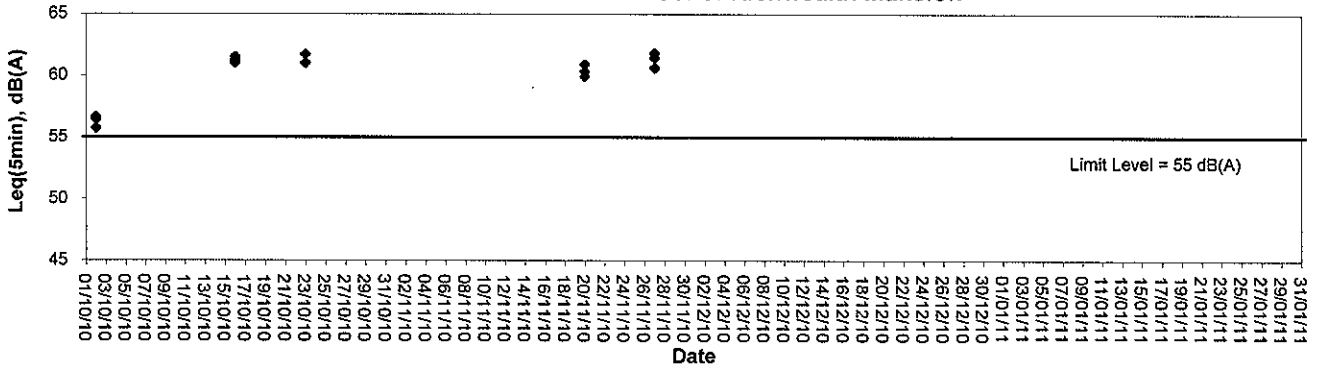
Noise level at KS6 - Podium at the Culliman



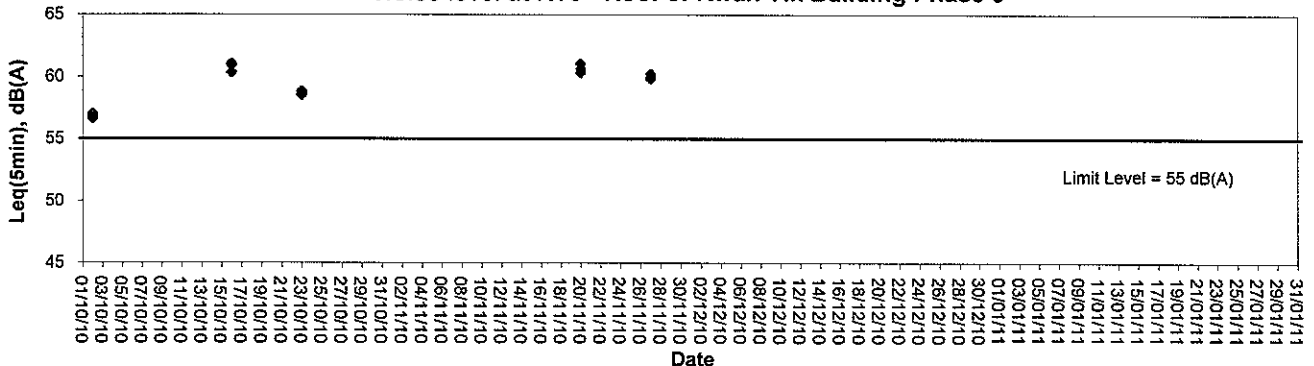
Noise level at CGa - Pavement in front of Connaught Garden



Noise level at RWM - Roof of Richwealth Mansion



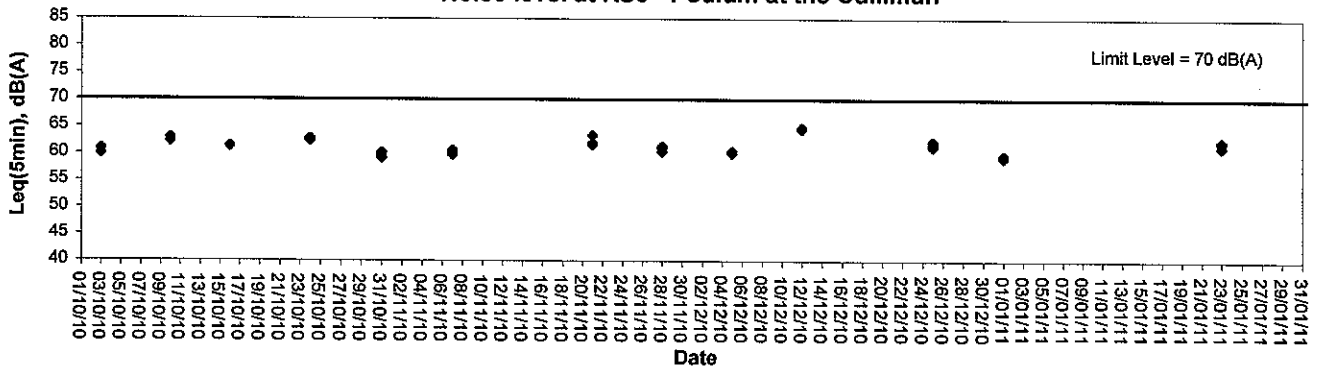
Noise level at KY3 - Roof of Kwan Yik Building Phase 3



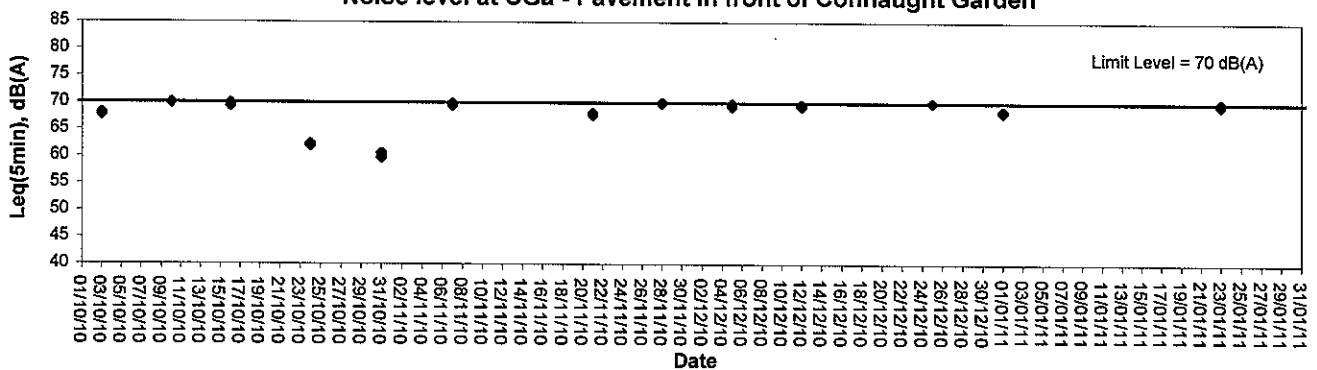


### Noise Monitoring (Holiday-time)

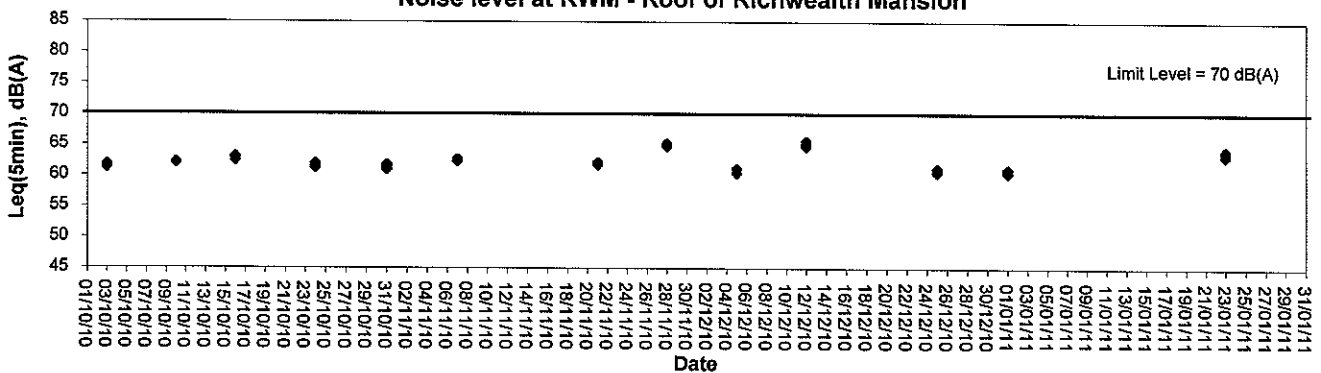
Noise level at KS6 - Podium at the Culliman



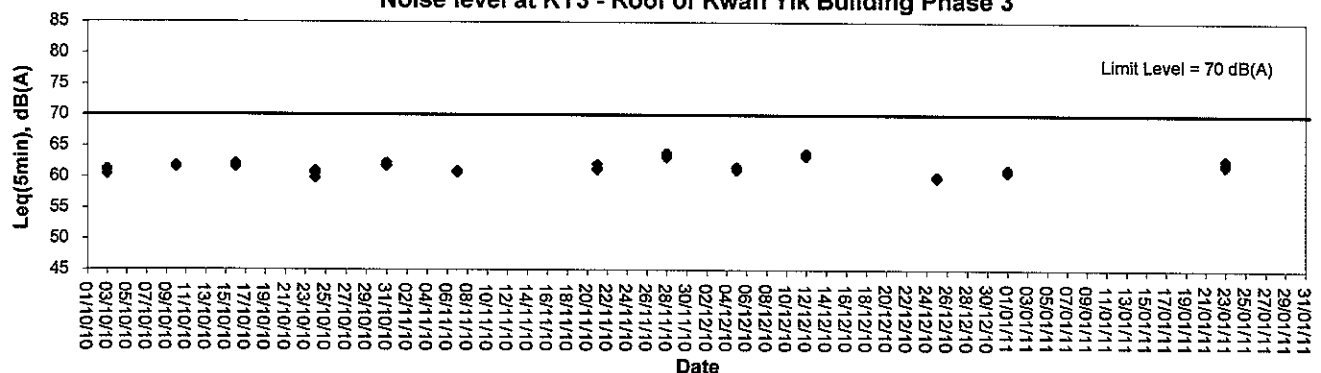
Noise level at CGA - Pavement in front of Connaught Garden



Noise level at RWM - Roof of Richwealth Mansion



Noise level at KY3 - Roof of Kwan Yik Building Phase 3

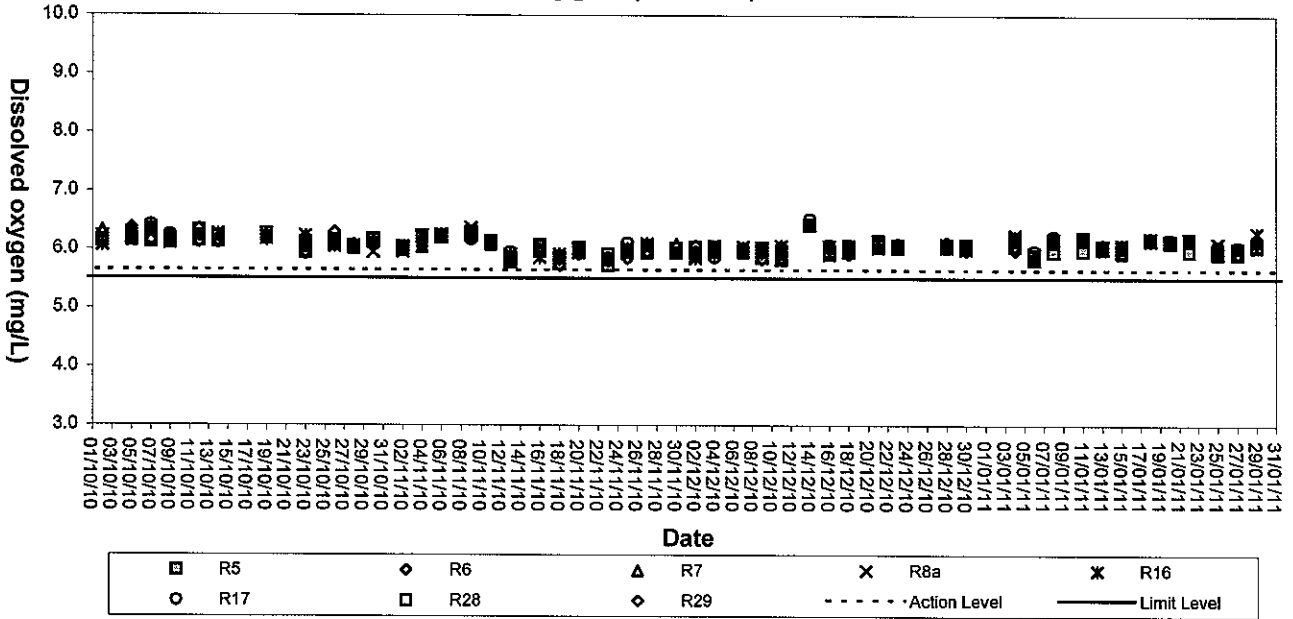


## **Appendix C**

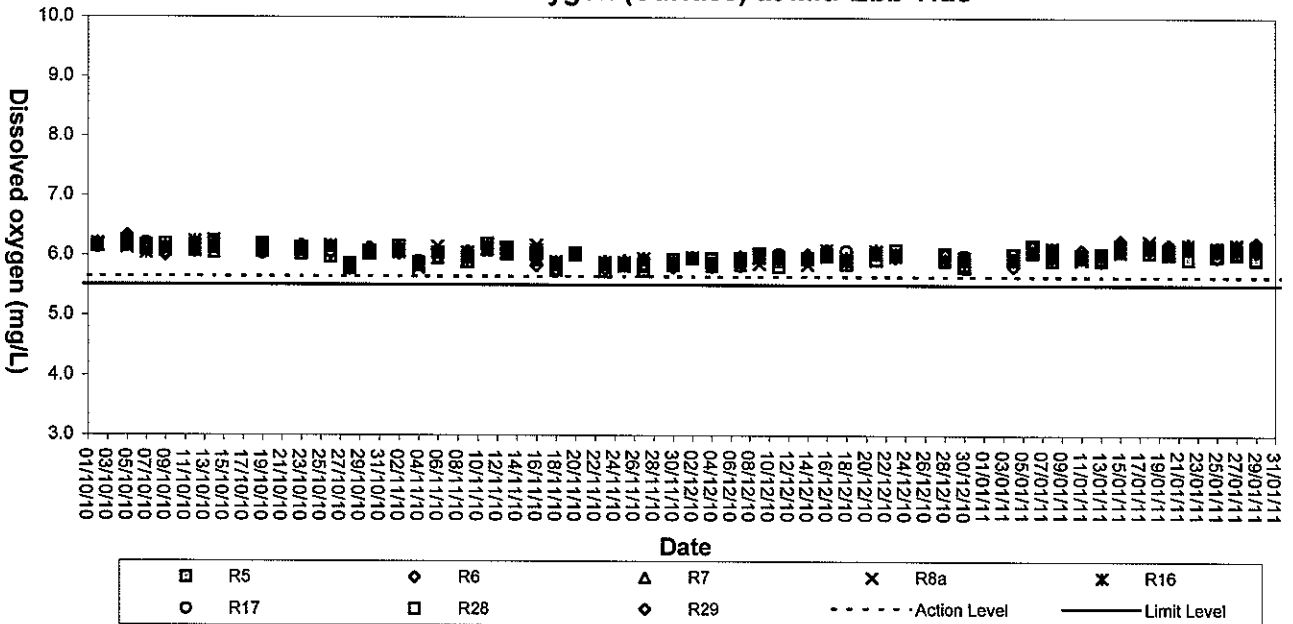
### **Graphical Plots of Impact Marine Water Quality Monitoring Data**



### Dissolved Oxygen (Surface) at Mid-Flood Tide

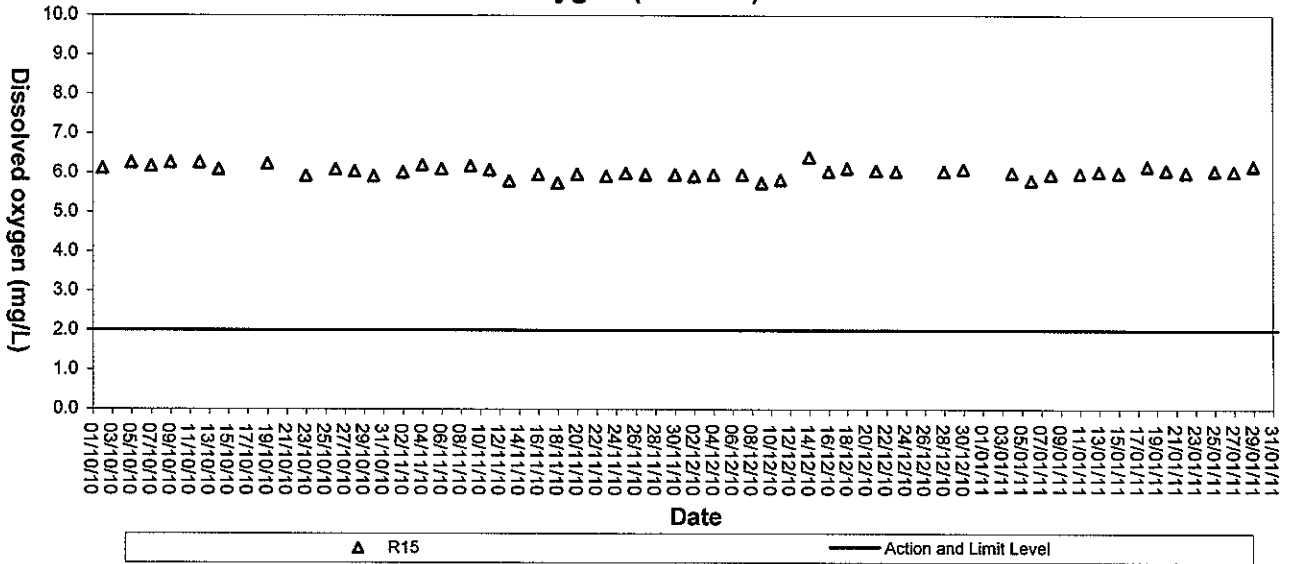


### Dissolved Oxygen (Surface) at Mid-Ebb Tide

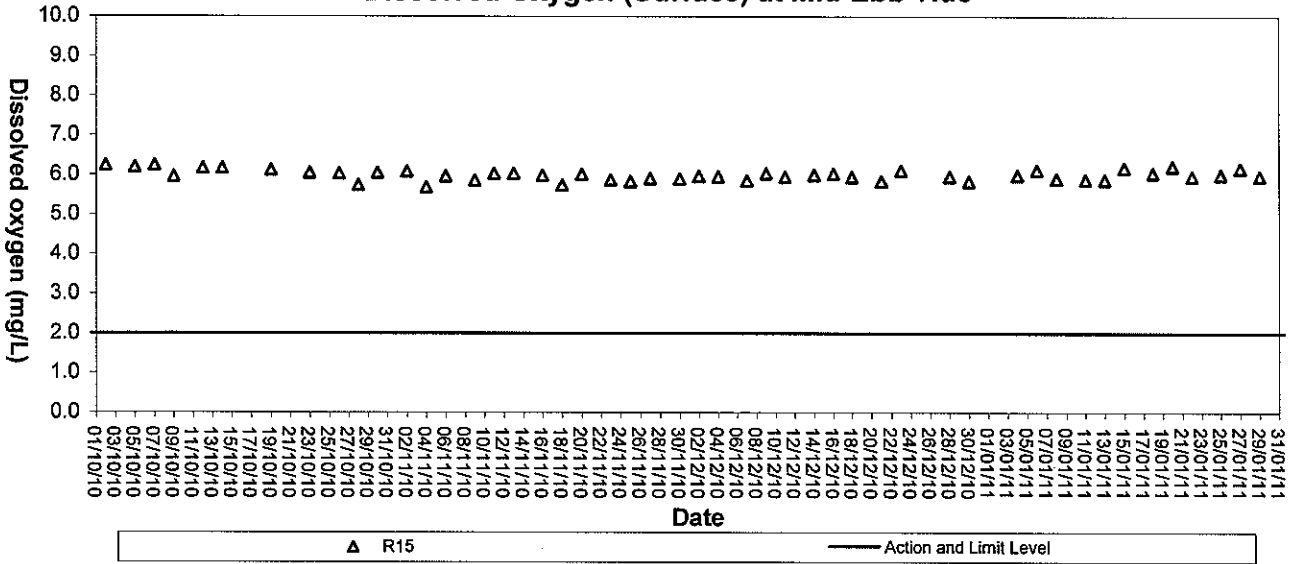




### Dissolved Oxygen (Surface) at Mid-Flood Tide



### Dissolved Oxygen (Surface) at Mid-Ebb Tide

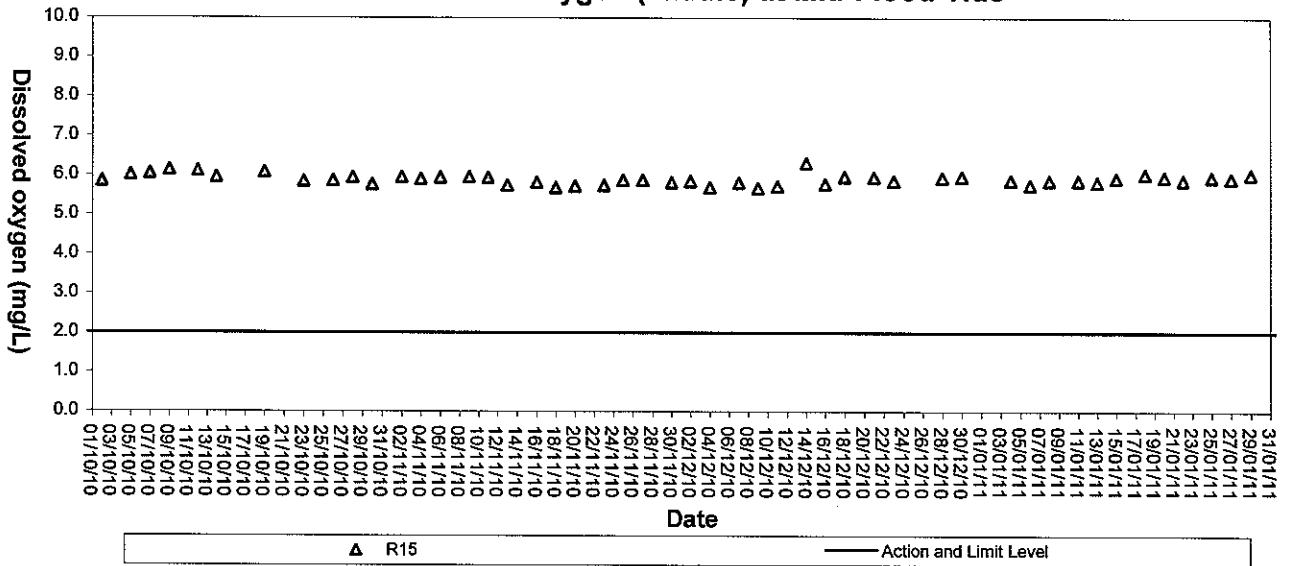




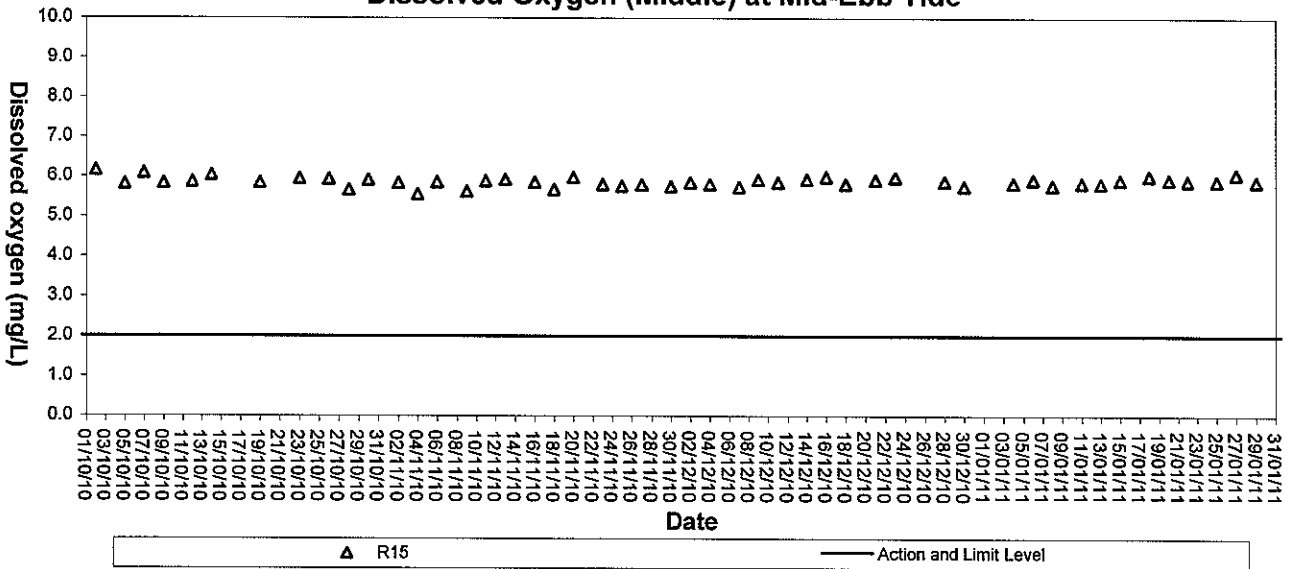




### Dissolved Oxygen (Middle) at Mid-Flood Tide



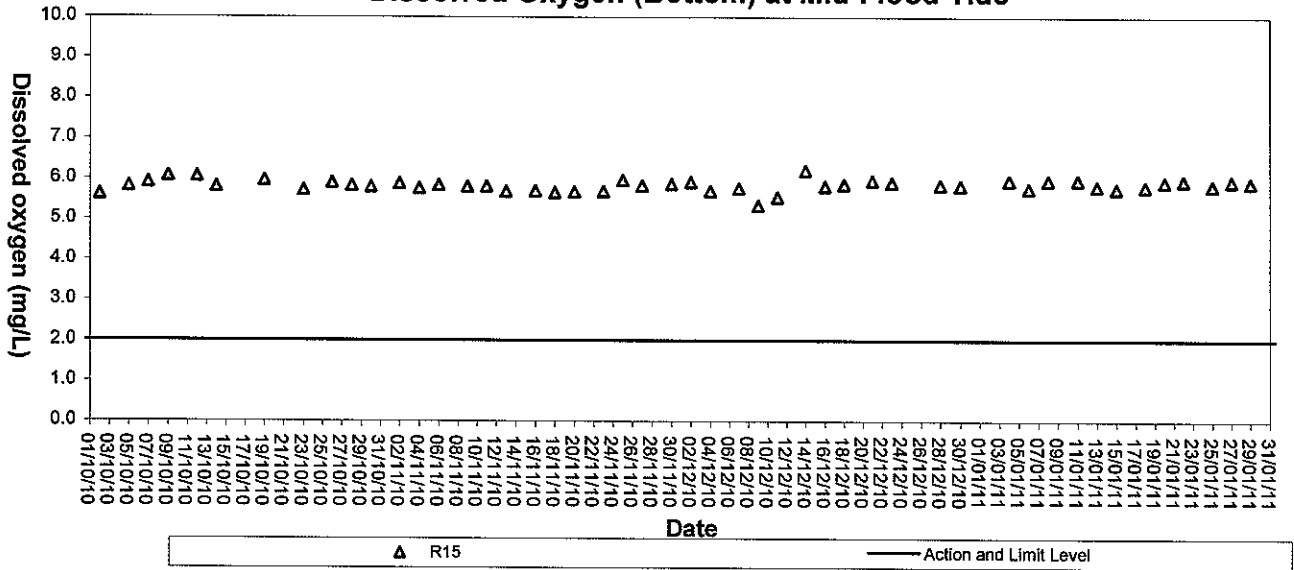
### Dissolved Oxygen (Middle) at Mid-Ebb Tide







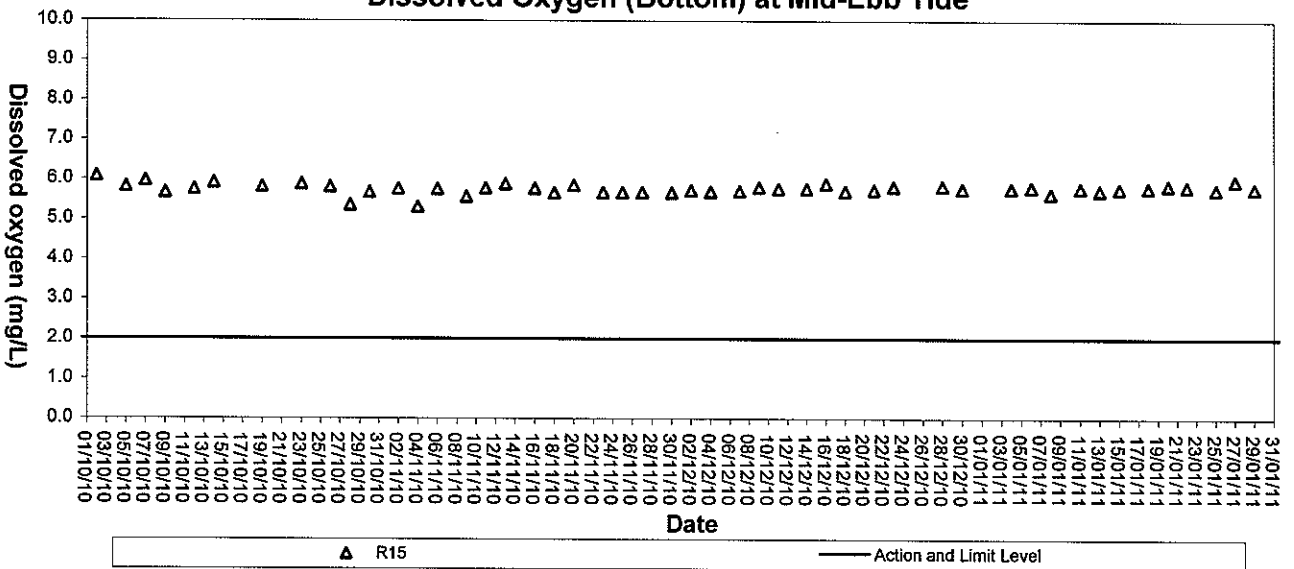
### Dissolved Oxygen (Bottom) at Mid-Flood Tide



▲ R15

— Action and Limit Level

### Dissolved Oxygen (Bottom) at Mid-Ebb Tide

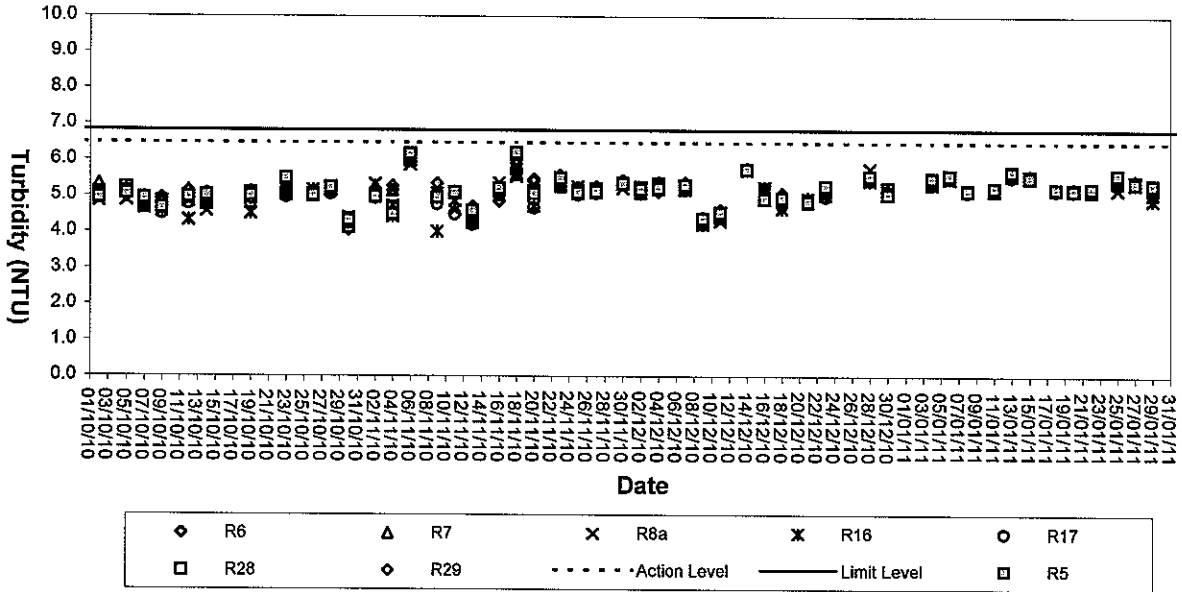


▲ R15

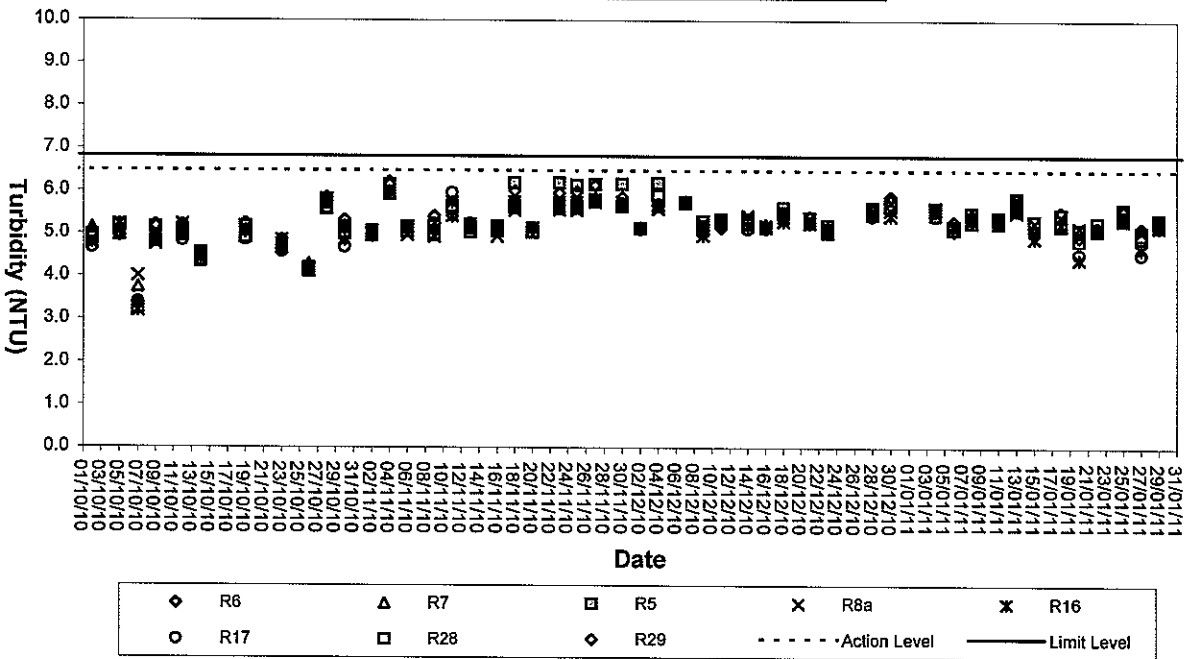
— Action and Limit Level



**Turbidity (Depth-average) at Mid-Flood Tide**

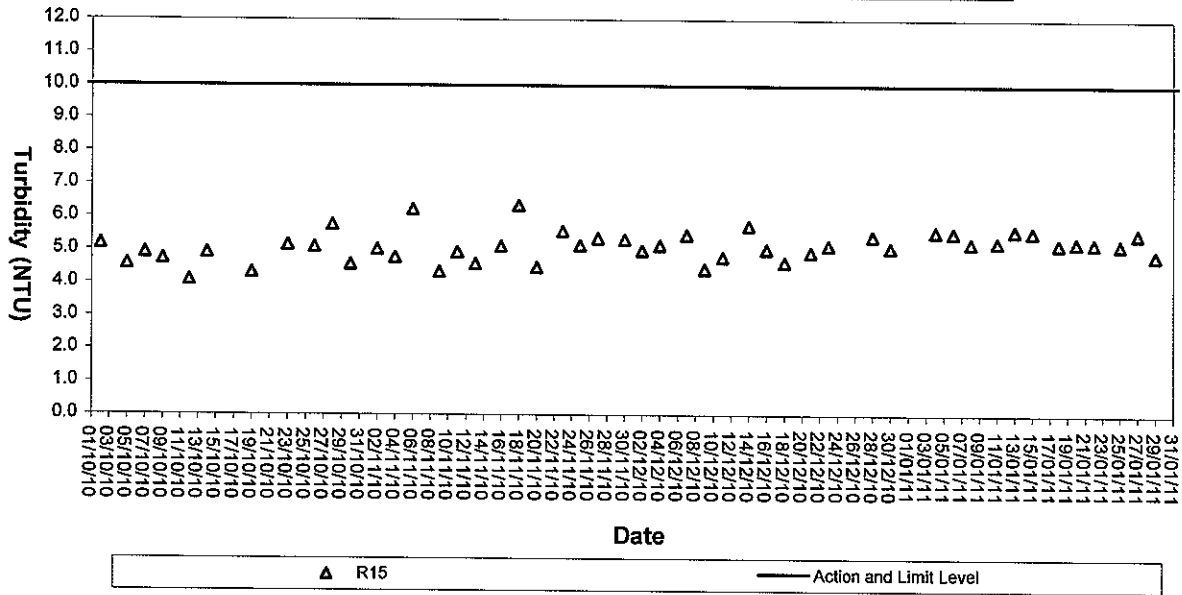


**Turbidity (Depth-average) at Mid-Ebb Tide**

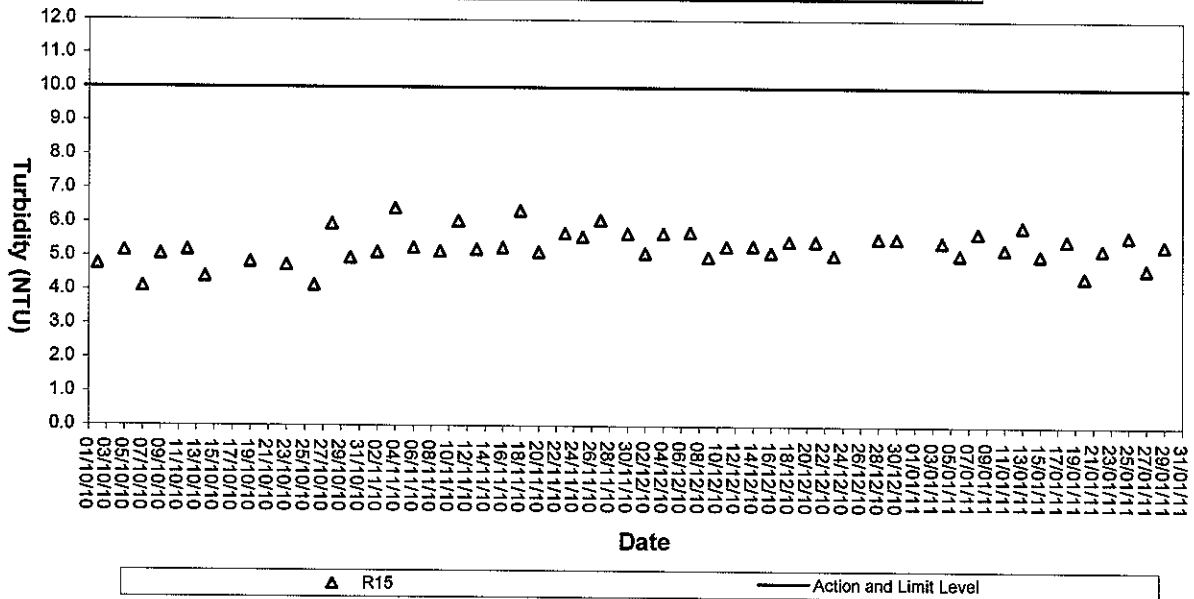




### Turbidity (Depth-average) of R15 at Mid-Flood Tide

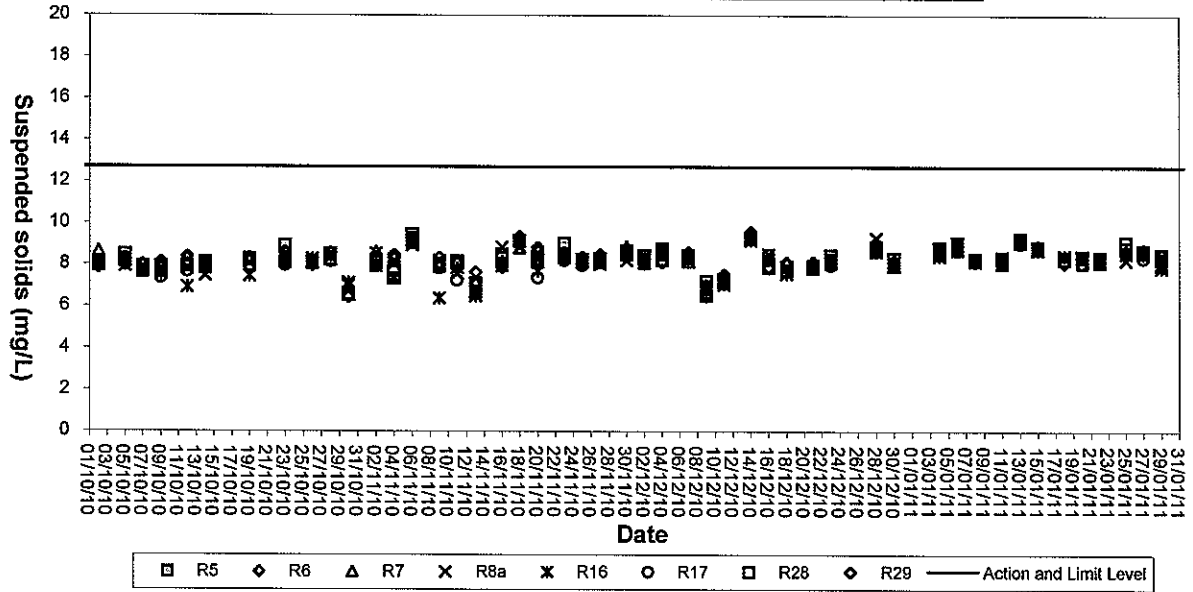


### Turbidity (Depth-average) of R15 at Mid-Ebb Tide

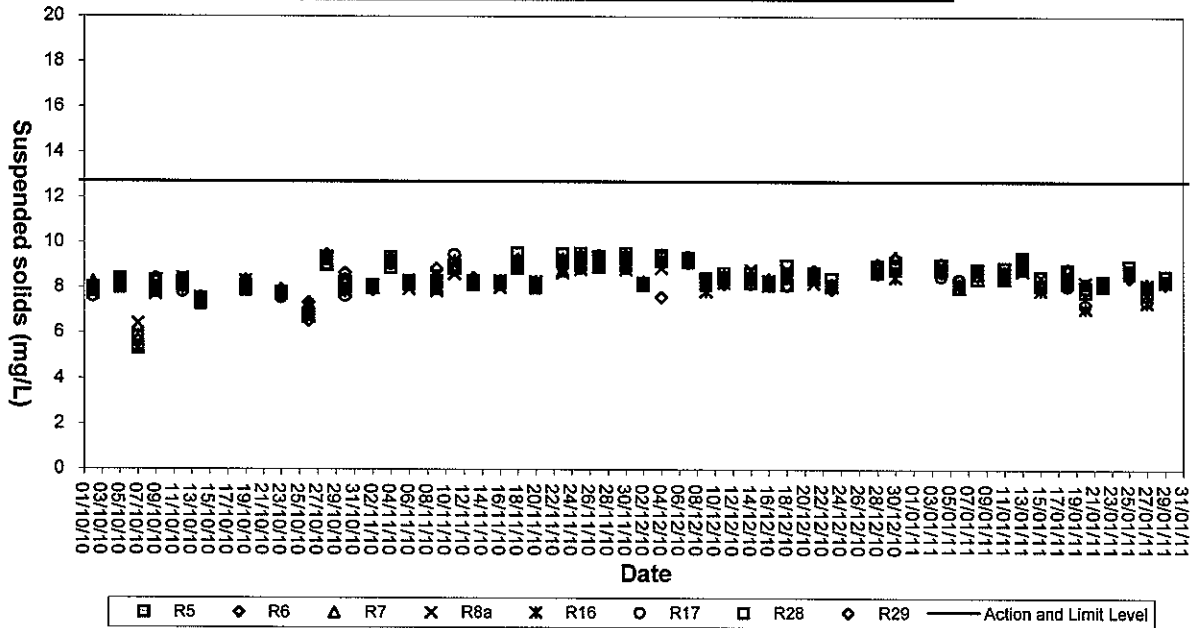




### Suspended solids (Depth-average) at Mid-Flood Tide

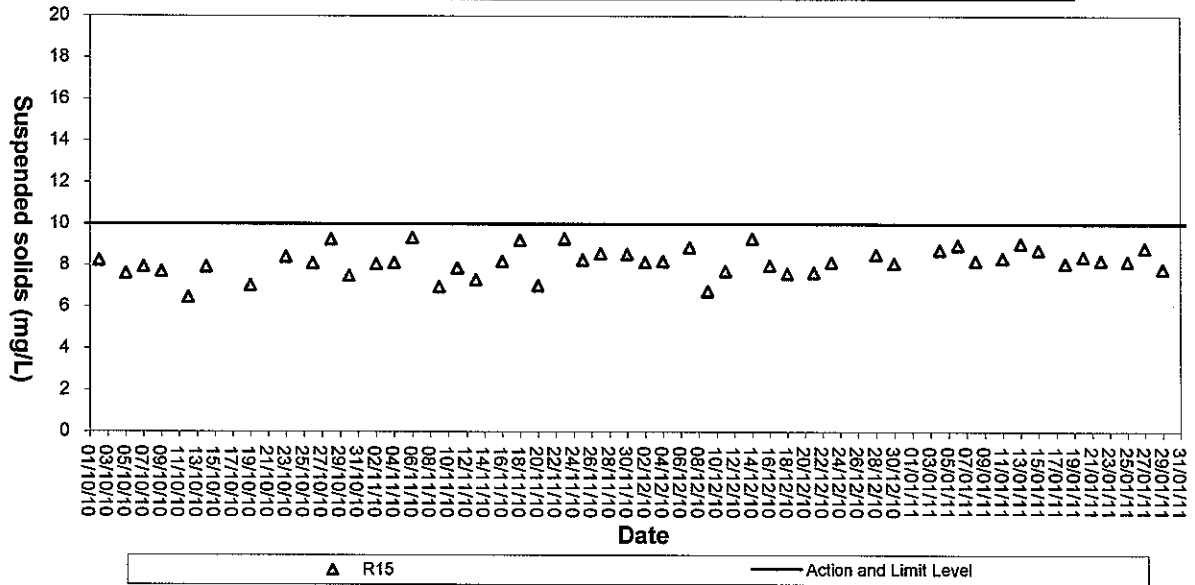


### Suspended Solids (Depth-average) at Mid-Ebb Tide

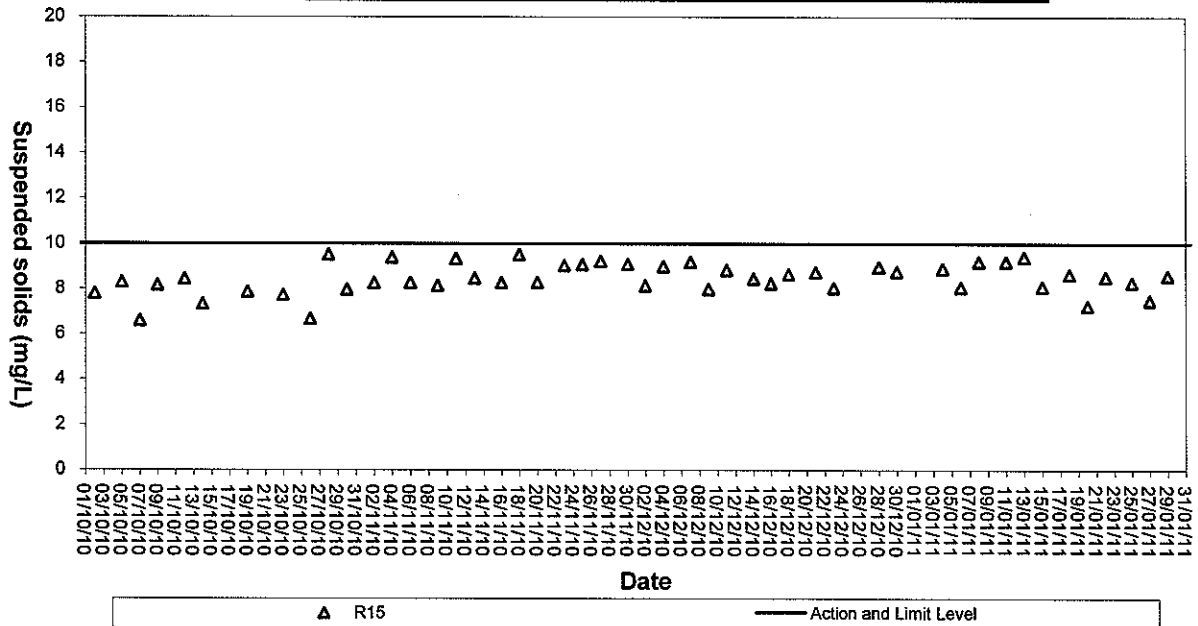




### Suspended solids (Depth-average) of R15 at Mid-Flood Tide



### Suspended Solids (Depth-average) of R15 at Mid-Ebb Tide



## Appendix D

### Environmental Quality Performance (Action / Limit Levels)



### Action and Limit Levels for Noise Monitoring

Time Period	Action	Limit
0700 –1900 hrs on normal weekday (Day-time)	When one documented complaint is received	75 dB(A) *
1900-2300 hrs (Evening-time)		70 dB(A)
0700-1900 hrs on Holiday (Holiday-time)		70 dB(A)
Restricted hours (2300-0700 hrs of next day) (Night-time)		55 dB(A)

\* reduce to 70dB(A) for school and 65dB(A) during school examination periods

### Action and Limit Levels for Marine Water Quality

Parameter	Action Level	Limit Level
DO (mg/L) (Surface, Middle & Bottom)	<u>Surface, Middle &amp; Bottom</u>  WSD Seawater Intakes 2 mg/L (For R15)  Other Impact Monitoring Stations 5.65 mg/L (For R5, R6, R7, R8a, R16, R17, R28 and R29)	<u>Surface &amp; Middle</u>  WSD Seawater Intakes 2 mg/L (For R15)  Other Impact Monitoring Stations 5.51 mg/L (For R5, R6, R7, R8a, R16, R17, R28 and R29)  <u>Bottom</u>  5.11 mg/L (For R15, R5, R6, R7, R8a, R16, R17, R28 and R29)
SS (mg/L) (Depth-averaged)	WSD Seawater Intakes 10 mg/L (For R15)  Other Impact Monitoring Stations 12.7 mg/L (For R5, R6, R7, R8a, R16, R17, R28 and R29)	WSD Seawater Intakes 10 mg/L (For R15)  Other Impact Monitoring Stations 12.7 mg/L (For R5, R6, R7, R8a, R16, R17, R28 and R29)
Turbidity (NTU) (Depth-averaged)	WSD Seawater Intakes 10 NTU  Other Impact Monitoring Stations 6.48 NTU (For R5, R6, R7, R8a, R16, R17, R28 and R29)	WSD Seawater Intakes 10 NTU  Other Impact Monitoring Stations 6.82 NTU (For R5, R6, R7, R8a, R16, R17, R28 and R29)

- Notes: 1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.  
 2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.  
 3. For turbidity and SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.  
 4. 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.



## **Appendix E**

### **Event-Action Plans**



## Event and Action Plan for Construction Noise

Event	Action			
	ET Leader	IEC	ER	Contractor
<b>Action Level</b>	<ol style="list-style-type: none"> <li>1. Notify IEC and the Contractor.</li> <li>2. Carry out investigation.</li> <li>3. Report the results of investigation to IEC and the Contractor.</li> <li>4. Discuss with the Contractor and formulate remedial measures.</li> <li>5. Increase monitoring frequency to check mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review with analysed results submitted by ET.</li> <li>2. Review the proposed remedial measures by the Contractor and advise ER accordingly.</li> <li>3. Supervise the implement of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC.</li> <li>2. Implement noise mitigation proposals.</li> </ol>
<b>Limit Level</b>	<ol style="list-style-type: none"> <li>1. Identify the source.</li> <li>2. Notify IEC, ER, EPD and the Contractor.</li> <li>3. Repeat measurement to confirm findings.</li> <li>4. Increase monitoring frequency.</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>6. Inform IEC, ER, and EPD the causes &amp; actions taken for the exceedances.</li> <li>7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions.</li> <li>2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>4. Ensure remedial measures are properly implemented.</li> <li>5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Resubmit proposals if problem still not under control.</li> <li>5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.</li> </ol>



## Event and Action Plan for Water Quality for Construction Phase

Event	Action			
	ET Leader	IEC	ER	Contractor
<b>Action Level</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurement to confirm finding;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC and Contractor;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC and Contractor; and</li> <li>6. Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures;</li> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC on the proposed mitigation measures; and</li> <li>2. Make agreement on the mitigation measures to be implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>2. Rectify unacceptable practice;</li> <li>3. Check all plant and equipment;</li> <li>4. Consider changes of working methods;</li> <li>5. Discuss with ET and IEC and propose mitigation measures to IEC and ER; and</li> <li>6. Implement the agreed mitigation measures.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurement to confirm finding;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC and Contractor;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC and Contractor;</li> <li>6. Ensure mitigation measures are implemented;</li> <li>7. Prepare to increase the monitoring frequency to daily; and</li> <li>8. Repeat measurement on next day of exceedance.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures;</li> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC on the proposed mitigation measures;</li> <li>2. Make agreement on the mitigation measures to be implemented; and</li> <li>3. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the Engineer and confirm notification of the non-compliance in writing;</li> <li>2. Rectify unacceptable practice;</li> <li>3. Check all plant and equipment;</li> <li>4. Consider changes of working methods;</li> <li>5. Discuss with ET and IEC and propose mitigation measures to IEC and ER within 3 working days; and</li> <li>6. Implement the agreed mitigation measures.</li> </ol>



## Event and Action Plan for Water Quality for Construction Phase

Event	Action			
	ET Leader	IEC	ER	Contractor
<b>Limit Level</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurement to confirm finding;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC, Contractor and EPD;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC, ER and Contractor;</li> <li>6. Ensure mitigation measures are implemented; and</li> <li>7. Increase the monitoring frequency to daily until no exceedance of Limit level.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures;</li> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and</li> <li>2. Request Contractor to critically review the working methods;</li> <li>3. Make agreement on the mitigation measures to be implemented; and</li> <li>4. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the Engineer and confirm notification of the non-compliance in writing;</li> <li>2. Rectify unacceptable practice;</li> <li>3. Check all plant and equipment;</li> <li>4. Consider changes of working methods;</li> <li>5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days; and</li> <li>6. Implement the agreed mitigation measures.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Repeat in-situ measurement to confirm finding;</li> <li>2. Identify source(s) of impact;</li> <li>3. Inform IEC, Contractor and EPD;</li> <li>4. Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>5. Discuss mitigation measures with IEC, ER and Contractor;</li> <li>6. Ensure mitigation measures are implemented; and</li> <li>7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and Contractor on the mitigation measures;</li> <li>2. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly; and</li> <li>3. Assess the effectiveness of the implemented mitigation measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with IEC, ET and Contractor on the proposed mitigation measures; and</li> <li>2. Request Contractor to critically review the working methods;</li> <li>3. Make agreement on the mitigation measures to be implemented;</li> <li>4. Assess the effectiveness of the implemented mitigation measures; and</li> <li>5. 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.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inform the ER and confirm notification of the non-compliance in writing;</li> <li>2. Rectify unacceptable practice;</li> <li>3. Check all plant and equipment;</li> <li>4. Consider changes of working methods;</li> <li>5. Discuss with ET and IEC and ER and propose mitigation measures to IEC and ER within 3 working days;</li> <li>6. Implement the agreed mitigation measures; and</li> <li>7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction activities.</li> </ol>

# Appendix F

## Work Programme

Act ID	Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Free Float
1156	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12	0

Key Dates	Contract Commencement Date	Contract Completion	Works Period of Section 1 Works (791 Days)	Works Period of Section 2 Works (428 Days)	Works Period of Section 3 Works (549 Days)	Works Period of Section 4 Works (548 Days)
0	07SEP09 A	05NOV12*	05NOV12*	05NOV12*	05NOV12*	05NOV12*
791	07SEP09 A	05NOV12*	05NOV12*	05NOV12*	05NOV12*	05NOV12*
428	07SEP09 A	05NOV12*	05NOV12*	05NOV12*	05NOV12*	05NOV12*
549	07SEP09 A	05NOV12*	05NOV12*	05NOV12*	05NOV12*	05NOV12*
1156	07SEP09 A	05NOV12*	05NOV12*	05NOV12*	05NOV12*	05NOV12*

Section 1	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
1156	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 2	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
791	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 3	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
180	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 4	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
120	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 5	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
60	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 6	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
90	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 7	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
30	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 8	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
120	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 9	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
45	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 10	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
180	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 11	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
270	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 12	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
90	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 13	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
40	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 14	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
40	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 15	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
80	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 16	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
10	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 17	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
60	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 18	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
28	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 19	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
28	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 20	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
28	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 21	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
15	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 22	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
10	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 23	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
3	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 24	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
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Section 25	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
10	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 26	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
15	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 27	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
10	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 28	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
50	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 29	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
10	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 30	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
6	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 31	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
5	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 32	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
10	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 33	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
70	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Section 34	07SEP09 A	05NOV12	07SEP09 A	05NOV12	07SEP09 A	05NOV12
14	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td></td>	05NOV12	07SEP09 A <td>05NOV12</td> <td>07SEP09 A <td>05NOV12</td> </td>	05NOV12	07SEP09 A <td>05NOV12</td>	05NOV12

Start date	07SEP09	05NOV12	07SEP09	05NOV12	07SEP09	05NOV12
Finish date	05NOV12	05NOV12	05NOV12	05NOV12	05NOV12	05NOV12
Run date	04JAN10	04JAN10	04JAN10	04JAN10	04JAN10	04JAN10
Run date	12JAN11	12JAN11	12JAN11	12JAN11	12JAN11	12JAN11
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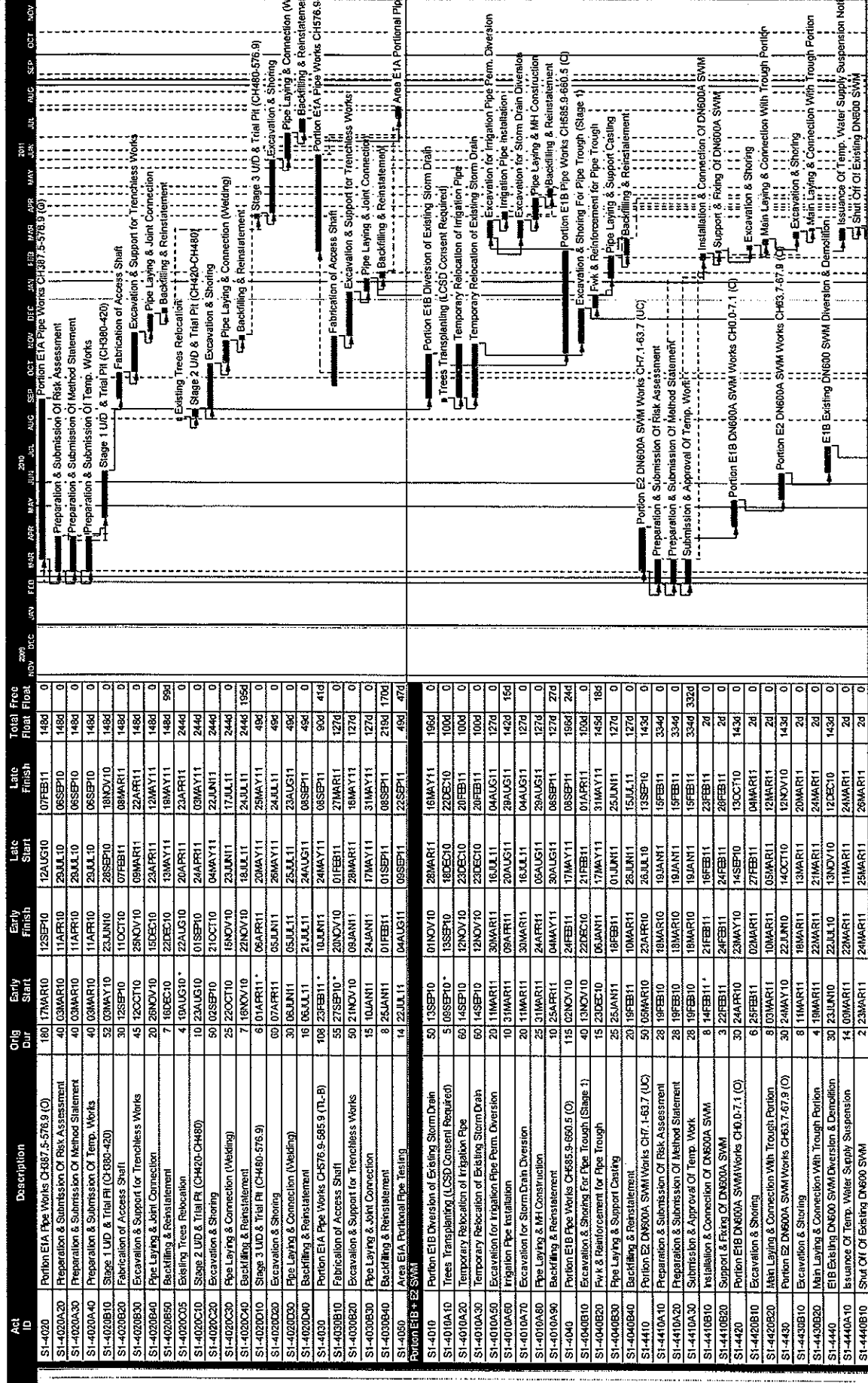
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3 Months Rolling Program (January 2011)

Wo Hing - Penta-Ocean Joint Venture

Contract No. 99WSD008  
Laying of Western Cross Harbour Main & Associated Land Mains from West Kowloon to Sai Ying Pun.



Start Date: 09SEP09  
Finish Date: 09NOV12  
Data Date: 04JAN10  
Run Date: 12JAN11  
Page Number: 2A  
c: Primavera Systems, Inc.

Legend:  
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 ■ Critical bar  
 ■ Summary bar  
 ■ Start milestone point  
 ■ Finish milestone point

3 Months Rolling Program (January 2011)



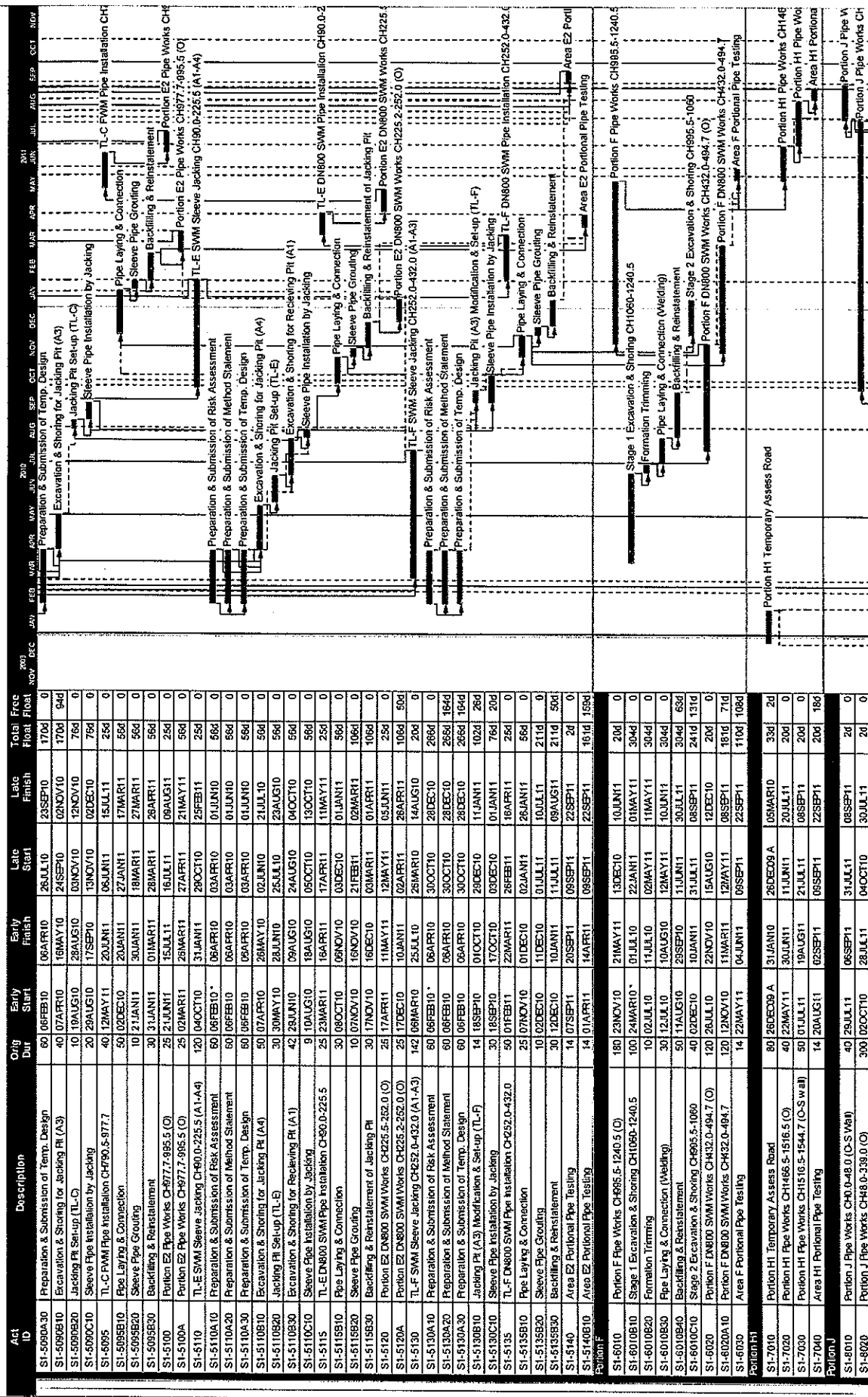
Contract No. 9WMS008  
Laying of Western Cross Harbour Main & Associated Land Mains from West Kowloon to Sai Ying Pun

Act ID	Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Free Float
S1-4440B20	DN600A Diversion Main Connect To Existing	2	23MAR11	24MAR11	25MAR11	25MAR11	20
S1-4440B30	Removal Of Existing DN600 SWM	6	23MAR11	30MAR11	27MAR11	01APR11	20
S1-4445	Portion E1B Trough Construction Under Planter	60	24JUN10	22AUG10	02JAN11	02MAR11	494
S1-4445B10	Excavation & Shoring For Pipe Trough (Stage 2)	40	23DEC10	31JAN11	02APR11	11MAY11	1000
S1-4445B20	Pw & Reinforcement for Pipe Trough	15	01FEB11	15FEB11	12MAY11	26MAY11	1000
S1-4450	Portion E1B Pipe Works CH660.5-677.4 (PT)	60	11OCT10	09DEC10	03MAR11	01MAY11	1430
S1-4450B10	Pipe Laying & Support Casting	25	16FEB11	12MAY11	27MAY11	20JUN11	1000
S1-4450B20	Backfilling & Reinstatement	20	13MAR11	01APR11	21JUN11	10JUL11	1000
S1-4460	Portion E1B Pipe Works CH77.4-695.9 (C)	40	09FEB11	20MAR11	31JUL11	08SEP11	1720
S1-4460B10	Portion E1B Pipe Works CH87.4-695.9(C)	30	02MAY11	31MAY11	10AUG11	06SEP11	1000
S1-4470	Portion E1B Pipe Works CH895.9-698.5 (UC)	20	10DEC10	23DEC10	02MAY11	21MAY11	1430
S1-4470B10	Portion E1B Pipe Works CH895.9-698.5 (UC)	30	02APR11	01MAY11	11JUL11	09AUG11	1000
S1-4480	Portion E1B DN600B SWM Works CH0.0-7.1 (C)	30	23JUL10	21AUG10	02JAN11	31JAN11	1630
S1-4480B10	Portion E1B DN600B SWM Works CH0.0-7.1 (C)	30	30APR11	29MAY11	10AUG11	08SEP11	1020
S1-4490	Portion E2 DN600B SWM Works CH7.1-63.7 (UC)	50	23JUL10	10SEP10	10SEP10	31JAN11	1430
S1-4490B10	Portion E2 DN600B SWM Works CH7.1-63.7 (UC)	30	31MAR11	29APR11	02APR11	01MAY11	20
S1-4500	Portion E2 DN600B SWM Works (63.7-67.9) (C)	30	11SEP10	10OCT10	01FEB11	02MAR11	1430
S1-4500B10	Portion E2 DN600B SWM Works (63.7-67.9) (C)	20	30APR11	18MAY11	02MAY11	21MAY11	20
S1-4510	Area E1B-E2 SWM Portional Pipe Testing	14	21MAR11	03APR11	03APR11	22SEP11	1720
S1-4510B10	Area E1B-E2 SWM Portional Pipe Testing	14	01JUN11	14JUN11	09SEP11	22SEP11	1000
<b>Portion E1C</b>							
S1-4710	Portion E1C DN300 FMM Works CH0.0-50.0 (UC)	50	05MAR10	23APR10	28SEP10	18NOV10	2070
S1-4710A10	Submission & Approval Of Risk Assessment	28	19FEB10	18MAR10	14SEP10	11OCT10	2070
S1-4710A20	Submission & Approval Of Method Statement	28	19FEB10	18MAR10	14SEP10	11OCT10	590
S1-4710B30	Submission & Approval Of Temp. Work	28	19FEB10	18MAR10	14SEP10	11OCT10	2070
S1-4710B10	Installation & Connection Of DN300 FMM	50	17MAY10	05JUL10	12OCT10	30NOV10	1480
S1-4710B20	Support & Fixing Of DN300 FMM	40	05JUL10	14AUG10	10DEC10	06JAN11	1480
S1-4720	E1C DN300 FMM Diversion Main Testing	8	24APR10	01MAY10	22FEB11	02MAR11	3050
S1-4720B10	E1C Exist. DN300 FMM Diversion & Demolition	8	15AUG10	22AUG10	10JAN11	17JAN11	1480
S1-4730	E1C Exist. DN300 FMM Diversion & Demolition	30	02MAY10	31MAY10	03MAR11	01APR11	3050
S1-4730A10	Issuance Of Temp. Water Supply Suspension	14	22SEP10	05OCT10	17FEB11	02MAR11	1480
S1-4730A20	Shut Off Existing DN300 FMM	2	06OCT10	07OCT10	03MAR11	04MAR11	1480
S1-4730B10	DN300 Diversion Main Connect To Existing	28	06OCT10	07OCT10	03MAR11	04MAR11	1480
S1-4730A30	Removal Of Existing DN300 FMM	28	06OCT10	04NOV10	05MAR11	01APR11	1480
S1-4740	Portion E1C DN800 SWM Works CH0.0-52.0 (UC)	60	05NOV10	23JAN11	02APR11	20JUN11	1480
S1-4740B10	Portion E1C DN800 SWM Works CH0.0-52.0 (UC)	60	05NOV10	21APR11	02APR11	20JUN11	1480
S1-4750	Portion E1C DN800 SWM Works CH52.0-90.0 (C)	60	01FEB11	21APR11	21JUN11	08SEP11	1400
S1-4750B10	Portion E1C DN800 SWM Works CH52.0-90.0 (C)	60	24JAN11	13APR11	21JUN11	08SEP11	1480
S1-4760	Area E1C Portional Pipe Testing	14	22APR11	05MAY11	09SEP11	22SEP11	1400
S1-4760B10	Area E1C Portional Pipe Testing	14	14APR11	27APR11	09SEP11	22SEP11	1480
<b>Portion E2</b>							
S1-5010	Portion E2 Marine Dept Advance Notice	60	07OCT09 A	20FEB10	07OCT09 A	12MAR10	200
S1-5020	WHOTCL Consent For Works Within Tunnel Area	120	07SEP09 A	20FEB10	07SEP09 A	12MAR10	200
S1-5030	Chamber Modification - 180 Days of Portion E2	65	07JAN10 A	14MAR10 A	07JAN10 A	14MAR10 A	0
S1-5040	Portion E2 Trial Run	60	08NOV09 A	14NOV09 A	09NOV09 A	14NOV09 A	0
S1-5050	Portion E2 Trial Pit & Utilities Detection	45	21FEB10	07MAR10	13MAR10	27MAR10	200
S1-5060	Portion E2 Initial & Utilities Survey	15	21FEB10	07MAR10	13MAR10	27MAR10	200
S1-5070	Portion E2 Pipe Works CH698.5-722.5 (UC)	60	27MAR11	14JUN11	22MAY11	09AUG11	560
S1-5070B10	Portion E2 Pipe Works CH698.5-722.5 (UC)	60	20MAY11	07AUG11	22MAY11	09AUG11	20
S1-5080	Portion E2 Pipe Works CH752.5-790.5 (C)	30	16JUL11	14AUG11	10AUG11	08SEP11	250
S1-5080A	Portion E2 Pipe Works CH752.5-790.5 (C)	30	08AUG11	03OCT11	10AUG11	08SEP11	250
S1-5090	T-L-C FMM Sleeve Jacking CH790.5-977.7 (A1-A3)	70	26JUL10	03OCT10	20AUG10	26OCT10	250
S1-5090A10	Preparation & Submission of Risk Assessment	60	06FEB10	03APR10	26JUL10	23SEP10	1700
S1-5090A20	Preparation & Submission of Method Statement	60	06FEB10	03APR10	26JUL10	23SEP10	1700

Start date: 07SEP09  
 Finish date: 06NOV12  
 Data date: 04JAN10  
 Rev date: 12JAN11  
 Rev number: 04  
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Legend:  
 Empty bar  
 Progress bar  
 Critical bar  
 Summary bar  
 Start milestone point  
 Finish milestone point

3 Months Rolling Program (January 2011)



Act ID	Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float
S1-509030	Preparation & Submission of Temp. Design	60	06FEB10	06AAR10	26JUL10	23SEP10	170d
S1-509040	Excavation & Shoring for Jacking Pit (A3)	40	07AAR10	16MAY10	24SEP10	02NOV10	170d
S1-509050	Jacking Pit Set-up (TL-C)	10	18AUG10	28AUG10	03NOV10	12NOV10	94d
S1-509060	Sleeve Pipe Installation by Jacking	20	28AUG10	17SEP10	13NOV10	02DEC10	76d
S1-509070	TL-C FWM Pipe Installation CH790.0-877.7	40	12MAY11	20JUN11	05JUN11	23JUL11	25d
S1-509080	Pipe Laying & Connection	50	02DEC10	20AAR11	20AAR11	17MAY11	56d
S1-509090	Backfilling & Reinstatement	10	21JAN11	30AAR11	18AAR11	27MAY11	56d
S1-510000	Portion E2 Pipe Works CH977.7-995.5 (O)	25	24JUN11	15JUL11	09AUG11	28AAR11	25d
S1-510010	TL-E Sleeve Jacking CH90.0-225.5 (A1-A4)	120	04OCT10	31JAN11	28OCT10	25FEB11	25d
S1-510020	Preparation & Submission of Risk Assessment	60	06AAR10	06AAR10	03AAR10	01JUN10	56d
S1-510030	Preparation & Submission of Method Statement	60	06FEB10	06AAR10	03AAR10	01JUN10	56d
S1-510040	Excavation & Shoring for Jacking Pit (A4)	60	06FEB10	06AAR10	03AAR10	01JUN10	56d
S1-510050	Jacking Pit Set-up (TL-E)	30	30MAY10	28JUN10	25JUL10	23AUG10	56d
S1-510060	Excavation & Shoring for Receiving Pit (A1)	42	28JUN10	09AUG10	05OCT10	04OCT10	56d
S1-510070	Sleeve Pipe Installation CH90.0-225.5	9	10AUG10	18AUG10	13OCT10	11OCT10	56d
S1-510080	Pipe Laying & Connection	30	08OCT10	06NOV10	03DEC10	01JAN11	56d
S1-510090	Backfilling & Reinstatement of Jacking Pit	10	07NOV10	16NOV10	02MAR11	02MAR11	106d
S1-511000	Portion E2 DN800 SWM Works CH225.5-252.0 (O)	25	17AAR11	11MAY11	12MAY11	05JUN11	25d
S1-511010	TL-F SWM Sleeve Jacking CH252.0-432.0 (A1-A3)	142	08MAR10	25JUL10	28MAR10	14AUG10	106d
S1-511020	Preparation & Submission of Risk Assessment	60	06FEB10	06AAR10	03OCT10	28DEC10	266d
S1-511030	Preparation & Submission of Method Statement	60	06FEB10	06AAR10	03OCT10	28DEC10	266d
S1-511040	Excavation & Shoring for Jacking Pit (A3)	14	18SEP10	10OCT10	29DEC10	11JAN11	102d
S1-511050	Sleeve Pipe Installation by Jacking	30	18SEP10	03DEC10	01JAN11	76d	20d
S1-511060	TL-F DN800 SWM Pipe Installation CH252.0-432.0	60	01FEB11	22MAR11	26FEB11	16AAR11	26d
S1-511070	Pipe Laying & Connection	25	07NOV10	01DEC10	02JAN11	28JAN11	56d
S1-511080	Sleeve Pipe Grouting	10	02DEC10	11DEC10	10JUL11	10JUL11	211d
S1-511090	Backfilling & Reinstatement	30	12DEC10	10JAN11	11JUL11	09AUG11	211d
S1-514000	Area E2 Portional Pipe Testing	14	07SEP11	20SEP11	09SEP11	22SEP11	2d
Portion F		14	01AAR11	14AAR11	09SEP11	22SEP11	161d
S1-601000	Portion F Pipe Works CH995.5-1240.5 (O)	180	23NOV10	21MAY11	13DEC10	10JUN11	20d
S1-601010	Stage 1 Excavation & Shoring CH1060-1240.5	100	24MAR10	01JUL10	22JAN11	01MAY11	304d
S1-601020	Formation Trimming	10	02JUL10	11JUL10	12MAY11	10JUN11	304d
S1-601030	Pipe Laying & Connection (Welding)	30	12JUL10	10AUG10	12MAY11	10JUN11	304d
S1-601040	Backfilling & Reinstatement	50	11AUG10	29SEP10	11JUN11	30JUL11	63d
S1-601050	Stage 2 Excavation & Shoring CH995.5-1060	40	02DEC10	10JAN11	06SEP11	241d	131d
S1-601060	Portion F DN800 SWM Works CH432.0-494.7 (O)	120	26JUL10	23NOV10	15AUG10	12DEC10	20d
S1-602000	Portion F DN800 SWM Works CH432.0-494.7	120	12NOV10	11MAR11	12MAY11	08SEP11	181d
S1-603000	Area F Portional Pipe Testing	14	22MAY11	04JUN11	09SEP11	22SEP11	110d
Portion H1		80	26DEC09	31JAN10	26DEC09	05MAR10	33d
S1-701000	Portion H1 Temporary Assess Road	40	22MAY11	30JUN11	11JUN11	20JUL11	20d
S1-702000	Portion H1 Pipe Works CH165.5-1916.5 (O)	50	07JUL11	19AUG11	11JUL11	06SEP11	20d
S1-703000	Area H1 Portional Pipe Testing	14	20AUG11	02SEP11	06SEP11	22SEP11	20d
Portion J		40	28JUL11	06SEP11	31JUL11	06SEP11	2d
S1-801000	Portion J Pipe Works CH0.0-48.0 (D-S/Wal)	300	02OCT10	28JUL11	04OCT10	30JUL11	2d
S1-802000	Portion J Pipe Works CH48.0-338.0 (O)						2d

Start date: 07SEP09  
Finish date: 06NOV12  
Run date: 04JAN10  
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3 Months Rolling Program (January 2011)

Legend:  
 ■ Early bar  
 ■ Progress bar  
 ■ Critical bar  
 ■ Summary bar  
 ■ Start milestone point  
 ■ Finish milestone point

Contract No. 04NSD006  
Laying of Western Cross Feeder Main & Associated Land Means from West Kowloon to Sai Ying Pun

Act ID	Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float	Float
S1-8020B10	Stage 1 Excavation & Shoring CH250-290 S1	55	22JUN10	15AUG10	21JUL10	13SEP10	28d	0
S1-8020B20	Pipe Laying & Connection (Welding)	20	16AUG10	04SEP10	14SEP10	03OCT10	29d	0
S1-8020B30	Associated Chamber Construction	30	05SEP10	04OCT10	03NOV10	02NOV10	29d	0
S1-8020B40	Backfilling & Reinstatement	15	09OCT10	19NOV10	03NOV10	17NOV10	29d	0
S1-8020B50	Stage 1 Excavation & Shoring CH250-290 S2	20	27FEB11	18MAR11	28MAR11	16MAY11	28d	0
S1-8020B60	Associated Chamber Construction	30	19MAR11	17APR11	17APR11	16MAY11	28d	0
S1-8020B70	Backfilling & Reinstatement	15	18APR11	02MAY11	17MAY11	31MAY11	29d	0
S1-8020C10	Stage 2 Excavation & Shoring CH180-290	55	20OCT10	13DEC10	18NOV10	11JAN11	29d	0
S1-8020C20	Pipe Laying & Connection (Welding)	30	14DEC10	12JAN11	11FEB11	10FEB11	29d	0
S1-8020C30	Associated Chamber Construction	30	13JAN11	11FEB11	12MAR11	11FEB11	29d	0
S1-8020C40	Backfilling & Reinstatement	15	12FEB11	26FEB11	13MAR11	27MAR11	29d	0
S1-8020D10	Stage 3 Excavation & Shoring CH140-180	35	11OCT10	04NOV10	07JUN11	05JUL11	233d	0
S1-8020D20	Pipe Laying & Connection (Welding)	20	15NOV10	04DEC10	10JUL11	25JUL11	233d	0
S1-8020D30	Associated Chamber Construction	30	05DEC10	03JAN11	25AUG11	24AUG11	233d	0
S1-8020D40	Backfilling & Reinstatement	15	04JAN11	18JAN11	25AUG11	09SEP11	233d	231d
S1-8020E10	Stage 4 Excavation & Shoring CH45-CH140	50	30APR11	18JUN11	07JUN11	20JUL11	32d	0
S1-8020E20	Pipe Laying & Connection (Welding)	20	18JUN11	08JUL11	21JUL11	09AUG11	32d	0
S1-8020E30	Associated Chamber Construction	20	08JUL11	07AUG11	10AUG11	29AUG11	32d	0
S1-8020E40	Backfilling & Reinstatement	10	28JUL11	07AUG11	20AUG11	08SEP11	32d	30d
S1-8020F10	Stage 5 Excavation & Shoring CH200-340	50	03MAY11	21JUN11	07JUN11	20JUL11	29d	0
S1-8020F20	Pipe Laying & Connection (Welding)	30	22JUN11	10AUG11	21JUL11	19AUG11	29d	0
S1-8020F30	Backfilling & Reinstatement	20	22JUL11	20AUG11	20AUG11	08SEP11	29d	0
S1-8030	Portion J Kiosk for RTU & Connect To SCADA	30	25JUL11	27AUG11	10AUG11	08SEP11	12d	10d
S1-8040	Portion J Kiosk for RTU & Connect To SCADA	209	17MAR10	11OCT10	19MAR10	13OCT10	294d	292d
S1-8040A10	Preparation & Submission of Risk Assessment	28	03MAR10	30MAR10	27AUG10	23SEP10	177d	0
S1-8040A20	Preparation & Submission of Method Statement	28	03MAR10	30MAR10	27AUG10	23SEP10	177d	0
S1-8040A30	Preparation & Submission of Temp. Works	28	03MAR10	30MAR10	27AUG10	23SEP10	177d	161d
S1-8040A40	Granting of Excavation Permit	0	01SEP10		17SEP10		16d	0
S1-8040B10	T.T.A. LD & Trial Pit Excavation	25	08SEP10	02OCT10	24SEP10	18OCT10	16d	0
S1-8040B20	Access Shaft Fabrication	65	23OCT10	26DEC10	08NOV10	11JAN11	16d	0
S1-8040B30	Heading Tunnel Excavation (Hard Shield)	70	27DEC10	06MAR11	12JAN11	22MAR11	16d	0
S1-8040B40	Pipe Installation Inside Heading Tunnel	40	07MAR11	15APR11	23MAR11	01MAY11	16d	0
S1-8040B50	Backfilling & Reinstatement	10	16APR11	25APR11	02MAY11	11MAY11	16d	0
S1-8050	Portion J Pipe Works CH368.4-388.4 (O)	40	26APR11	04JUN11	12MAY11	20JUN11	16d	0
S1-8060	Portion J Pipe Works CH1000-CH1000-22.7 (O)	80	05JUN11	23AUG11	21JUN11	08SEP11	16d	14d
S1-8070	Area J Positional Pipe Testing	14	07SEP11	20SEP11	08SEP11	22SEP11	2d	0
S1-9010	Within 365 Days Commencement of Portion K	365	07SEP09	08SEP10	07SEP09	07NOV10	54d	0
S1-9020	Portion K Initial Survey	15	09SEP10	23SEP10	02NOV10	16NOV10	54d	0
S1-9030	Portion K Utilities Detection & Trial Pit	20	14SEP10	13OCT10	17NOV10	06DEC10	54d	0
S1-9040	Portion K Pipe Works (Construction of MB)	200	14OCT10	01MAY11	07DEC10	24JUN11	54d	0
S1-9050	Portion K Kiosk for RTU & Connect To SCADA	30	02MAY11	31MAY11	25JUN11	24JUL11	54d	0
S1-9060	Area K Constructed MB Testing	60	01JUN11	30JUL11	25JUL11	22SEP11	54d	52d
Name Works (Portion)								
M1000	Permit Application & Advance Notification	120	07SEP09	20FEB10	07SEP09	01MAR10	9d	0
M1010	Submission & Approval - MS & Temp Works Design	120	07SEP09	20FEB10	07SEP09	02APR10	41d	0
M1010A10	Preparation & Submission of Risk Assessment	217	07SEP09	11APR10	07SEP09	12APR10	1d	0
M1010A20	Preparation & Submission of Method Statement	217	07SEP09	11APR10	07SEP09	12APR10	1d	0
M1010A30	Preparation & Submission of Temp. Works	217	07SEP09	11APR10	07SEP09	12APR10	1d	0
M1020	Bathymetric Survey	120	22FEB10	27FEB10	27FEB10	27FEB10	0	0
M1030	Material Procurement & Delivery	180	06NOV09	04MAY10	06NOV09	14JUN10	41d	0
M1040	Submission & Approval of EWSA Manual	50	07SEP09	17JAN10	07SEP09	17JAN10	0	0

Start date: 07SEP09  
Finish date: 09NOV12  
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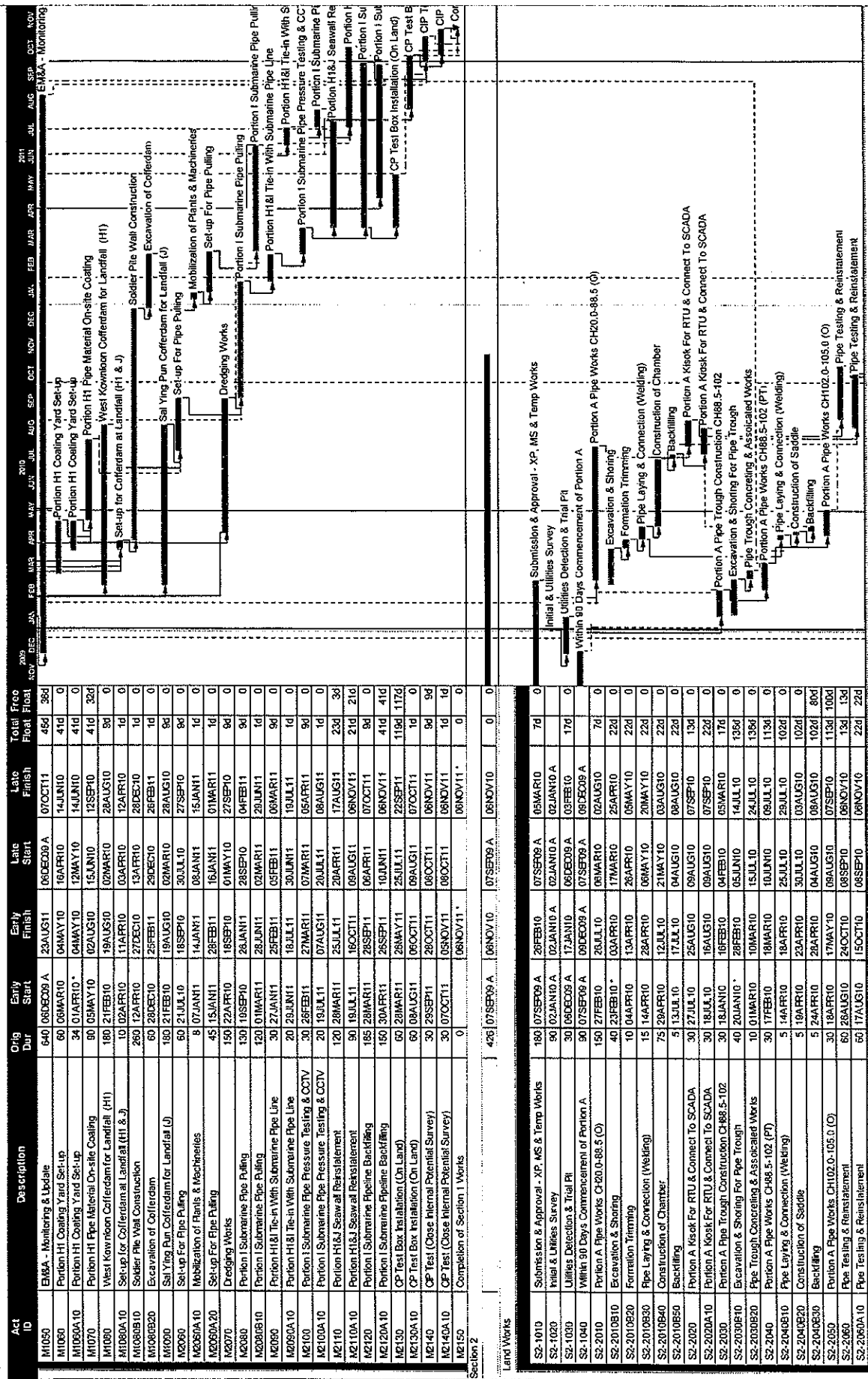
3 Months Rolling Program (January 2011)

Legend:

- █ Early bar
- █ Progress bar
- █ Critical bar
- █ Summary bar
- ▲ Start milestone point
- ▲ Finish milestone point

Contract No. 01WSD008

Laying of Western Cross Harbour Main & Associated Land Masses from West Kowloon to Sai Ying Pun



Act ID	Description	Orig Dur	Early Start	Early Finish	Late Start	Late Finish	Total Float
M1050	EMA - Monitoring & Update	640	08DEC09 A	25AUG11	06DEC09 A	07OCT11	456
M1060	Portion H1 Coating Yard Set-up	0	06MAR10	04MAY10	16APR10	14JUL10	41d
M1060A10	Portion H1 Coating Yard Set-up	34	01APR10 *	04MAY10	12MAY10	14JUN10	41d
M1070	Portion H1 Pipe Material On-site Coating	0	05MAY10	02AUG10	15JUN10	12SEP10	41d
M1080	West Kowloon Cofferdam for Landfall (H1)	180	21FEB10	19AUG10	02MAR10	12APR10	3d
M1080A10	Set-up for Cofferdam at Landfall (H1 & J)	10	02APR10	11APR10	03APR10	12APR10	1d
M1080B10	Solder Pits Wall Construction	260	12APR10	27DEC10	13APR10	28DEC10	1d
M1080C10	Excavation of Cofferdam	60	28DEC10	28FEB11	29DEC10	28FEB11	1d
M1090	Sai Ying Pun Cofferdam for Landfall (J)	180	21FEB10	19AUG10	02MAR10	12APR10	3d
M2060	Set-up for Pipe Pulling	60	21JUL10	18SEP10	30JUL10	27SEP10	8d
M2060A10	Mobilization of Plants & Machineries	8	07JAN11	14JAN11	08JAN11	15JAN11	1d
M2060A20	Set-up for Pipe Pulling	45	15JAN11	28FEB11	16JAN11	01MAR11	1d
M2070	Designing Works	150	22APR10	17SEP10	01MAY10	27SEP10	8d
M2080	Portion I Submarine Pipe Pulling	130	18SEP10	26JAN11	28SEP10	04FEB11	9d
M2080B10	Portion I Submarine Pipe Pulling	120	01MAR11	28JAN11	02MAR11	29JAN11	1d
M2090	Portion H1&J Tie-in With Submarine Pipe Line	20	28JAN11	16JUL11	05FEB11	06MAR11	9d
M2090A10	Portion H1&J Tie-in With Submarine Pipe Line	30	28FEB11	27MAR11	07MAR11	05APR11	1d
M2100	Portion I Submarine Pipe Pressure Testing & CCTV	20	19JUL11	07AUG11	20JUL11	08AUG11	1d
M2100A10	Portion I Submarine Pipe Pressure Testing & CCTV	20	19JUL11	07AUG11	20JUL11	08AUG11	1d
M2110	Portion H1&J Seawall Reinstatement	120	28MAR11	15JUL11	20APR11	17AUG11	23d
M2110A10	Portion H1&J Seawall Reinstatement	90	19JUL11	16OCT11	09AUG11	06NOV11	21d
M2120	Portion I Submarine Pipeline Backfilling	185	28MAR11	28SEP11	06APR11	07OCT11	8d
M2120A10	Portion I Submarine Pipeline Backfilling	150	30APR11	26SEP11	10JUN11	06NOV11	41d
M2130	CP Test Box Installation (On Land)	60	28MAR11	28MAY11	25JUL11	23SEP11	118d
M2130A10	CP Test Box Installation (On Land)	60	08AUG11	06OCT11	09AUG11	07OCT11	1d
M2140	CP Test (Close Internal Potential Survey)	30	28SEP11	28OCT11	06OCT11	06NOV11	9d
M2140A10	CP Test (Close Internal Potential Survey)	30	07OCT11	05NOV11	08OCT11	06NOV11	1d
M2150	Completion of Section I Works	0	06NOV11	06NOV11	06NOV11	06NOV11	0
S2-1010	Submission & Approval - XP, MS & Temp Works	180	07SEP09 A	26FEB10	07SEP09 A	05MAR10	7d
S2-1020	Initial & Utilities Survey	90	02JAN10 A	02JAN10 A	02JAN10 A	02JAN10 A	0
S2-1030	Utilities Detection & Trial Pit	30	06DEC09 A	17JAN10	06DEC09 A	03FEB10	17d
S2-1040	Within 90 Days Commencement of Portion A	90	07SEP09 A	06DEC09 A	07SEP09 A	06DEC09 A	0
S2-2010	Portion A Pipe Works CH20.0-88.5 (O)	150	27FEB10	26JUL10	06MAR10	02AUG10	7d
S2-2010B10	Excavation & Shoring	40	23FEB10 *	03APR10	17MAR10	25APR10	22d
S2-2010B30	Formation Trimming	10	04APR10	13APR10	26APR10	05MAY10	22d
S2-2010B50	Pipe Laying & Connection (Welding)	15	14APR10	28APR10	06MAY10	20MAY10	22d
S2-2010B50	Construction of Chamber	75	28APR10	12JUL10	21MAY10	03AUG10	22d
S2-2020	Portion A Kiosk For RTU & Connect To SCADA	51	13JUL10	17JUL10	09AUG10	08AUG10	22d
S2-2020A10	Portion A Kiosk For RTU & Connect To SCADA	30	27JUL10	25AUG10	09AUG10	07SEP10	13d
S2-2030	Portion A Pipe Trough Construction CH88.5-102	30	18JUL10	16AUG10	09AUG10	07SEP10	22d
S2-2030B10	Excavation & Shoring For Pipe Trough	30	18JAN10	16FEB10	04FEB10	05MAR10	17d
S2-2030B20	Pipe Trough Concreting & Associated Works	40	20JAN10 *	28FEB10	05JUN10	14JUL10	136d
S2-2040	Portion A Pipe Works CH88.5-102 (PT)	30	17FEB10	10MAR10	15JUL10	24JUL10	136d
S2-2040B10	Pipe Laying & Connection (Welding)	5	14APR10	18APR10	23JUL10	29JUL10	102d
S2-2040B20	Construction of Saddle	5	19APR10	23APR10	30JUL10	03AUG10	102d
S2-2050	Portion A Pipe Works CH102.0-105.0 (O)	60	28APR10	17MAY10	04AUG10	08AUG10	102d
S2-2060	Pipe Testing & Reinstatement	30	18AUG10	24OCT10	08SEP10	07SEP10	113d
S2-2060A10	Pipe Testing & Reinstatement	60	17AUG10	15OCT10	08SEP10	06NOV10	22d

Start date: 07SEP09  
 Finish date: 06NOV12  
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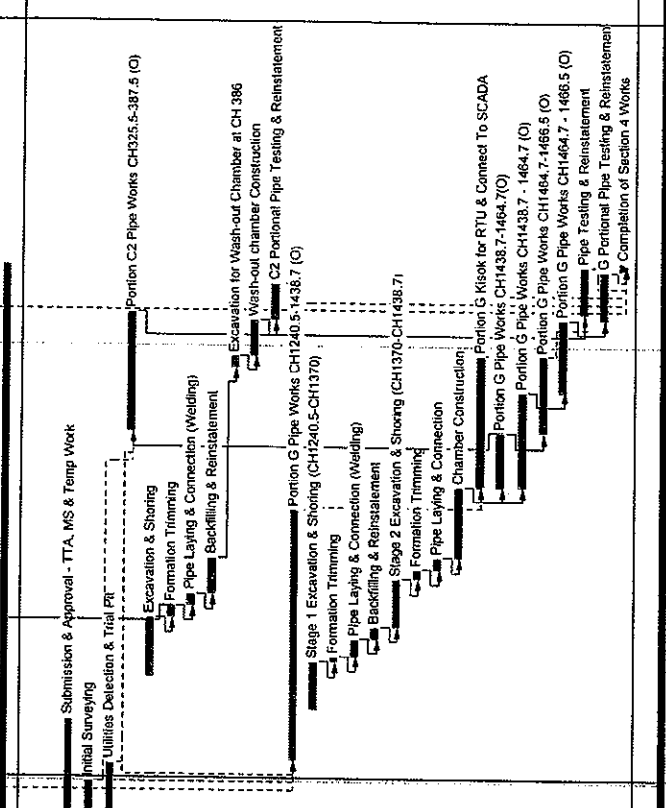
3 Months Rolling Program (January 2011)

Wo Hing - Penta-Ocean Joint Venture

Legend:  
 Early bar  
 Progress bar  
 Critical bar  
 Summary bar  
 Start milestone point  
 Finish milestone point

Contract No. 99WSD008  
Laying of Western Cross Harbour Main & Associated Land Mains from West Kowloon to Sai Ying Pun

Act ID	Description	Orig	Early Start	Early Finish	Late Start	Late Finish	Total Float	2011												
								JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Section 4									Completion of Section 2 Works											
Land Works									06NOV10*											
SA-2010	Completion of Section 2 Works	0	06NOV10*	06NOV10*	07SEP09 A	09MAR11	0													
SA-1010	Submission & Approval - TTA, MS & Temp Work	120	07SEP09 A	20FEB10	07SEP09 A	28MAY10	98d													
SA-1020	Initial Surveying	90	07SEP09 A	31DEC09 A	07SEP09 A	31DEC09 A	0													
SA-1030	Utilities Detection & Trial Pit	20	16NOV09 A	15JAN10	16NOV09 A	23APR10	38d													
SA-2010	Portion C2 Pipe Works CH325.5-387.5 (O)	100	21OCT10	28JAN11	21OCT10	28JAN11	0													
SA-2010810	Excavation & Shoring	50	23MAY10	17MAY10	14APR10	02JUN10	16d													
SA-2010920	Formalton Trimming	10	18MAY10	12JUN10	03JUN10	22JUN10	16d													
SA-2010930	Pipe Laying & Connection (Welding)	10	28MAY10	06JUN10	13JUN10	22JUN10	16d													
SA-2010940	Backfilling & Reinstatement	30	07JUN10	06JUL10	23JUN10	22JUL10	16d													
SA-2010950	Excavation for Wash-out Chamber at CH 386	10	14DEC10	23DEC10	30DEC10	08JAN11	16d													
SA-2010960	Wash-out chamber Construction	30	24DEC10	22JAN11	08JAN11	07FEB11	16d													
SA-2010980	C2 Portional Pipe Testlog & Reinstatement	30	23JAN11	21FEB11	08FEB11	09MAR11	16d													
SA-2020	Portion G Pipe Works CH1240.5-1438.7 (O)	210	19JAN10	16AUG10	24APR10	19NOV10	95d													
SA-2020810	Stage 1 Excavation & Shoring (CH1240.5-CH1370)	40	02MAR10*	10APR10	02MAR10	10APR10	0													
SA-2020820	Formalton Trimming	5	11APR10	15APR10	11APR10	15APR10	0													
SA-2020830	Pipe Laying & Connection (Welding)	15	10APR10	30APR10	10APR10	30APR10	0													
SA-2020840	Backfilling & Reinstatement	10	01MAY10	10MAY10	01MAY10	10MAY10	0													
SA-2020850	Stage 2 Excavation & Shoring (CH1370-CH1438.7)	40	11MAY10	19JUN10	11MAY10	19JUN10	0													
SA-2020870	Formalton Trimming	8	20JUN10	27JUN10	20JUN10	27JUN10	0													
SA-2020880	Pipe Laying & Connection	10	28JUN10	07JUL10	28JUN10	07JUL10	0													
SA-2020890	Chamber Construction	60	08JUL10	05SEP10	08JUL10	05SEP10	0													
SA-2040	Portion G Kiosk for RTU & Connect To SCADA	110	06SEP10	24DEC10	20NOV10	09MAR11	75d													
SA-2040810	Portion G Pipe Works CH1438.7-1464.7 (O)	45	06SEP10	20OCT10	06SEP10	20OCT10	0													
SA-2050	Portion G Pipe Works CH1438.7 - 1464.7 (O)	80	06SEP10	24NOV10	11SEP10	29NOV10	5d													
SA-2050810	Portion G Pipe Works CH1464.7 - 1466.5 (O)	65	21OCT10	24DEC10	24NOV10	29NOV10	35d													
SA-3010	Pipe Testing & Reinstatement	60	25NOV10	23JAN11	30NOV10	28JAN11	5d													
SA-3010A10	G Portional Pipe Testing & Reinstatement	40	23JAN11	04MAR11	29JAN11	09MAR11	5d													
SA-3020	Completion of Section 4 Works	0	09MAR11*	09MAR11*	09MAR11*	09MAR11*	0													
Section 5									05NOV12											
Landscape Softworks and Establishment Works									07SEP09 A											
BS-9010	Landscape works	846	07SEP09 A	28APR12	07SEP09 A	05NOV12	191d													
BS-9020	Reinstatement of Portion H1 & H2	203	07NOV11	27MAY12	17APR12	05NOV12	162d													
BS-9030	Reinstatement of Portion H1 & H2 Redevelop to LCS	0	0	27MAY12	05NOV12	05NOV12	162d													
BS-9000	Completion of Section 5 Works	0	0	05NOV12*	05NOV12*	05NOV12*	0													



Start date  
Finish date  
Date due  
Run date  
Page number  
c. Primavera Systems, Inc.

07SEP09  
05NOV12  
04JAN10  
12JAN11  
7A  
7A

Legend:  
 ■ Early start  
 ■ Progress bar  
 ■ Critical bar  
 ■ Summary bar  
 ▲ Start milestone point  
 ▲ Finish milestone point

3 Months Rolling Program (January 2011)

## **Appendix G**

# **Implementation Schedule of Environmental Mitigation Measures (EMIS)**





	Location	Implementation Status		
		Implemented	Partially implemented	Not implemented
<b>Environmental Protection Measures</b>				
<b>Noise Impact</b>				
Well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	All areas	√		
Air compressors and hand held breakers should have noise labels.	All areas	√		
Compressors and generators should operate with door closed.	All areas	√		
Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	All areas	√		
<b>Water Quality</b>				
<b>Mitigation Measures for Dredging</b>				
Dredging should be undertaken using one grab dredger only with a maximum production rate of 4,000m <sup>3</sup> per day.	Marine	√		
Deployment of frame type silt curtain should be fully enclose the grab while dredging works are in progress.	Marine	√		
Deployment of silt screen should be at the sea water intake at Kowloon South Salt Water Pumping Station while dredging works are in progress	Marine		√	
Tight-closing grabs should be used to minimize the loss of sediment to suspension during dredging works. For dredging of any contaminated mud, closed watertight grabs must be used.	Marine	√		
All vessels should 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	Marine	√		
The decks of all vessels should be kept tidy and free of oil or other substances that might be accidentally or otherwise washed overboard	Marine		√	
Adequate free board shall be maintained on barges to ensure that decks are not washed by wave action.	Marine	√		
All barges used for the transport of dredged materials should be fitted with tight bottom seals to prevent leakage of material during loading and transport	Marine	√		
Construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present in the water within the site or dumping grounds	Marine	√		
Loading of barges should be controlled to prevent splashing of material into the surrounding waters. Barges should not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation	Marine	√		
The speed of vessels should be controlled within the works area to prevent propeller wash from stirring up the seabed sediments	Marine	√		
<b>Mitigation Measures for other Construction Activities</b>				
Sedimentation tanks with sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m <sup>3</sup> capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity should be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped	All areas	√		
Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the storm runoff being directed into foul sewers	All areas	√		
All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads.	All areas			√
An adequately designed and located wheel washing bay should be provided at every site exit, and wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process.	All areas			√
The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains	All areas			√
Fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters of the Victoria Harbour and Western Harbour WCZs	All areas	√		





Environmental Protection Measures		Location	Implementation Status		
			Implemented	Partially implemented	Not implemented
<b>Water Quality</b>					
<b>Mitigation Measures for other Construction Activities</b>					
<ul style="list-style-type: none"> <li>Portable chemical toilets should be used to handle construction workforce sewage prior to discharge to the existing trunk sewer. Sufficient numbers of portable toilets shall be provided by a licensed contractor to serve the construction workers. The Contractor shall also be responsible for waste disposal and maintenance practices.</li> <li>Construction site runoff should be prevented or minimised in accordance with the guidelines stipulated in the EPD's Practice Note for Professional Persons, Construction Site Drainage (ProPECC PN 1/94). All discharges from the construction site should be controlled to comply with the standards for effluents discharged into the Victoria Harbour WCZ under the TM-DSS.</li> <li>Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.</li> </ul>	All areas	√			
<b>Waste Management</b>					
<b>C&amp;D Materials</b>					
<ul style="list-style-type: none"> <li>Excavated materials should be reused on-site as backfilling material and for landscaping works as far as practicable.</li> <li>C&amp;D material generated from excavation works should be disposed of at public fill reception facilities for other beneficial uses.</li> <li>A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed</li> <li>A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.</li> </ul>	All areas	√			√
<b>Chemical Waste</b>					
<ul style="list-style-type: none"> <li>Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately.</li> <li>Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc.</li> <li>The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility.</li> </ul>	All areas	√			
<b>General Refuse</b>					
<ul style="list-style-type: none"> <li>General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material.</li> <li>A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material.</li> <li>An enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>	All areas	√			
<b>Marine Dredged Sediment (During transportation and disposal)</b>					
<ul style="list-style-type: none"> <li>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 dredgers before the vessel is moved</li> <li>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 EPD</li> <li>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.</li> </ul>	Marine	√			
<b>Good Site Practices</b>					
<ul style="list-style-type: none"> <li>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</li> <li>Training of site personnel in proper waste management and chemical handling procedures</li> <li>Provision of sufficient waste disposal points and regular collection of waste</li> </ul>	All areas	√			
	All areas	√			
	All areas	√			



Environmental Protection Measures		Implementation Status		
Location		Implemented	Partially implemented	Not implemented
<b>Waste Management</b>				
<b>Good Site Practices</b>				
	<ul style="list-style-type: none"> <li>Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.</li> <li>Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers</li> </ul>	√		
<b>Waste Reduction Measures</b>				
	<ul style="list-style-type: none"> <li>Sort C&amp;D material from demolition and decommissioning of the existing facilities to recover recyclable portions such as metals</li> <li>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</li> <li>Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force</li> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials</li> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste</li> </ul>	√		
	<ul style="list-style-type: none"> <li>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</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste</li> </ul>	√		
<b>Marine Ecology</b>				
	<ul style="list-style-type: none"> <li>Use of one grab dredger only with a maximum production rate of 4,000m<sup>3</sup> per day for dredging.</li> <li>Deployment of frame type silt curtain to fully enclose the grab while dredging works are in progress.</li> <li>Deployment of silt screen at the sea water intake at Kowloon South Salt Water Pumping Station while dredging works are in progress.</li> <li>Good site practices to avoid silt runoff from construction works associated with the construction of the submarine watermain.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Deployment of frame type silt curtain to fully enclose the grab while dredging works are in progress.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Deployment of silt screen at the sea water intake at Kowloon South Salt Water Pumping Station while dredging works are in progress.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Good site practices to avoid silt runoff from construction works associated with the construction of the submarine watermain.</li> </ul>	√		
<b>Good Site Practices</b>				
	<ul style="list-style-type: none"> <li>The Environmental Permit should be displaced conspicuously on site.</li> <li>Construction noise permits should be posted at site entrance or available for site inspection.</li> <li>Chemical storage area provided with lock and located on sealed areas.</li> <li>All chemicals should be placed at the banded area with adequate band capacity (&gt;110% of largest tank).</li> <li>Any unused chemicals or those with remaining functional capacity should be recycled.</li> <li>All generators, fuel and oil storage are within bundle areas.</li> <li>Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.</li> <li>A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>The Environmental Permit should be displaced conspicuously on site.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Construction noise permits should be posted at site entrance or available for site inspection.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Chemical storage area provided with lock and located on sealed areas.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>All chemicals should be placed at the banded area with adequate band capacity (&gt;110% of largest tank).</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Any unused chemicals or those with remaining functional capacity should be recycled.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>All generators, fuel and oil storage are within bundle areas.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.</li> </ul>	√		
	<ul style="list-style-type: none"> <li>A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.</li> </ul>	√		



## Appendix H

### Statistical Analysis of the Monitoring Parameters between Quarterly Mean and Ambient Mean

## Statistical Analysis of the Trend of Dissolved Oxygen

### t-test

Group Name	N	Mean	Std Dev	SE
Quarterly Mean	1998	5.9147	0.1459	0.0033
1.3 times of Ambient Mean (130% of Baseline Mean)	648	8.1835	0.2680	0.0105

### Result:

Probability that two variances are equal (f-test) = 0

Difference between means = 0.7312 (Std Dev = 0.3069 and SE = 0.011)  
(95% CI : 0.7096 < Diff < 0.7528)

t-value of difference = 66.338 (775 degrees of freedom)  
P = 1 (>0.05)

### Conclusion:

There is no statistically significant difference of Dissolved Oxygen between 1.3 times of ambient mean and quarterly mean.

## Statistical Analysis of the Trend of Turbidity

### t-test

Group Name	N	Mean	Std Dev	SE
Quarterly Mean	666	4.6002	0.4955	0.0192
1.3 times of Ambient Mean (130% of Baseline Mean)	216	6.7413	1.3077	0.0892

### Result:

Probability that two variances are equal (f-test) = 0

Difference between means = 2.1411 (Std Dev = 1.8042 and SE = 0.0608)  
(95% CI : 2.0219 < Diff < 2.2603)

t-value of difference = 35.204 (880 degrees of freedom)  
P = 1 (>0.05)

### Conclusion:

There is no statistically significant difference of Turbidity between 1.3 times of ambient mean and quarterly mean.



## Statistical Analysis of the Trend of Suspended Solids

### t-test

Group Name	N	Mean	Std Dev	SE
Quarterly Mean	666	8.4172	0.5555	0.0215
1.3 times of Ambient Mean (130% of Baseline Mean)	216	12.7839	2.4624	0.1679

### Result:

Probability that two variances are equal (f-test) = 0

Difference between means = 4.3667 (Std Dev = 3.0415 and SE = 0.1025)  
(95% CI : 4.1657 < Diff < 4.5677)

t-value of difference = 42.59 (880 degrees of freedom)  
P = 0 (<0.05)

### Conclusion:

There is statistically significant difference of Suspended Solids between 1.3 times of ambient mean and quarterly mean.



**Appendix I**  
**Site General Layout plan**

**NOTES :**

1. THIS DRAWING SHALL BE READ IN CONNECTION WITH DRAWING NO. 241239/6/030 TO 030A.

**LEGEND :**

- PROPOSED FRESH WATERMAIN
- PROPOSED SALT WATERMAIN
- PROPOSED WORKS LIMIT
- CLY (1/2")
- PORTION C1
- PORTION C2 (SECTION 4)
- PORTION C3
- PORTION C4
- PORTION C5
- PORTION C6
- PORTION C7
- PORTION C8
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- PORTION C96
- PORTION C97
- PORTION C98
- PORTION C99
- PORTION C100

THIS DRAWING SHALL BE READ IN CONNECTION WITH DRAWING NO. 241239/6/030 TO 030A.

SECTION 1

SECTION 2

SECTION 4

01	100	01	100	01	100
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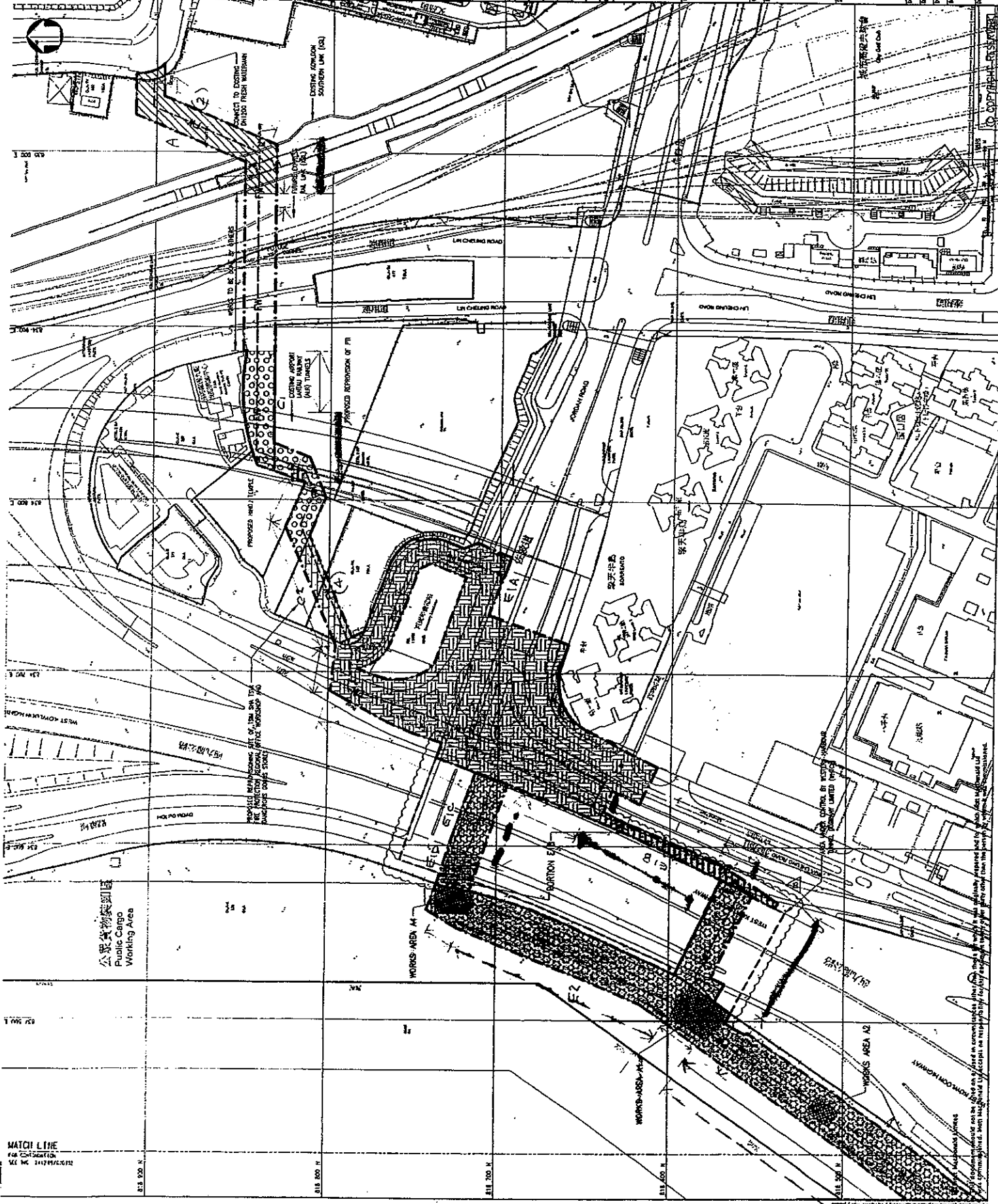
THE GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION  
WATER SUPPLIES DEPARTMENT

9 MSD/08

LAYING OF WESTERN CROSS HARBOUR MAIN  
AND ASSOCIATED LAND MAINS FROM WEST  
KOWLOON TO SAI YING PUN

POSSESSION OF SITE  
(SHEET 1 OF 5)

Scale	1:1000	Drawn by	14/12/08
Checked by		Reviewed by	
Approved by		Authorised by	
Project No.	9 MSD/08	Sheet No.	10
Revision		Date	
Drawn by		Checked by	
Checked by		Approved by	
Approved by		Authorised by	
Project No.	9 MSD/08	Sheet No.	10
Revision		Date	
Drawn by		Checked by	
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Approved by		Authorised by	

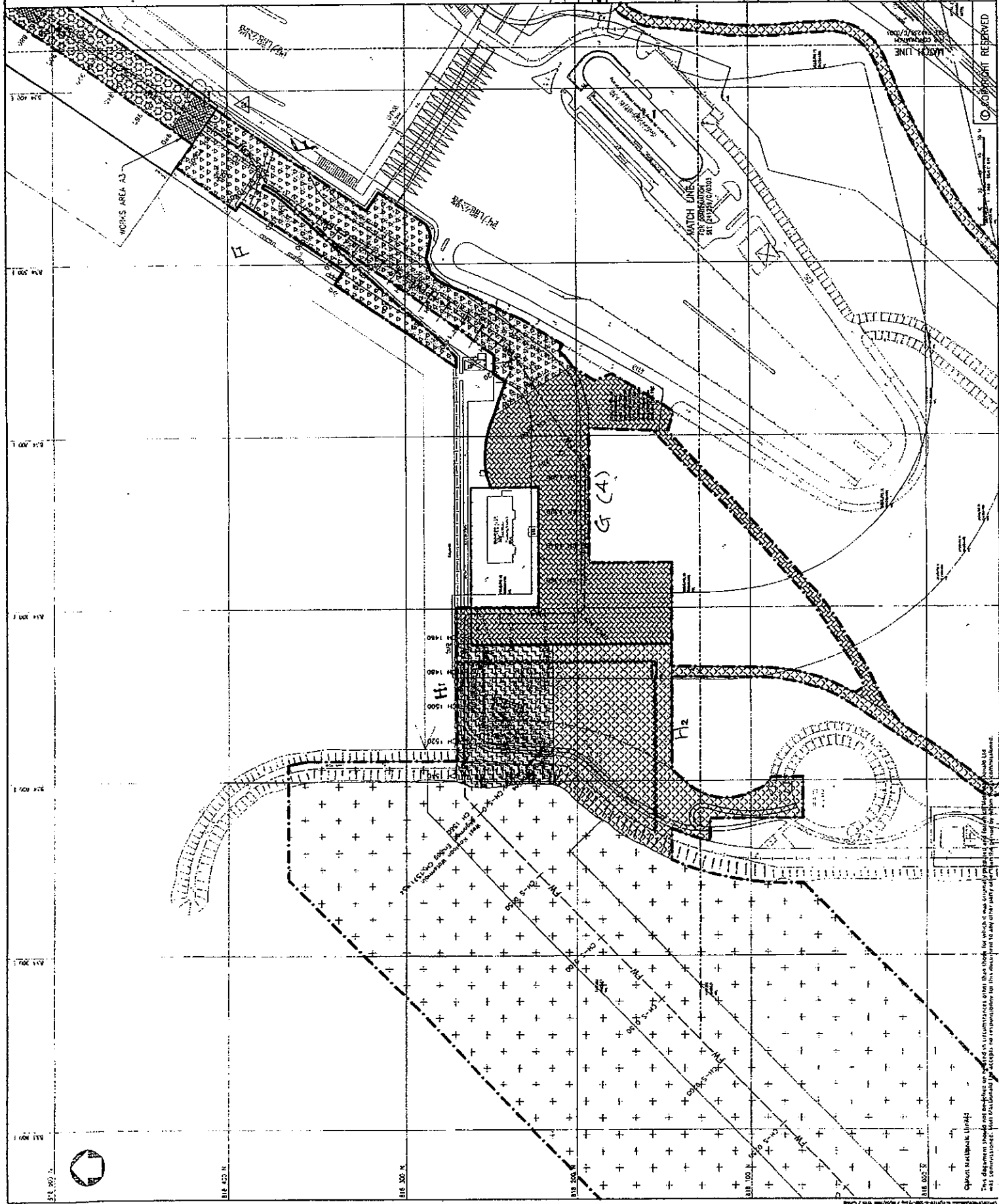


MATCH LINE  
FOR CONTINUATION  
SEE NO. 241239/6/030

This drawing is a reproduction of the original drawing. It is not to be used as a basis for any other drawing or construction. It is the responsibility of the user to ensure that the drawing is used in accordance with the relevant specifications and standards. The user is advised to check the drawing for any errors or omissions before use. The user is also advised to contact the relevant authorities for any further information.

**NOTES**

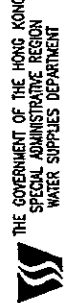
- 1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 241239/02/01 AND 03/01 TO 03/05.
- 2. THE LEGEND SHALL REFER TO DRAWING NO. 241239/02/01.



NO.	DATE	BY	REVISION
01	12/12/98	J. CHAN	ISSUE FOR TENDER APPROVAL NO. 1
02	03/04/99	P. CHAN	REVISE APPROVAL NO. 2
03	03/04/99	P. CHAN	REVISE APPROVAL NO. 3
04	03/04/99	P. CHAN	REVISE APPROVAL NO. 4
05	03/04/99	P. CHAN	REVISE APPROVAL NO. 5
06	03/04/99	P. CHAN	REVISE APPROVAL NO. 6
07	03/04/99	P. CHAN	REVISE APPROVAL NO. 7
08	03/04/99	P. CHAN	REVISE APPROVAL NO. 8
09	03/04/99	P. CHAN	REVISE APPROVAL NO. 9
10	03/04/99	P. CHAN	REVISE APPROVAL NO. 10

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THE GOVERNMENT OF THE HONG KONG  
 SPECIAL ADMINISTRATIVE REGION  
 WATER SUPPLIES DEPARTMENT

PROJECT NO. 9/WSD/08  
 LAYING OF WESTERN CROSS HARBOUR MAIN  
 AND ASSOCIATED LAND MAINS FROM WEST  
 KOWLOON TO SAU YING PUN

POSSESSION OF SITE  
 (SHEET 2 OF 5)

NO.	DATE	BY	REVISION
01	12/12/98	J. CHAN	ISSUE FOR TENDER APPROVAL NO. 1
02	03/04/99	P. CHAN	REVISE APPROVAL NO. 2
03	03/04/99	P. CHAN	REVISE APPROVAL NO. 3
04	03/04/99	P. CHAN	REVISE APPROVAL NO. 4
05	03/04/99	P. CHAN	REVISE APPROVAL NO. 5
06	03/04/99	P. CHAN	REVISE APPROVAL NO. 6
07	03/04/99	P. CHAN	REVISE APPROVAL NO. 7
08	03/04/99	P. CHAN	REVISE APPROVAL NO. 8
09	03/04/99	P. CHAN	REVISE APPROVAL NO. 9
10	03/04/99	P. CHAN	REVISE APPROVAL NO. 10

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 241239/02/0302



NOTES :

1. THIS DRAWING SHALL BE READ IN CONNECTION WITH DRAWING NOS. SA1128/03/001 TO 003 AND 004 TO 005.
2. THE LEGEND SHALL REFER TO DRAWING NO. SA1128/03/001.

01	DATE OF ISSUE	21/12/07
02	SCALE	AS SHOWN
03	PROJECT NO.	SA1128/03/001
04	PROJECT NAME	LAYING OF WESTERN CROSS HARBOUR MAIN AND ASSOCIATED LAND MAINS FROM WEST KOWLOON TO SAU YING PUN

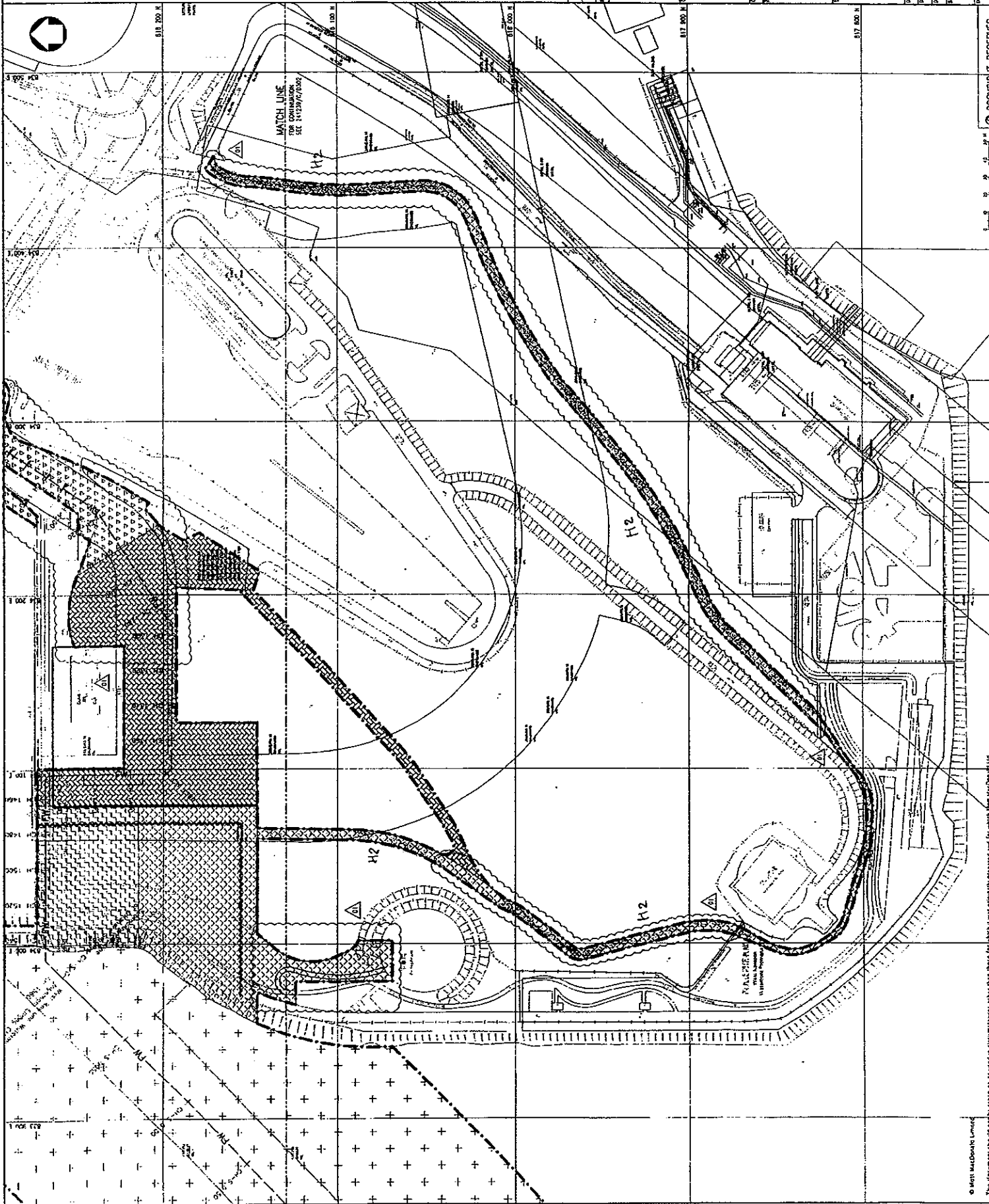
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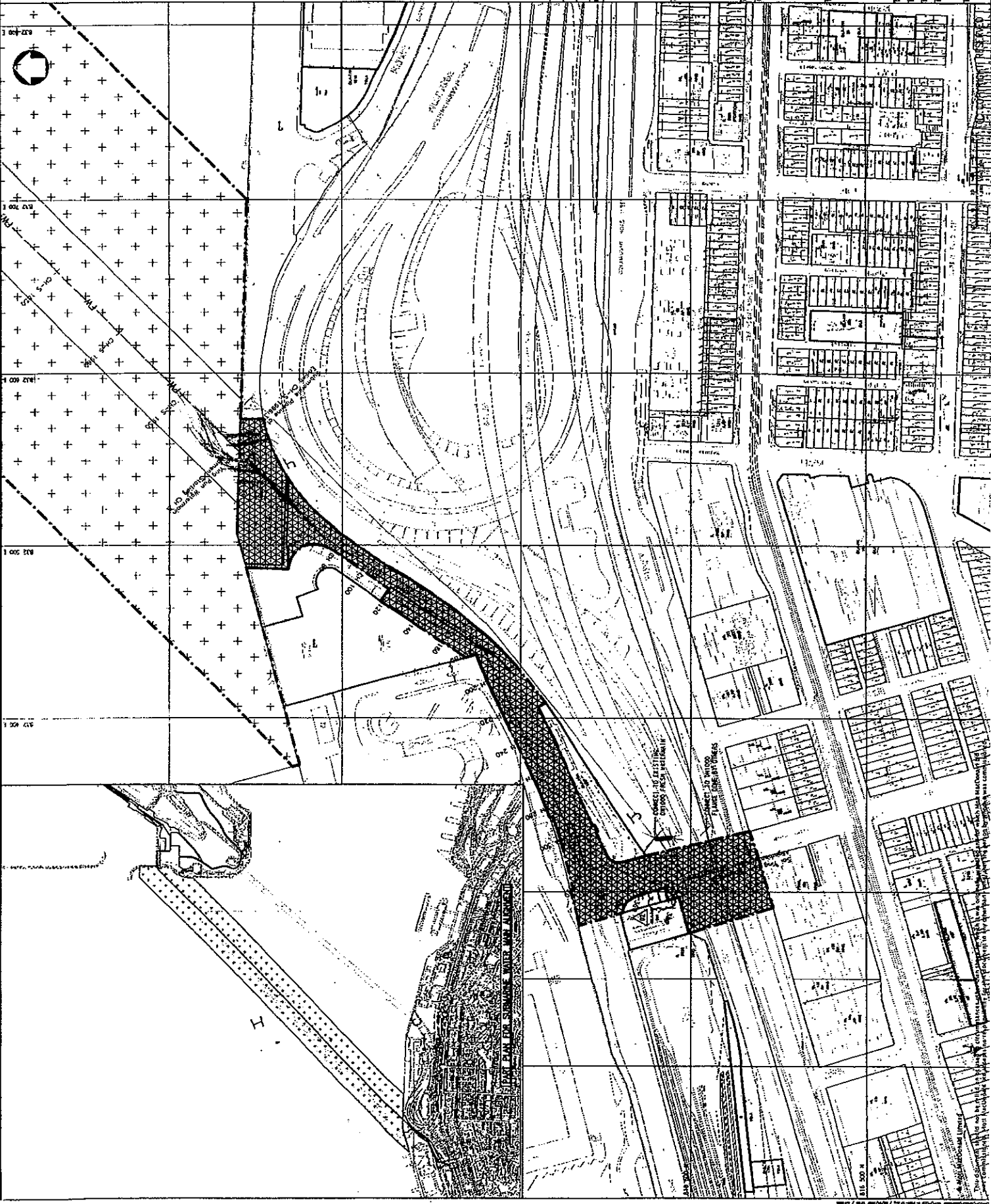
POSSESSION OF SITE  
 (SHEET 3 OF 5)

Checked by	FL	FL	FL	FL	FL	FL	FL	FL	FL
Drawn by	FL	FL	FL	FL	FL	FL	FL	FL	FL
Scale	1:1000 @A1								
Project No.	SA1128								
Sheet No.	TEN								
Drawing No.	9/NSD/08/001/03								



NOTES :

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NOS. 241239/6/0301 TO 0303 AND 0305.
2. THE LEGEND SHALL REFER TO DRAWING NO. 241239/6/0301.



01	APR 09	PL	FINAL APPROVAL NO. 1	4/1/09
02	MAY 08	PL	FINAL APPROVAL NO. 3	5/1/08
03	MAY 08	PL	FINAL APPROVAL NO. 3	5/1/08
04	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08
05	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08
06	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08
07	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08
08	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08
09	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08
10	DEC 08	PL	FINAL APPROVAL NO. 3	12/1/08

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9/WS3D/08

LAYING OF WESTERN CROSS HARBOUR MAIN  
 AND ASSOCIATED LAND MAINS FROM WEST  
 KOWLOON TO SAU YING FUN

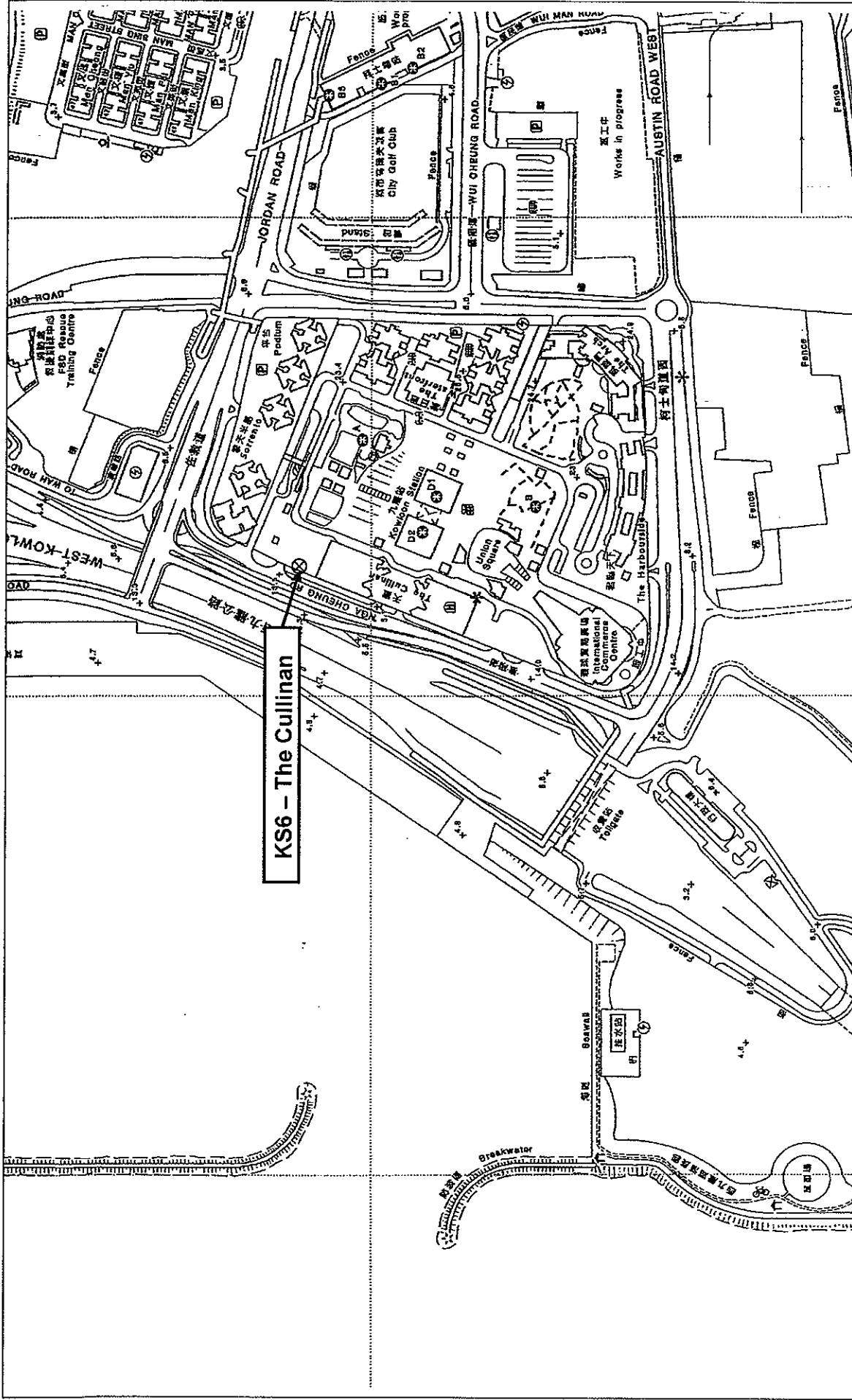
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Scale	1:1000	Sheet No.	TEN
Project No.	9/WS3D/08	Revision No.	02
Drawn By		Checked By	
Approved By		Supervised By	
Issue Date	24/12/08	Issue No.	10





## Figures



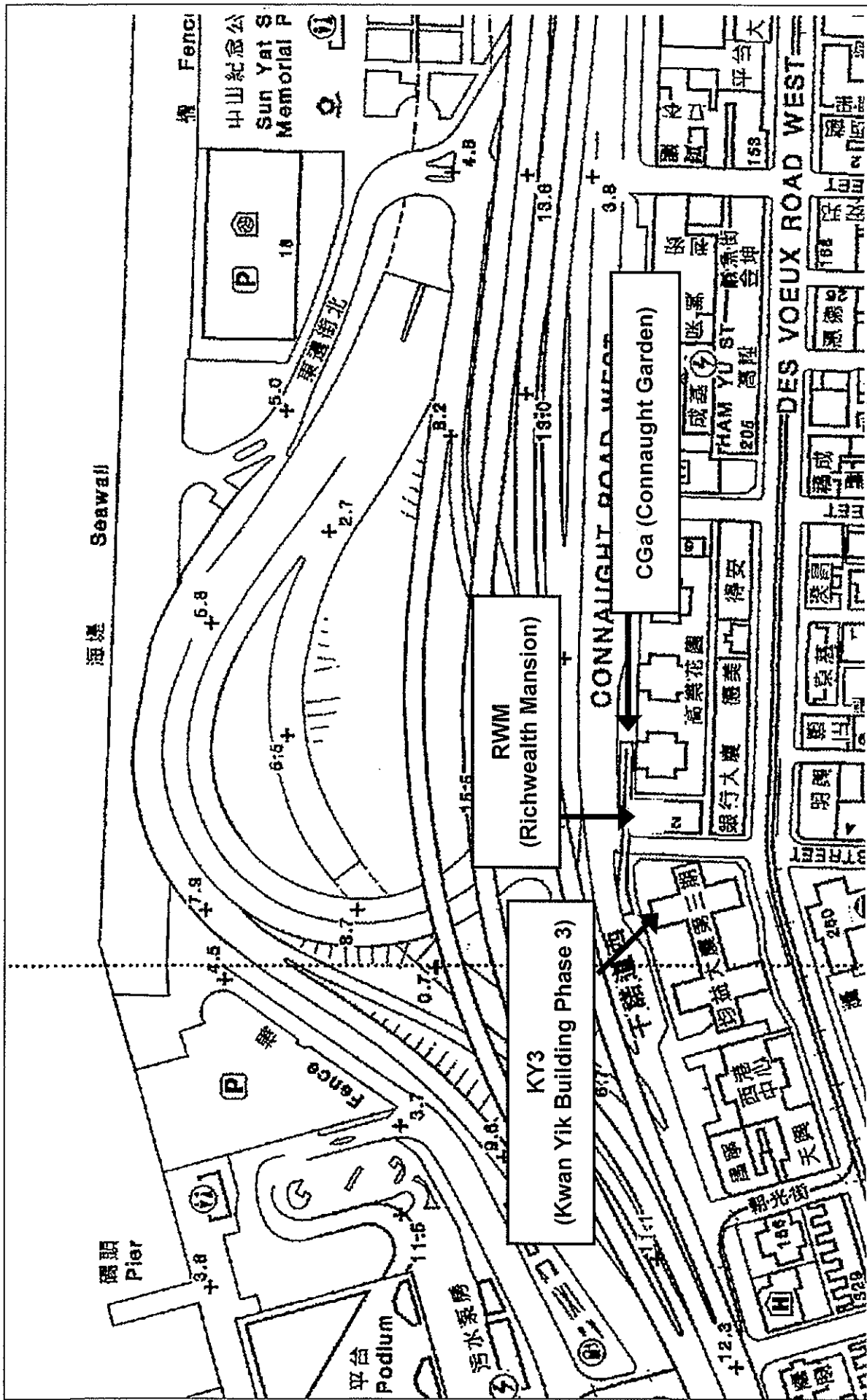
Contract No. 9/WSD/08 Laying of Western Cross Harbour Main and Associated Land Mains for West Kowloon to Sai Ying Pun

Figure 1

Location of Noise Monitoring Station at West Kowloon

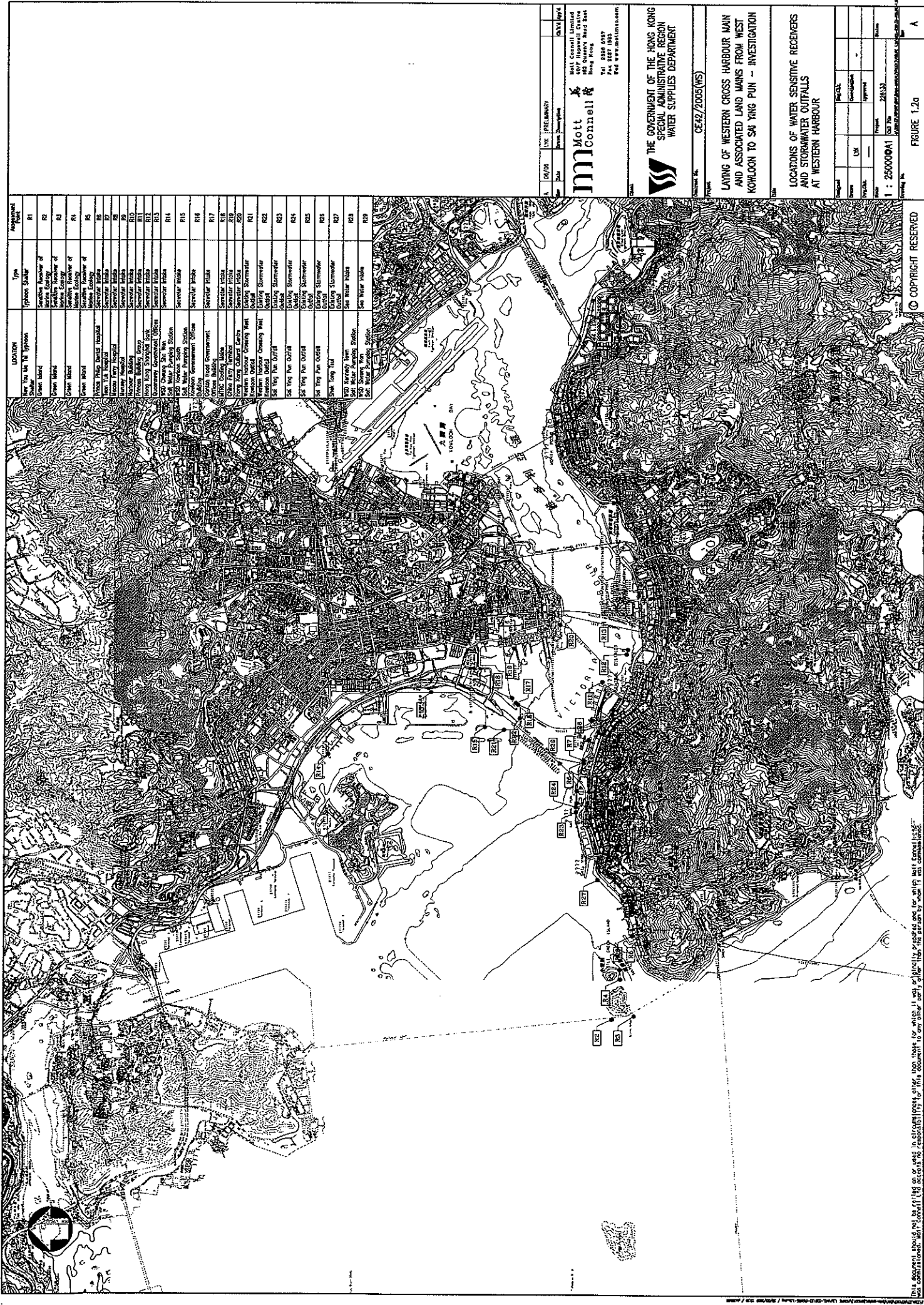


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Figure 2  
Locations of Noise Monitoring Stations at Sai Ying Pun



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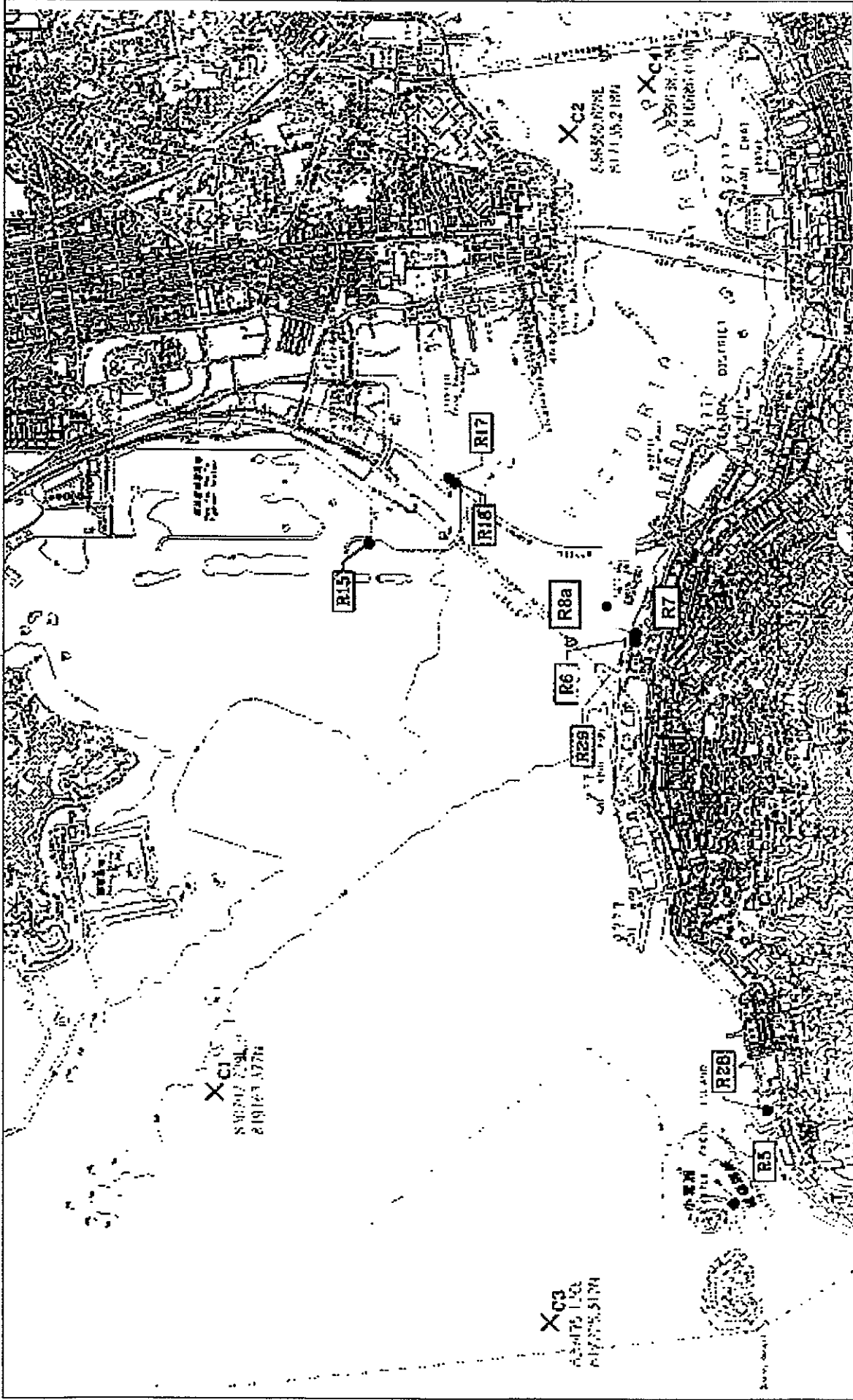
Project No. CE42/2003(WS)  
 LAYING OF WESTERN CROSS HARBOUR MAIN AND ASSOCIATED LAND MAINS FROM WEST KOHLOON TO SA YING PUN - INVESTIGATION

LOCATIONS OF WATER SENSITIVE RECEIVERS AND STORMWATER OUTFALLS AT WESTERN HARBOUR

Category	Phase	DK	LVK	LVK	LVK	Project	Scale
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FIGURE 1.2a  
 A

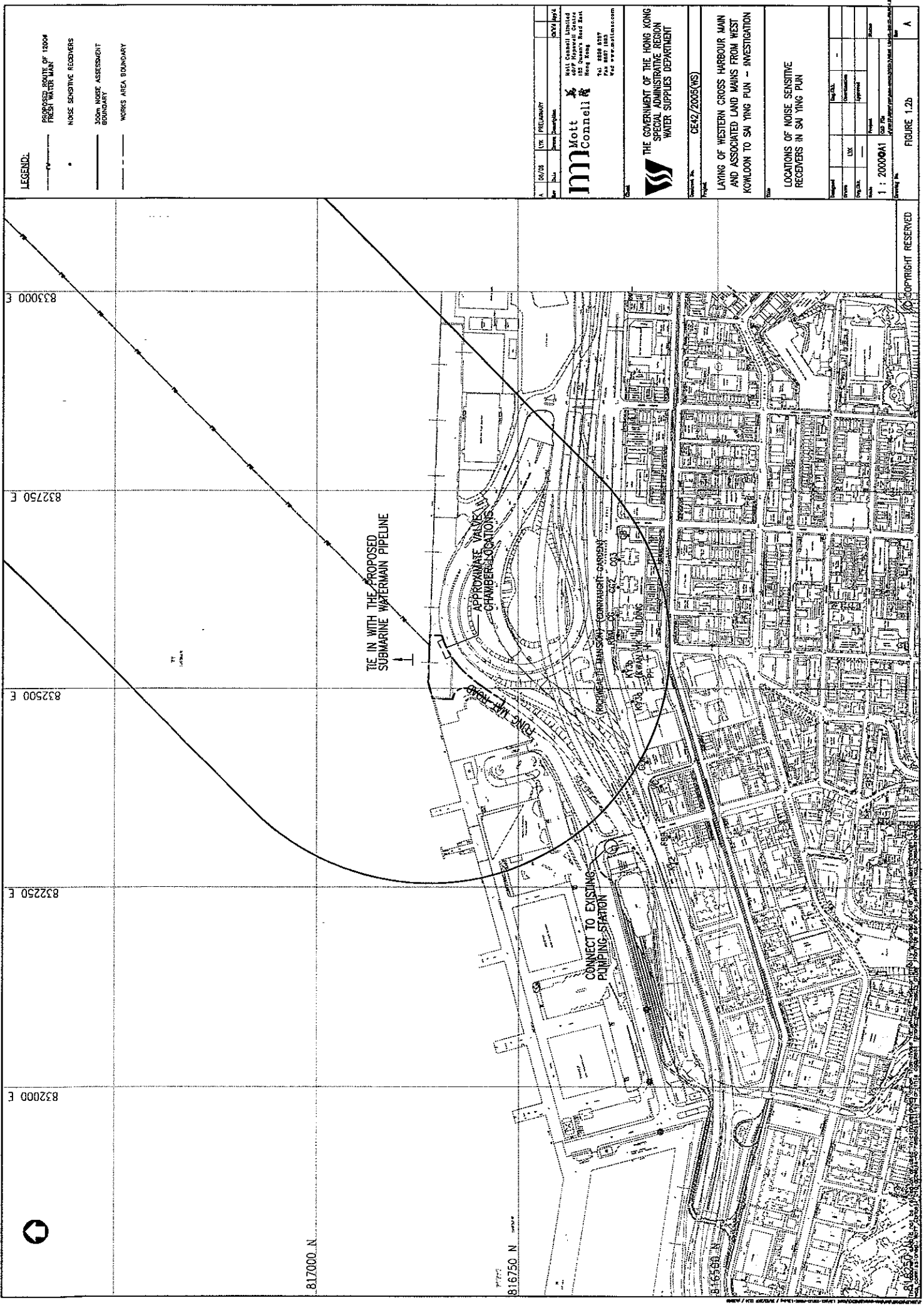




Contract No. 9/WSD/08 Laying of Western Cross Harbour Main and Associated Land Mains for West Kowloon to Sai Ying Pun

Figure 3  
Locations of Water Quality Monitoring Stations





**LEGEND:**

- PROPOSED ROUTE OF 10004 PRESENT WATER MAIN
- - - NOISE SENSITIVE RECEIVERS BOUNDARY
- WORKS AREA BOUNDARY

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Project No. CE42/2005(VS)

LAYING OF WESTERN CROSS HARBOUR MAIN  
 AND ASSOCIATED LAND MAINS FROM WEST  
 KOWLOON TO SAI YING PUN - INVESTIGATION

LOCATIONS OF NOISE SENSITIVE  
 RECEIVERS IN SAI YING PUN

Project No.	CE42/2005(VS)
Scale	1:20000
Date	2005/01
Author	
Checker	
Approver	
Project Manager	

FIGURE 1.2b

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**LEGEND:**

- PROPOSED ROUTE OF 1200# FRESH WATER MAIN
- NOISE SENSITIVE RECEIVERS
- TEMPORARY PLATFORM
- 300m NOISE ASSESSMENT BOUNDARY
- WORKS AREA BOUNDARY

NO.	DATE	TYPE	DESCRIPTION
1	2003/07/24	PRELIMINARY	Issue for Comment

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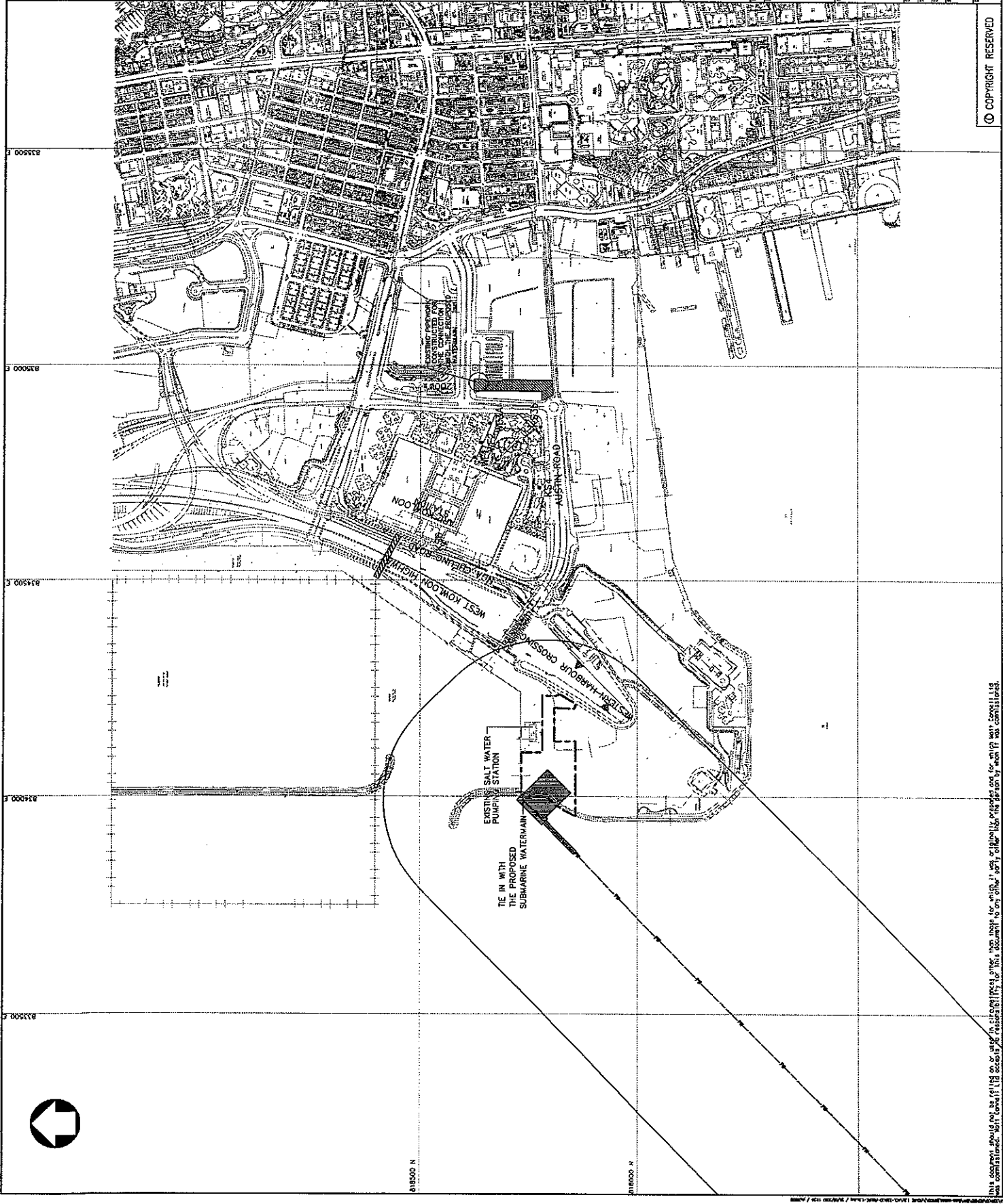
DE42/2003 (WS)

LAYING OF WESTERN CROSS HARBOUR MAIN  
AND ASSOCIATED LAND MAINS FROM WEST  
KOWLOON TO SAI YING PUN - INVESTIGATION

LOCATION OF NOISE SENSITIVE  
RECEIVERS IN WEST KOWLOON

NO.	DATE	TYPE	DESCRIPTION
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FIGURE 1.2c



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