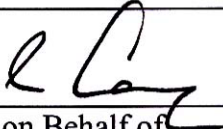


**Proposed Extension of Public Golf Course  
at Kau Sai Chau Island, Sai Kung**

**Monthly Environmental Monitoring & Audit (EM&A) Report  
for January 2007**

**(Report No. 382210/013)**

Report Authorized For Issue By:	
	For and on Behalf of Black & Veatch Hong Kong Limited

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**February 2007**

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	<b>Name</b>	<b>Signature</b>	<b>Date</b>
Prepared	<b>Esther Tong</b>		Feb 2007
Checked	<b>Manuel Chua</b>		Feb 2007
Reviewed	<b>PK Lee</b>		Feb 2007



Your ref : 40040032/CERT/16\_07.doc  
Our ref :

**Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
(Independent Environmental Checker)**

**CHECK CERTIFICATE**

1. We certify that professional skill and care have been used in the checking of the Environmental Team's (ET) No.13 Monthly EM&A Report for January 2007 for the construction of Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung.
2. We certify that the ET's EM&A programme for the reporting period has been satisfactorily executed and the No.13 Monthly EM&A report for January 2007 has been verified.
3. We would comment that our evaluation of the ET's EM&A is based on a random audit process which cannot be guaranteed to have all non-conformities identified.

Signed



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Independent Environmental Checker

Name Gary Tam

of Hong Kong Productivity Council  
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Date 2 February 2007

## **Executive Summary**

This is the thirteen Monthly Environmental Monitoring and Audit (EM&A) Report prepared by Black & Veatch, the designated Environmental Team (ET), for the Project "Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung". The construction works of golf course was commenced on 16<sup>th</sup> January 2006. This report presents the results of the EM&A works conducted in the month of January 2007 (25<sup>th</sup> December 2006 to 24<sup>th</sup> January 2007).

### Summary of construction works undertaken during this report period

No dredging of the permanent intake and outfall pipelines for the desalination plant has been carried out. Testing of the desalination plant was carried out in the first week of this reporting month. Construction work of Irrigation Lake 1D and associated pipelines for the desalination plant were still in progress. As there is discharge licence for the desalination plant, the plant will not be operated until successful application from EPD.

Site formation work at the scaring areas was carried out during the reporting month and expected to be completed before March 2007 (dry season). According to the latest construction programme prepared by the Contractor (CHEC), most of the northern portion of East Course (GH 3, 5, 7 & 8) will be planted with turf in the dry season of 2007 (February to March). For southern portion of the East Course (GH 11-16), major construction works were site formation and construction of permanent bridges (nos. 10 at Stream B1 and 15 at Stream C) during the reporting month. Central portion will be the last portion planted with turf (GH 1, 2, 9, 10 & 17). According to the site observation, no turf was planted in the East Course during the reporting month. The Contractor confirmed that turfing at Hole 8 will commence on 12 February 2007. Nutrients will be applied and expected that no pesticide will be required for the new planting turf within the first 6 weeks.

Closed low flow drainage system includes lake formation, gravity drains, rising main, underground water tanks and pumping stations. The construction of gravity drain from Lake 1D to existing reservoir was in progress and expected to be completed near the end of the next reporting month (January 2007). The construction of the closed low flow drainage is in progress.

The floating pontoon was located and operated at the designated location according to Environmental Permit (EP). Concrete batching plant has been in operation.

The full scale remediation work for the contaminated soil (originally located at Hole 18 – hotspot L3) at Hole 17 (one of the major fill area) was carried out on 4<sup>th</sup> October 2006. A Final Site Remediation Report (FSRR) prepared by the Contractor was submitted to EPD for comments in the previous reporting month and approved in this reporting month.

Archaeology watching brief has been started since early September 2006 at Holes 11, 12, 14, 15 and 16 and completed in this reporting month. No archaeological material or deposits was identified in the reporting month. Out of 18 monitoring days, there is one remaining monitoring day for Hole 2. The Contractor cannot confirm the excavation day at remaining part of Hole 2.

Regarding the vegetation clearance of Stream B2 buffer zone on 17 November 2006, the Contractor prepared a mitigation work programme for ET and the Engineer to review and HKJC's approval before carrying out the actual mitigation work within the buffer zone during this reporting month. ET has commented on the mitigation work proposal and is waiting for the response from the Contractor before actual work can be carried out on site.

### Environmental Monitoring and Audit Progress

A summary of monitoring activities in this reporting period is shown as follows:

24-hour Total Suspended Particulates (TSP) monitoring at GCA B1	5 times
Water quality monitoring (marine + freshwater)	5 times
Terrestrial Ecology	1 time
Marine Ecology	0 time*
Landscaping & Visual	3 times

\* For marine ecology, it will be carried out on quarterly basis and the next coral monitoring will be on March 2007.

### Air Quality

5 sets of 24-hour TSP monitoring were carried out on 29<sup>th</sup> December 2006, 4<sup>th</sup>, 10<sup>th</sup>, 16<sup>th</sup>, 22<sup>nd</sup> January 2007 at Bungalow A (GCA B1) at Kau Sai Chau during this reporting month. No exceedance of 24-hour TSP was recorded at GCA B1.

### Water Quality

5 sets of water quality monitoring were carried out on 28<sup>th</sup> December 2006, 3<sup>rd</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 22<sup>nd</sup> January 2007 at 9 marine and 7 freshwater monitoring locations. No rainstorm signal was hoisted during the reporting month.

### Terrestrial Ecology

Terrestrial ecology was conducted on 30<sup>th</sup> January 2007. The demarcation of the stream buffer zone had been established for Streams A, B & C. The downstream section of Stream A channel was filled up by boulders as reported in the previous month. The physical condition of Stream C (filled with silt due to silty runoff in November 2006) remained the same as the previous reporting month. The condition of the Stream B2 buffer zone (partially cleared) remained the same as the previous reporting month.

### Marine Ecology

No marine ecology (coral monitoring) was required to conduct in January 2007. The next marine monitoring will be conducted in March 2007.

### Landscaping & Visual

Landscape and visual monitoring and site audits were carried out on 27<sup>th</sup> December 2006, 10<sup>th</sup> and 24<sup>th</sup> January 2007. During the site audit, site formation, vegetation clearance works and building construction were being carried out. The Contractor shall take measures to improve the condition of damaged trees. Damaged trees next to administration building were still unprotected after being damaged by the adjacent construction activities.

The following works have been outstanding since July 2006: (i) no rectification work has been carried out for all mal-pruning transplanted trees, (ii) no provision of any tree protection zones for all retain trees near administration building - construction materials were stockpiled and surrounded at the tree base area, (iii) the cause of the tree death T925 was outstanding, (iv) transplanted tree T848 was in poor condition, and (v) soil around the transplanted trees was dry and more frequent watering (recommended dosage is 20L/day) is required in particular in dry season.

### Environmental Site Auditing

Five weekly joint environmental site audits were carried out on 27<sup>th</sup> December, 1<sup>st</sup>, 9<sup>th</sup>, 16<sup>th</sup> and 23<sup>rd</sup> January 2007, with the Engineer and Contractor's representatives. A monthly joint environmental site audit was carried out on 23<sup>rd</sup> January 2007 by the Contractor's Representative, ET's representative and Independent Environmental Checker (IEC).

### Environmental Non-conformance

#### *Air Quality*

No exceedance of 24-hour TSP was recorded at GCA B1.

#### *Marine Water Quality*

No exceedance was recorded at all marine monitoring stations.

#### *Freshwater Quality*

Eighteen exceedances of turbidity and five exceedances of suspended were recorded at Stream A, Stream B, Stream C and F\_Inland Marsh. All exceedances recorded at all streams (A, B & C) and fresh water inland marsh was considered project-related.

As the upstream monitoring locations at Streams B & C (F\_UB and F\_UC) are located within the construction work area since September 2006, they represent and become impact monitoring stations instead of control stations.

All notifications of exceedances and the subsequent exceedance incident reports have been forwarded to the relevant parties.

For those considered project-related exceedances at all streams and freshwater and marine water, the Contractor was required to critically review the temporary drainage management plan and implement necessary improvement to prevent runoff from the construction site to the marine water and stream courses. The Contractor was also requested to rectify the situation as soon as possible. The water quality monitoring results revealed that the temporary drainage installed on site was insufficient and should be improved especially at those concern areas.

No environmental complaint was received in this reporting month.

For the construction dust generated from the construction site to nearby sensitive receivers (public/golfers), EPD formally issued "Yellow Form" to CHEC on 30 March 2006 after the site inspection on 10 March 2006. EPD carried out routine site inspections and gave verbal warnings to CHEC on (i) dust generation from dusty stockpiles and vehicles at major haul roads and (ii) insufficient installation of hoarding at the main exit/entrance according to the Air Pollution Control Ordinance (APCO) after the site inspection. However, the progress of the dust suppression mitigation measures provided on site was slow. EPD did the site investigation on 15 January 2007 and issued "Pink Form" to CHEC on 17 January 2007. The suspected non-compliance is due to carrying out notifiable work not in accordance with the Schedule of the APCO (Construction Dust) Regulation (Schedule no.14).

According to the EPD latest record, CHEC was convicted for breaching the Water Pollution Control Ordinance (WPCO) and fined \$50,000 in November 2006. The main reason for the prosecution was due to the active pumping/discharge of silty water from the construction site of desalination plant directly into Port Shelter Water Control Zone (WCZ) without provision of proper water treatment facilities on site for



treatment to ensure that the water quality complied with Water Quality Objectives (WQO) of Port Shelter before discharge on 12 June 2006.

### Implementation Status of Environmental Mitigation Measures

The Contractor was reminded the following issues and to take actions if necessary:

#### Air Quality

- Increase frequency of watering at main haul roads and rock breaking areas;
- Pave major haul roads with gravels/concrete to minimize the dust emission due to the heavy traffic;
- Cover all soil/sand/aggregates stockpiles with tarpaulin or other measures to reduce the dust emission; and
- Install hoarding at the main exit/entrance of the construction site;

#### Waste Management

- Properly dispose of the vegetation stockpiles, general refuse and construction waste off-site;
- Provide chemical / chemical waste storage areas and construction waste sorting area; and
- Provide sufficient mobile toilets at remote site areas;

#### Ecology

- Remove remaining rubbles at downstream of Stream A;
- Rectify and remediate the vegetation clearance at Stream B2 buffer zone occurred in November 2006;
- Rectify and remediate the silt deposit at Stream C after the rainstorm occurred in November 2006;

#### Water Quality

- Submission and implementation of Temporary Drainage Management Plan (TDMP) to ER for approval for the coming wet season in 2007 to avoid silty/nutrient/pesticide runoff;
- Provide sufficient mitigation measure for the construction of permanent bridge to avoid runoff;
- Minimize the water quality impact when undertaking cut-and-fill works. It is important to provide sufficient temporary drainage at critical areas to confine, collect and provide proper treatment before discharging to marine water and stream courses to ensure that the water quality is complied with WPCO requirements;
- Provide sufficient treatment facilities especially at water sensitive areas before water discharges from construction site;
- Maintain the integrity of silt curtains and remove settled silt within the silt curtain which have been installed outside the fresh water inland marsh, near Hole 2, near Hole 4, inactive culture zone and Stream A;
- Strengthen the preventive/interim measures for avoiding silty runoff from the exposed areas to the low lying areas. More frequent maintenance of the silt fence is necessary; and
- Provide sufficient temporary drainage system at all temporary bridges;

#### Landscape & Visual

- Protect the retain trees with sufficient watering mainly located at the administration building;
- Provide sufficient water to the retain and transplanted trees in particular during dry season;
- Provide tree protection zone for all retain tree at the administration building; and
- Provide incident report for the death of the trees;

*Future Key Issues*

General issues to be considered in the coming month include:

- Potential dust generation from activities on-site : bulk earthworks at Holes 10 to 16, concrete batching plant operation and soil/sand/aggregates stockpiles;
- Provide sufficient temporary drainage and mitigation measures for construction temporary/permanent crossings at Streams A, B1, B2 and C;
- Implement sufficient and improve the temporary drainage system (and make use of the permanent drainage system) on site to prevent silty/nutrients/pesticides runoff discharging to marine and stream courses before the coming wet season 2007;
- Apply the discharge licence for the desalination plant near to the existing KSC pier before operation;
- Dispose of construction wastes, vegetation and general refuse off-site; and
- Hydroseed the bare ground/temporary/permanent slopes according to the golf course design.

*Key issues at particular areas:*

- Submit the Temporary Drainage Master Plan (TDMP) for the turf establishment period prepared by the Contractor at least one month before implementation for the Engineer and Jockey Club's approval;
- Carry out water quality monitoring for nutrients/pesticides when the turf establishment commence;
- Carry out coral monitoring for the transplanted corals on quarterly basis;
- Carry out coral monitoring when desalination plant operates in dry season;
- Implement filter systems (nutrients and pesticides removal) at Holes 5 and 6;
- Archaeology watching brief at Hole 2 (one day monitoring).

## 1. Introduction

### 1.1 Background of the Project

1.1.1 Black & Veatch (hereinafter called the “ET”) was appointed by Hong Kong Jockey Club (hereinafter called the "Project Proponent") to undertake Environmental Monitoring and Audit (EM&A) for “Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung” (hereinafter called the “Project”). Under the requirements of Section 4 of Environmental Permit EP-224/2005, EM&A programme as set out in the EM&A Manual is required to be implemented. In accordance with the EM&A Manual, environmental monitoring of air quality, water quality, terrestrial and marine ecology, landscape and visual, archaeology (watching brief) and land contamination are required for the Project.

1.1.2 This report summarises the environmental monitoring and audit works for the Project in January 2007 (from 25<sup>th</sup> December 2006 to 24<sup>th</sup> January 2007).

### 1.2 Purpose of the Report

1.2.1 This is the thirteen EM&A report which summarizes the impact monitoring results and audit findings for the EM&A programme during the reporting period from **25<sup>th</sup> December 2006 to 24<sup>th</sup> January 2007**.

### 1.3 Structure of the Report

1.3.1 The structure of the report is shown in Table 1.1.

**Table 1.1 Structure of the Report**

<b>Section</b>		<b>Description</b>
<b>1</b>	Introduction	Details the scope and structure of the report
<b>2</b>	Project Information	Summarizes background and scope of the project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of environmental permits/licenses during the reporting period.
<b>3</b>	Environmental Monitoring Requirement	Summarizes the monitoring parameters, programmes, methodology, frequency, location, action and limit levels, event action plans, environmental mitigation measures as recommended in the EIA report and relevant environmental requirements.
<b>4</b>	Implementation Status on Environmental Mitigation Measures	Summarizes the implementation of environmental protection measures during the reporting period.
<b>5</b>	Monitoring Results	Summarizes the monitoring results obtained in the reporting period.
<b>6</b>	Environmental Site Auditing	Summarizes the audit findings of the weekly site inspections undertaken within the reporting period.
<b>7</b>	Environmental Non-conformance	Summarizes any monitoring exceedance, environmental complaints and environmental summons within the reporting period.
<b>8</b>	Future Key Issues	Summarizes the impact forecast and monitoring schedule for the next three month (25 Feb 2007 – 24 Apr 2007).
<b>9</b>	Recommendations and Conclusions	Lists out any recommendations and provides an overall conclusion of the results and findings of the EM&A programme for the reporting period.

## 2. Project Information

### 2.1 Background

2.1.1 The Project comprises the following major components:

- Construction of the third 18-hole public golf course on the east side of the island, south of the existing golfing area;
- A new irrigation lake to collect surface runoff from the new 18-hole golf course. Water stored at the new irrigation lake can also be diverted to existing reservoir for tertiary treatment and recycling;
- A new desalination plant adjacent to the existing pier to serve as an additional irrigation water supply for the new golf course during dry season; and
- Expansion of existing administration and maintenance buildings.

2.1.2 The potential environmental impacts of the Project have been studied in the Environmental Impact Assessment (EIA) report (EIAO Register No. AEIAR- 091/2005). The EIA was approved on 14 November 2005 under the EIAO. An Environmental Permit (EP-224/2005) was granted on 28 November 2005.

### 2.2 Site Description

2.2.1 A layout plan of the Project is provided in **Figure 1.1**.

### 2.3 Project Organization

2.3.1 Project organization and lines of communication are shown in **Figure 1.2**.

### 2.4 Construction Programme

2.4.1 The tentative construction programme for the Project is presented in **Annex A**. The construction works were commenced on 16 January 2006 and are scheduled to be completed by end of July 2007.

### 2.5 Status of Environmental Submission

2.5.1 A summary of the reporting requirement for compliance with EP conditions of the Project is listed in Table 2.1.

**Table 2.1 Summary of Compliance with EP Conditions**

EP-224/2005	Environmental Permit Submission	Status	Remarks
2.3	Management organization of the main construction companies and/or any form of joint ventures associated with the construction of the Project.	Submitted	At least one week before the commencement of construction of the Project.
2.4	Contamination Assessment Plan (CAP) submission. If land contamination is confirmed by the site investigation, submission of a Remediation Assessment	Submitted	The Final Site Remediation Report (FSRR) was approved by EPD in this reporting month.

EP-224/2005	Environmental Permit Submission	Status	Remarks
	Plan (RAP) including a Contamination Assessment Report (CAR) is required.		
3.6	Detailed methodology for Coral Transplantation submission to the Director for approval.	Approved	Approved on 16 <sup>th</sup> November 2006. Coral transplantation at Site D2 was completed in early December 2006. No dredging work for the desalination plant's intake and outfall pipelines was carried out. AFCD has no comment for the coral donor site survey, coral mapping survey and coral transplantation reports.
4.1	EM&A Manual (revised)	Submitted	At least two weeks before commencement of construction of the Project.
4.3	Baseline Monitoring Report	Submitted	At least two weeks before commencement of construction of the Project
4.5	Monthly EM&A Report	Submitted	within 10 working days after the end of the reporting month
5.1	Set up a dedicated web site and notify the Director in writing the Internet address.	Completed	Within 6 weeks after the commencement of construction of the Project ( <a href="http://www.kscgolf.com/ema/index.asp">http://www.kscgolf.com/ema/index.asp</a> )
3.4	Variation of Environmental Permit for the construction of the temporary crossings at Stream B during wet season.	Completed	Variation of Environmental Permit was approved on 18 <sup>th</sup> August 2006. The revised registered EP was EP-224/2005/A.

## 2.6 Summary of EM&A Requirements

2.6.1 The EM&A programme requires environmental monitoring for air quality, water quality, terrestrial and marine ecology, landscape and visual, archaeology (watching brief) and land contamination. The EM&A requirements for each parameter are described in subsequent sections, including:

- All monitoring parameters;
- Action and Limit Levels for all environmental parameters;
- Event and Action Plans; and
- Environmental mitigation measures, as recommended in the project EIA final report.

2.6.2 A summary of impact EM&A requirements is presented in Table 2.2.

**Table 2.2 Summary of Impact EM&A Requirements**

Impacts	Parameters/descriptions	Locations	Frequencies	Duration
Air Quality	24-Hour TSP	1 Location	Once every 6 days	During Construction
	1-Hour TSP	1 Location	Three times in every 6 days	During Construction (As required when complaint received)
Water Quality	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity and SS	9 marine and 7 freshwater locations	<b>First 3 months</b> 3 times a week, mid-ebb and mid-flood tides. If there is no exceedance occurs for the first 3 months, reduce to once per week.	During Construction
	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity, SS, NO3-N, NO2-N, NH3-N, TP and selected pesticides.	9 marine and 7 freshwater locations	Once per week. If there is no exceedance occurs, monitoring frequency is subjected to change and shall be agreed with EPD.	During Construction: turf establishment period (permanent low flow drainage is not completed)
	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity, SS, NO3-N, NO2-N, NH3-N, TP, Chl-a and selected pesticides.	9 marine and 6 freshwater locations	A 2-year of monitoring period for the operation phase is proposed. Monitoring should be carried out on bi-weekly basis for the first 12 months, after when the frequency will be reviewed by EPD.	During Operation
	Dissolved Oxygen, Temperature, Turbidity, pH, Salinity, SS, NO3-N, NO2-N, NH3-N, TP, Chl-a and selected pesticides	8 marine locations	Additional water quality monitoring shall be carried out after heavy rain storm or when there is an overflow event from the reservoir, irrigation buffer lake or detention ponds/tanks.	During Construction and Operation
Terrestrial Ecology	Monitoring aquatic fauna	Streams B, C & D	Once a month	During Construction
	Environmental Site Inspection mainly on intact of buffer zones	Streams A, B and C	Once a week	During Construction

Impacts	Parameters/descriptions	Locations	Frequencies	Duration
<b>Marine Ecology</b>	Transplanted corals	Site D2	Quarterly for one year after transplantation	During construction
	Natural corals	Site C, Site B2, Site D2, and the Control Site.	<b>For Site D2 and the Control Site:</b> Weekly at the first two weeks of dredging works for the desalination plant pipelines. If no exceedance was recorded, the monitoring schedule would be changed to biweekly till the pipeline construction works are finished.  <b>For Site C, B2 and the Control Site:</b> Monthly for the first three months of the construction phase. If no exceedance was recorded, the monitoring schedule would be changed to quarterly during the rest of the construction phase.	During Construction
		Site C, Site D2 and the Control Site.	First three months would be monthly conducted during the first two years of the operation phase. If no exceedance was recorded, the monitoring schedule would be changed to semi-annually, i.e. once in dry season and once in wet season.	During Operation
	Seagrass bed	Site D3, and at Site D2 if seagrasses were found during the baseline monitoring.	Weekly during the first two weeks of dredging works, and then biweekly till the pipeline construction works are finished.	During Construction
		Site D3, and at Site D2 if seagrasses were found during the baseline monitoring.	During the first two years of the operation phase.  The monitoring schedule during the first three months would be monthly. After that, the monitoring schedule would be changed to semi-annually, i.e. once in dry season and once in wet season.	During Operation
	<b>Landscape and Visual</b>	Audits to ensure effective implementation of mitigation measures	Project area and at visual sensitive receivers	Auditing inspections and reporting shall be undertaken once every two weeks of the construction phase and once every two months of the operation phase.
<b>Archaeology (Watching Brief)</b>	Monitor archaeological potential sites at major cut areas	Hole 2, Hole 11, Hole 12, Hole 14, Hole 15 and Hole 16.	The archaeologist should keep the AMO informed of the progress of watching brief. The archaeologist should submit progress reports every 3 months during the programme of the watching brief.	During Construction
<b>Land Contamination</b>	Total Sulphur and Total Lead	Locations 2, 3, 6, 7 & 8	One month before commencement of work at the identified 5 hotspots	During Construction
<b>General Site Conditions</b>	Environmental Site Inspection	Works areas and areas affected by works	Periodically (weekly basis)	During Construction

### 3. Environmental Monitoring Requirements

#### 3.1 Air Quality

##### Monitoring Requirement

- 3.1.1 24-hour TSP monitoring was carried out at GCA B1 to monitor the construction dust impact level in this reporting period.
- 3.1.2 The established Action/Limit Levels (AL levels) for the 1-hour and 24-hour TSP monitoring works are summarized in Table 3.1 and Table 3.2.

**Table 3.1 Action and Limit Levels for 1-hour TSP**

Location	Description	Action Level	Limit Level
GCA B1	Bungalow A adjacent to Kau Sai Chau Public Golf Course Administration Building	277.2 $\mu\text{g m}^{-3}$	500 $\mu\text{g m}^{-3}$

Note: The action levels for GCA B1 are developed based on baseline monitoring result.

**Table 3.2 Action and Limit Levels for 24-hour TSP**

Location	Description	Action Level	Limit Level
GCA B1	Bungalow A adjacent to Kau Sai Chau Public Golf Course Administration Building	187.4 $\mu\text{g m}^{-3}$	260 $\mu\text{g m}^{-3}$

Note: The action levels for GCA B1 are developed based on baseline monitoring result.

##### Monitoring Parameters, Frequency and Programme

- 3.1.3 The monitoring parameters and frequency are summarized in Table 3.3. The monitoring programme for the reporting period is shown in **Annex B**.

**Table 3.3 TSP Monitoring Parameter and Frequency**

Parameter	Frequency
24-hour TSP	Once every 6 days
1-hour TSP	3 times every 6 days (as required in case of complaints)

##### Monitoring Locations

- 3.1.4 In accordance with the EM&A Manual, one monitoring station (GCA B1) was selected and shown in **Figure 3.1**.

##### Monitoring Equipment

- 3.1.5 24-hour and 1-hour TSP (in case of complaints received) were performed using High Volume Samplers (HVS) and measured in-situ respectively. 24-hour TSP level of samples were collected using filters and High Volume Sampler and the collected samples were determined by a local HOKLAS accredited laboratory upon receipt of the samples and 1-hour TSP level will be performed in-situ.



- 3.1.6 High volume samplers (HVS - Model GS-2310 Accu-vol) complete with the appropriate sampling inlets were installed for 24-hour TSP sampling. The HVS is composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50 Appendix B). A portable dust meter was used for the 1-hour TSP monitoring. Table 3.4 summarises the equipment used.

**Table 3.4 Air Quality Monitoring Equipment**

Equipment	Model
HVS Sampler	GS 2310 Accu-vol system
Calibrator	GMW 25
1-hour TSP Dust Meter	Laser Dust Monitor – Model LD-1 (L)

Monitoring Methodology and Calibration Details

*24-hour TSP Monitoring*

(i) Field Monitoring, Operation & Analytical Procedures

- 3.1.7 Operating/analytical procedures for the operation of HVS are as follows. The sampler was placed on a horizontal platform with appropriate supporting structure such that:
- the filter was at least 1.3 meters above ground;
  - no two samplers were placed less than 2 metres apart;
  - the distance between the sampler and an obstacle, such as buildings, were at least twice the height that the obstacle protrudes above the sampler;
  - a minimum of 2 metres separation from walls, parapets and penthouses were required for the rooftop samplers;
  - a minimum of 2 metres separation from any supporting structure, measured horizontally was provided;
  - airflow around the sampler was unrestricted;
  - no furnaces or incineration flues were operating near the sampler;
  - the sampler was more than 20 metres from the dripline; and
  - any wire fence and gate to protect the sampler, did not cause any obstruction during monitoring.
- 3.1.8 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m<sup>3</sup>/min. and 1.4 m<sup>3</sup>/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- 3.1.9 For TSP sampling, fibreglass filters (G810) were used [Note: these filters have a collection efficiency of > 99% for particles of 0.3 mm diameter].
- 3.1.10 The power supply was checked to ensure the sampler worked properly.
- 3.1.11 On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.
- 3.1.12 The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.

- 3.1.13 The filter was aligned on the screen so that the gasket formed an air-tight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- 3.1.14 The shelter lid was closed and secured with the aluminum strip.
- 3.1.15 The timer was then programmed. Information was recorded on the record sheeting, which included the starting time, the weather condition, and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- 3.1.16 After sampling, the filter was transferred from the filter holder of the HVS to a sealable plastic bag and sent to the laboratory for weighing. The elapsed time was also recorded.
- 3.1.17 Before weighing, all filters were conditioned for 24 hours before weighing under temperature of  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$  and the relative humidity (RH)  $< 50\% \pm 5\%$ , preferably 40%. The HOKLAS laboratory (ALS Technichem (HK) Pty Ltd) has comprehensive quality assurance and quality control programmes.

(ii) Maintenance

- 3.1.18 Proper maintenance would be provided for the HVS as described below:
- 3.1.19 The HVS motors and their accessories have been properly maintained. Appropriate maintenance such as routine motor brushes replacement (time interval for replacement is about 500 hours) and electrical wiring checking have been conducted to ensure that the equipment and necessary power supply were in good working condition.
- 3.1.20 Initial calibration of HVS was conducted upon installation of equipment. The subsequent calibration would be provided at 2-month intervals using GMW-25 Calibration Kit.

*1-hour TSP Monitoring*

(i) Measuring Procedures

- 3.1.21 The measuring procedures of the 1-hour dust meter have been in accordance with the Manufacturer's Instruction Manual as follows:
- Set POWER to "ON", push BATTERY button, make sure that the meter's indicator is in the range with a red line and allow the instrument to stand for about 3 minutes (Then, the air sampling inlet has been capped).
  - Push the knob at MEASURE position.
  - Push "O-ADJ" button. (Then meter's indication is 0).
  - Push the knob at SENSI ADJ position and set the meter's indication to S value described on the Test Report using the trimmer for SENSI ADJ.
  - Pull out the knob and return it to MEASURE position.
  - Push "START" button.
  - All measurement procedures in section 2.3 of the approved EM&A Manual are followed during the reporting period.

(ii) Maintenance

- 3.1.22 The 1-hour TSP meter would be checked at 3 month intervals and calibrated at 1-year intervals throughout all stages of the air quality baseline monitoring.

Event and Action Plans

3.1.23 The Event and Action Plan (EAP) for air quality monitoring is presented in **Annex C**.

**3.2 Water Quality**

Monitoring Requirement

3.2.1 Water quality monitoring was conducted in accordance with the EM&A Manual. Tables 3.5 & 3.6 show the established Action/Limit Levels for the water environmental monitoring parameters.

**Table 3.5 Derived Summaries of Action and Limit Levels for Marine Water Quality**

Parameters	Location	Action	Location	Limit
<b>DO (Surface &amp; Middle)</b>	FCZ	6.0 mg/L	FCZ	5.3 mg/L
	All except FCZ	4.9 mg/L	All except FCZ	4.6 mg/L
<b>DO (Bottom)</b>	All	3.7 mg/L	All	3.4 mg/L
<b>pH (depth-averaged)</b>		N/A	All	6.5 - 8.5
<b>SS (Depth-averaged)☆</b>	FCZ	4.5 mg/L	FCZ	5.6 mg/L
	All except FCZ	6.1 mg/L	All except FCZ	10.6 mg/L
<b>SS (Depth-averaged) Dredging for submarine pipelines⊕</b>	M_RO1	6.1 mg/L	M_RO1	10.6 mg/L
<b>Turbidity (Tby) (depth-averaged) ☆</b>	FCZ	2.9 NTU☼	FCZ	3.9 NTU☼
	All except FCZ	3.3 NTU☼	All except FCZ	6.2 NTU☼
<b>Ammonia Nitrogen (depth-averaged)</b>	FCZ	0.02 mg/L	FCZ	0.03 mg/L
	All except FCZ	0.05 mg/L Δ	All except FCZ	0.05 mg/L Δ
<b>Nitrate Nitrogen (depth-averaged)</b>	FCZ	0.08 mg/L	FCZ	0.09 mg/L
	All except FCZ	0.09mg/L Δ	All except FCZ	0.09 mg/L Δ
<b>Nitrite Nitrogen (depth-averaged)</b>	FCZ	0.02 mg/L θ	FCZ	0.02 mg/L θ
	All except FCZ	0.02 mg/L	All except FCZ	0.04 mg/L
<b>TIN (depth-averaged)</b>	FCZ	0.12 mg/L	FCZ	0.14 mg/L
	All except FCZ	0.16 mg/L	All except FCZ	0.18 mg/L
<b>Total Phosphorus (depth-averaged)</b>	All	0.09 mg/L Δ	All	0.09 mg/L Δ

Remarks:

☆ : Action and limit levels are subjected to review especially for wet season throughout the construction phase of the project.

⊕ : Action and limit levels are subjected to review before the dredging works.

☼ : All are based on EM&A baseline monitoring data due to marked difference between EPD turbidity data and those from the baseline survey.

Δ : For nutrient monitoring (except NO<sub>2</sub>-N) at non-FCZ stations, the trigger level has made reference to the existing golf course guideline values. The guideline value of NO<sub>2</sub>-N is below the current detection limit of 0.01mg/L and thus not used.

θ : The same action and limit level of 0.02 mg/L is determined from the EM&A baseline data as 78% of the NO<sub>2</sub>-N data are ≤ 0.01 mg/L and all remaining 22% equal to 0.02 mg/L.

**FCZ** including fish culture zones of Kai Lung Wan, Tai Tau Chau and Kau Sai

**All except FCZ** including remaining impact monitoring station of M\_RO1, M\_Marsh, M\_BP and M\_Coral.

Control monitoring locations: M\_A & M\_B

**Table 3.6 Derived Summaries of Action and Limit Levels for Freshwater Water Quality**

Parameters	Location	Action	Location	Limit
<b>DO (mid-depth)</b>		6.3 mg/L	All	4 mg/L ξ
<b>pH (mid-depth)</b>		N/A	All	6.0 - 9.0
<b>SS (mid-depth) ☆</b>	All	3.8 mg/L or 120% of upstream control station's SS at the same tide of the same day	All	8 mg/L or 130% of upstream control station's SS at the same tide of the same day
<b>Turbidity (Tby) (mid-depth) ☆</b>	All	3.1 NTU or 120% of upstream control station's Tby at the same tide of the same day	All	4 NTU or 130% of upstream control station's Tby at the same tide of the same day
<b>Ammonia Nitrogen (mid-depth)</b>		N/A	All	0.01 mg/L
<b>Nitrate Nitrogen (mid-depth)</b>	All	0.10 mg/L	All	0.11 mg/L
<b>Nitrite Nitrogen (mid-depth)</b>		N/A	All	0.01 mg/L
<b>TIN (mid-depth)</b>	All	0.12 mg/L	All	0.13 mg/L
<b>Total Phosphorus (mid-depth)</b>		N/A	All	0.02 mg/L

Remarks:

☆ : Action and limit levels are subjected to review especially for wet season.

Freshwater monitoring locations: F\_UA, F\_DA, F\_UB, F\_DB, F\_UC, F\_DC and F\_Inland Marsh

As most of the freshwater samples were reported of NH<sub>3</sub>-N, NO<sub>2</sub>-N levels below the detection limit of 0.01 mg/L, limit level is set at 0.01 mg/L. Similarly for TP, a limit level of 0.02 mg/L (the detection limit of TP) is imposed.

ξ : Water Quality Objectives of the Port Shelter

#### Monitoring Parameters, Frequency and Programme

- 3.2.2 For marine water quality, measurements shall be taken at both mid-flood and mid-ebb tides and at three water depths (1 m below water surface, mid-depth and 1 m above sea bed, except where the water depth is less than 6 m, in which case the mid-depth station may be omitted). Should the water depth be less than 3 m, only the mid-depth station will be monitored.
- 3.2.3 For the stream course, measurements shall be taken at mid-water depth.
- 3.2.4 The water quality parameters which need to be monitored are as follows:

- Marine water quality - dissolved oxygen (DO), temperature, turbidity, suspended solids (SS), pH and salinity
  - Freshwater water quality - dissolved oxygen (DO), temperature, turbidity, suspended solids (SS), pH and salinity
- 3.2.5 Additional marine and freshwater water quality monitoring parameters for the impact monitoring during construction include nitrate nitrogen (NO<sub>3</sub>-N), nitrite nitrogen (NO<sub>2</sub>-N), ammonia nitrogen (NH<sub>3</sub>-N), total phosphate (TP) and selected pesticides.
- 3.2.6 The ET Leader shall propose the additional monitoring parameters for approval by IC(E), Engineer, EPD and AFCD, and shall submit such information for approval at least 2 weeks before the turf establishment period.
- 3.2.7 Additional water quality monitoring at Tai Tau Chau FCZ (TTC), Kai Lung Wan FCZ (KLW), Kau Sai FCZ (KS), downstream of the existing marsh (M\_Marsh), marine water of Port Shelter (M\_Coral), existing reservoir (F\_Inland M) and Control stations (M\_A and M\_B) shall be carried out after heavy rain storm or when there is an overflow event from the reservoir, irrigation buffer lake or detention ponds/tanks. The heavy rain storm shall be defined when there is an amber/red/black rainstorm warning signal issued by the Hong Kong Observatory. The water sample shall be taken within 24 hours after the black/red/amber rainstorm warning signal is cancelled. Please refer to revised EM&A manual for the sampling condition requirement after a heavy rain storm event occurs. The monitoring parameters shall include dissolved oxygen, temperature, turbidity, suspended solids, pH and salinity. Additional parameters shall be the same as stated in paragraphs 3.2.5-3.2.6.

*Monitoring Frequency*

- 3.2.8 The monitoring parameters and frequency are summarized in Table 3.7. The monitoring programme for the reporting period is shown in **Annex B**.

**Table 3.7 Water Quality Monitoring Parameter, Frequency and Locations**

Parameters	Frequency	Location
Dissolved Oxygen (mg/L)	<b>3 days per week</b>	<u><b>Marine Water</b></u> Fish culture zone stations: TTC, KLW, KS  Control stations: M_A, M_B  Impact stations: M_BP, M_RO1, M_Marsh, M_Coral  <u><b>Freshwater Water</b></u>  Stream A (F_UA, F_DA) Stream B (F_UB, F_DB) Stream C (F_UC, F_DC) Inland Marsh (F_Inland_M)
Temperature (°C)		
Turbidity (NTU)		
pH		
Salinity (ppt)		
Suspended Solids (mg/L)		

Monitoring Locations

3.2.9 The water quality monitoring locations for marine and freshwater (**Figure 3.2**) are summarized in Table 3.8.

**Table 3.8 Water Quality Monitoring Locations during Construction Phase**

Identification Number	Location	Co-ordinates		Approx. Water Depth	No. of Depth
		latitude	longitude		
<i>Marine Water (9 stations)</i>					
TTC	Tai Tau Chau Fish Culture Zone	22° 22' 03.7"	114° 19' 19.6"	9.5 m	3
KLW	Kai Lung Wan Fish Culture Zone	22° 22' 10.6"	114° 18' 01.4"	13 m	3
KS	Kau Sai Fish Culture Zone	22° 20' 26.5"	114° 18' 59.9"	11 m	3
M_BP	Temporary barging point	22° 21' 50.6"	114° 19' 16.7"	9.6 m	3
M_RO1	Desalination plant south of the existing pier	22° 21' 51.8"	114° 18' 17.7"	5 m	2
M_Marsh	Discharge point at the existing marsh	22° 22' 19.8"	114° 19' 05.4"	7.7 m	3
M_Coral	Marine water of Port Shelter	22° 21' 21.3"	114° 19' 42.7"	10.2m	3
M_A	Water Control Station of Port Shelter	22° 22' 51.3"	114° 18' 34.5"	7.5 m	3
M_B	Water Control Station of Port Shelter	22° 20' 26.4"	114° 20' 11.8"	16.5 m	3
<i>Fresh Water (7 stations)</i>					
F_UA	Upstream and downstream of stream A	22° 21' 32.3"	114° 19' 06.5"	-	1
F_DA		22° 21' 33.5"	114° 19' 06.8"		1
F_UB	Upstream and downstream of stream B	22° 21' 23.9"	114° 19' 16.1"	-	1
F_DB		22° 21' 27.2"	114° 19' 16.0"		1
F_UC	Upstream and downstream of stream C	22° 21' 14.8"	114° 19' 26.4"	-	1
F_DC		22° 21' 03.5"	114° 19' 32.0"		1
F_Inland M	Downstream of the existing marsh (Inland)	22° 22' 17.9"	114° 18' 59.1"	-	1

Monitoring Equipment

3.2.10 The equipment listed below shall be supplied by the ET and approved by the IC(E) and the Engineer for water quality monitoring.

*Dissolved Oxygen and Temperature Measuring Equipment*

3.2.11 The instrument shall be a portable and weatherproof DO measuring instrument complete with cable and sensor, and use a DC power source. The equipment shall be capable of measuring:

- dissolved oxygen levels in the range of 0 - 20 mg L<sup>-1</sup> and 0 - 200% saturation; and
- a temperature of 0 - 45 degrees Celsius.

3.2.12 It shall have a membrane electrode with automatic temperature compensation complete with a cable. Sufficient stocks of spare electrodes and cables shall be available for replacement where

necessary. (For example, YSI model 59 meter, YSI 5739 probe, YSI 5795A submersible stirrer with reel and cable or an approved similar instrument).

- 3.2.13 Should salinity compensation not be built-in in the DO equipment, in-situ salinity shall be measured to calibrate the DO equipment prior to each DO measurement.

*Turbidity Measurement Instrument*

- 3.2.14 Turbidity shall be measured in situ by the nephelometric method. The instrument shall be portable and weatherproof turbidity measuring instrument using a DC power source complete with cable, sensor and comprehensive operation manuals. It shall have a photoelectric sensor capable of measuring turbidity between 0 - 1000 NTU (for example, Hach model 2100P or an approved similar instrument). The cable shall not be less than 25m in length. The meter shall be calibrated in order to establish the relationship between NTU units and the levels of suspended solids.

*Suspended Solids*

- 3.2.15 A water sample at least 2.5L in capacity with messenger and using a 10m line should be collected. Samples should be submitted to HOKLAS accredited laboratory as soon as possible for gravimetric analysis for suspended.

*Sampler*

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

*Water Depth Detector*

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

*Salinity*

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

*pH*

- 3.2.19 The instrument shall consist of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It shall be readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 shall be used for calibration of the instrument before and after use. Details of the method shall comply with APHA, 19th ed. 4500-HTB.

*Flow Rate Meter*

- 3.2.20 A portable, battery-operated flow meter should be used for the determination of water depth at each designated monitoring location and record in m<sup>3</sup>/s. A hand held or meter fixed to the underside of the survey boat may be used.

*Sample Containers and Storage*

- 3.2.21 Water samples for laboratory analysis shall be stored in high density polythene bottles with no preservative added, packed in ice (cooled to 4°C without being frozen) and delivered to the laboratory and analysed as soon as possible after collection. Sufficient volume of samples shall be collected to achieve the required detection limit.

*Monitoring Position Equipment*

- 3.2.22 A hand-held or boat-fixed type digital Differential Global Positioning System (DGPS) with way point bearing indication or other equipment instrument of similar accuracy, shall be provided and used during marine water monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

Monitoring Methodology and Calibration Details

- 3.2.23 Dissolved oxygen (DO), temperature, turbidity, pH and salinity were measured in situ at the designated water quality monitoring stations. General observation, weather conditions, with the sampling time, date and location were marked on the field record sheet.
- 3.2.24 Water samples were taken from each monitoring station for laboratory analysis. The sample identification number, sampling location, date, time, project name and analyses were required.
- 3.2.25 The samples were placed in a cooler with ice (to 4°C without being frozen) and kept away from sunlight. Samples were submitted to a Hong Kong Laboratory Accreditation Scheme (HOKLAS) or other international accredited laboratory for analysis within 24 hours of sampling.

*Calibration of In-Situ Instruments*

- 3.2.26 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use and subsequently re-calibrated at three monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter were carried out before measurement at each monitoring location.

*Laboratory Analysis*

- 3.2.27 All laboratory work were carried out by ALS Technichem Pty Ltd (HOKLAS accredited laboratory). Water samples were collected at the monitoring and control stations for carrying out the laboratory determinations. The determination work will start within 24 hours after collection of the water samples. The analysis shall follow the standard methods according to APHA Standard Methods for the Examination of Water and Wastewater, 19th Edition, or an equivalent method approved by EPD.

**Table 3.9 Analytical Methods to be applied to Water Quality Samples**

Determinant	Standard Method	Reporting Limit
Suspended Solids	APHA 2540 D	2 mg/L
Nitrate Nitrogen	APHA 4500-NO <sub>3</sub> <sup>-</sup>	0.01 mg/L
Nitrite Nitrogen	APHA 4500-NO <sub>2</sub> <sup>-</sup>	0.01 mg/L
Ammonia Nitrogen	APHA 4500-NH <sub>3</sub> (D)	0.01 mg/L
Total phosphorus	ASTM D515-88B	0.02 mg/L*
Chlorophyll a	APHA 10200 H2 &3	0.5 µg/L

Remarks: \*After review baseline data, the detection limit report will be revised to 0.02 mg/L.



### *QA/QC Procedure*

- 3.2.28 ALS Technichem Pty Ltd. has comprehensive quality assurance and quality control programmes. For QA/QC procedures of parameters, one duplicate sample was analysed for every batch of 20 samples as required by HOKLAS.

### Event and Action Plans

- 3.2.29 The Event and Action Plan (EAP) for water quality monitoring is presented in **Annex C**.

## **3.3 Ecology**

### Introduction

- 3.3.1 The marine and terrestrial ecological monitoring surveys for the ecological EM&A were conducted in accordance with the EM&A manual.
- 3.3.2 As stipulated in the EM&A Manual, the ecological monitoring surveys for terrestrial ecology would be conducted monthly during the construction phase. Monitoring survey would consist of aquatic fauna survey. While the majority of the Project Area would be subject to site formation, natural streams would be partially or fully preserved and protected by buffer zones, and therefore would constitute the primary target of the terrestrial ecological monitoring. Special attention should thus be paid to ecologically sensitive streams to ensure minimum damage to existing vegetation and streams. The purpose of the monitoring survey was to check the conditions of the stream habitat and the associated aquatic fauna communities.
- 3.3.3 While the ecological monitoring surveys for marine ecology included coral monitoring at both the eastern and western coasts of Kau Sai Chau Island. The coral monitoring at the western coast would be conducted concurrently with the dredging works which have yet to conduct, and therefore had not been commenced. The coral monitoring at the eastern Kau Sai Chau would be monthly for the first three months of the construction phase, and if no exceedance was recorded, the monitoring schedule would be changed to quarterly during the rest of the construction phase. As a coral damage incident was recorded in March 2006, the monthly monitoring was extended for another three months from April 2006 to June 2006. No exceedance was recorded during these three months, the monitoring schedule were changed to quarterly after that till the end of the construction phase. Monitoring survey would consist of checking tagged corals at both impact sites and control site. The purpose of the monitoring survey was to check the conditions of the tagged corals and the impact sites. Although the dredging works for the desalination plant have yet to conduct, 89 natural corals near the plant were transplanted in November 2006. The transplanted corals would be monitored quarterly for a year and the first monitoring was conducted in December 2006.

### Ecological Mitigation Measures and Implementations

- 3.3.4 Ecological mitigation measures to be implemented during the construction phase include the following:
- Establishment of buffer zones for the natural stream courses during both construction phase.
  - Provision of temporary bypass channels or pipes during construction phase for stream courses subject to pipe culverting.
  - Protection of water quality of the natural stream courses and temporary bypass channels or pipes.
  - Transplantation of coral colonies within the dredging area for the desalination plant prior to the dredging works.

- Avoidance of corals when the anchoring points are deployed, and to shift the floating temporary barging point to the location with least corals within the mapping area.
- Regular site audit of ecological mitigation measures and good site practice.

#### Monitoring Frequency and Schedule

#### **Terrestrial Ecology**

- 3.3.5 As reported in the EIA Report, there were four perennial natural streams (Streams A-D) within the Assessment Area for the EIA Study. Streams A, B & C were located within the Project Area, while Stream D was outside the Project Areas and acted as the main stream draining the western part of the Assessment Area. Buffer Zone would be established for the three streams within the Project Area along their partial length (Stream A) or full length (Streams B & C) (**Figure 3.3**). Moreover, Streams B, C & D would be monitored for aquatic fauna monthly during the construction phase. Monitoring on the implementation of the mitigation measures for stream protection, the effectiveness of stream buffer zones, and the aquatic fauna in streams would be conducted during the entire construction phase.
- 3.3.6 The objectives of the monitoring survey are to check the status of *Caridina trifasciata* and *Nanhaipotamon hongkongensis*. The surveys covered natural stream courses within the assessment area (Streams A to D), and aquatic fauna were studied by various sampling methods depending upon site conditions. Methods included direct observation, active searching, and sample collection using hand-nets. Hand nets were used to collect swimming organisms such as shrimps and fish. Where necessary boulders on the stream beds were overturned to locate aquatic organisms such as crabs. Aquatic species encountered was recorded, with special attention to rare or protected species.

#### **Marine Ecology**

- 3.3.7 As required in the EM&A Manual, prior to the commencement of all construction works, a baseline survey of natural corals were conducted in December 2005. At each of the Site C, Site B2, Site D2 and a Control Site near the AFCD's Coral Buoy at Sharp Island (**Figure 3.4**), 20 natural coral colonies in good conditions (i.e. generally intact and no sign of bleaching) and significant sizes (preferably over 20 cm in diameter) were selected and tagged. Each of the tagged coral colonies was identified to species level and their conditions, in terms of percentages of survival, sedimentation and bleaching, were recorded. Each coral was attached with a plastic label with assigned number and then photographed. The species and the size of each tagged corals were also recorded. The species of corals to have been tagged included the following 15 species: *Cyphastrea serailia*, *Favia speciosa*, *Favites abdita*, *Favites pentagona*, *Goniastrea aspera*, *Goniopora columna*, *Hydnophora exesa*, *Leptastrea pruinosa*, *Lithophyllon undulatum*, *Pavona decussate*, *Platygyra acuta*, *Platygyra carnosus*, *Plesiastrea versipora*, *Psammocora superficialis*, and *Turbinaria peltata*. All tagged corals were in good conditions during the baseline survey, without significant sign of bleaching or being covered by sediments, and therefore were all recommended as the monitored coral colonies (all 80 tagged corals, 20 from each site). The seagrass beds in Site D3 were also surveyed for their extent, coverage percentage and health conditions during the baseline survey. The results of the baseline survey has presented in the Baseline Monitoring Report. The original 20 tagged corals at Site B2 were re-organised in April 2006, with B-11 to B-20 retained, but 40 new tagged corals (B-21 to B-60) were established. The number of tagged corals at Site B2 was therefore increased from 20 nos. to 50 nos. The baseline conditions of these newly tagged corals (40 nos.) were presented in the monthly monitoring report of April 2006.
- 3.3.8 The reporting month (January 2007) was the Month thirteen of the construction programme. As the dredging works for the desalination plant had not been commenced, the impact sites to be

monitored in this monitoring survey were Site B2 and Site C (impact sites on the eastern Kau Sai Chau Island for the new golf course) only, while Site D2 and Site D3 (impact sites on the western Kau Sai Chau Island for desalination plant) were not required in this survey. The coral transplantation, which should be conducted prior to the commencement of dredging works according to the EM&A manual, were conducted in November 2006 due to the possible commissioning of the desalination plant in the coming dry season 2007 to supply water for turf establishment for the third golf course. The first quarterly monitoring on transplanted corals on the bedrock at Site D2 (see **Figure 3.5**) was performed in December 2006. 89 natural corals were transplanted and each was assigned with a number. These corals would be monitored quarterly for a year after transplantation.

- 3.3.9 The schedule for the impact sites on the eastern Kau Sai Chau Island during construction would be monthly in the first three months of the construction programme, and if no exceedance was recorded then quarterly till the end of the construction. As coral damage incident was reported in Month Three of the construction programme, AFCD requested the monthly monitoring should be extended to cover another three months (April, May and June 2006). No exceedance was recorded during the extended three-month period and the schedule was changed to quarterly.
- 3.3.10 During the weekly site inspection, ET also monitored and audited the implementation of the recommended mitigation measures for terrestrial and marine ecology. Monitoring locations for ecology are shown in **Figures 3.3 – 3.5**. The monitoring programme for the reporting period is shown in **Annex B**.

#### Event and Action Plans

- 3.3.11 The Event and Action Plan (EAP) for ecology monitoring is presented in **Annex C**.

### **3.4 Landscape and Visual**

- 3.4.1 The EIA concluded that the landscape and visual impacts associated with the construction of the third golf course are anticipated to be acceptable with mitigation. In order to ensure that the effective management and implementation of landscape mitigation measures developed and defined in the EIA, the ET conducted regular site inspections of the construction work sites.
- 3.4.2 Auditing inspections and reporting are undertaken once every two weeks of the construction phase. The effectiveness of the mitigation works has been audited in order to ensure impact reduction levels are achieved as described in the EIA report for this monitoring month. The monitoring programme for the reporting period is shown in **Annex B**.

### **3.5 Archaeology (Watching Brief)**

#### Introduction

- 3.5.1 The archeological impact assessment conducted in the EIA concluded that some potential for archaeological material remains at the Wan Chai Archaeological Site and a watching brief is recommended during the construction phase.
- 3.5.2 A watching brief is a process whereby a qualified and licensed archaeologist monitors the excavation works during the construction phase in areas identified (and agreed with the Antiquities and Monuments Office (AMO)) to be of archaeological potential.
- 3.5.3 The archaeologist conducting the watching brief should obtain a licence prior to commencement of works as stipulated in Section 12 of the Antiquities and Monuments Ordinance (Cap. 53). The licence was granted on 22<sup>nd</sup> December 2005.

Monitoring Location

- 3.5.4 The monitoring locations include Hole 2, Hole 11, Hole 12, Hole 14, Hole 15 & Hole 16. The monitoring locations are present in **Figure 3.6**.

Monitoring Frequency

- 3.5.5 A total of 18 days of monitoring is considered as minimum, and additional arrangement for watching brief should be made in consultation with AMO in case significant archaeological findings are unearthed in the course of excavation work.

Progress Report

- 3.5.6 Archaeologist should submit progress reports every 3 months during the programme of the watching brief.
- 3.5.7 A summary table for categories of archaeological find and recommended action is presented in **Annex C**.

**3.6 Land Contamination**

Potential Areas Recommended for Further Investigation

- 3.6.1 Contamination Assessment Plan (CAP) shall be submitted to EPD for approval before site investigation. If land contamination is confirmed by the site investigation, submission of a Remediation Assessment Plan (RAP) including a Contamination Assessment Report (CAR) is required. Potential 5 land contamination hotspots are presented in **Figure 3.7**.

#### **4. Implementation Status on Environmental Protection Requirements**

- 4.1.1 Major construction work of the third golf course were (i) site formation at Holes 10-16, (ii) permanent closed low flow drainage system installation including gravity drain from Lake 1D to existing reservoir, (iii) irrigation system installation, (iv) sub-soil drains installation, (v) hydroseeding at the permanent slope/bare grounds and (vi) construction of permanent bridges at Streams A, B, C and fresh water inland marsh.
- 4.1.2 There is no significant improvement on the dust suppression mitigation measures provided on site. During the site audit, only one water truck was watering the haul road during this reporting month. Other water trucks (approximate 3 numbers) were used for watering the permanent hydroseeding areas. The huge soil/sand/aggregates stockpiles were not properly covered with tarpaulin, frequent wetting the surface or other equivalent means located at Holes 1, 16 and 18 in order to reduce the dust generation. No dust suppression mitigation measure was provided for all rock breaking areas. Dust suppression measures for loading/unloading activities, rough shaping and haul road (truck traffic) were insufficient.
- 4.1.3 The water source was mainly pumped from the downstream of the fresh water inland marsh and downstream of Streams A & C (relatively dry) during the dry season. Alternative water source for dust suppression should be considered during the dry season. The Contractor claimed that the water trucks were queue up for a long time at the fresh water inland marsh. Jockey Club suggested the Contractor to make use of Hole 2 underground water tank and fill up at night by using the WSD water supply. However, no further action has been taken by the Contractor. The Contractor was urged to improvement this condition as soon as possible. According to our site audit during this month, no queue up of the water trucks at fresh water inland marsh was observed.
- 4.1.4 Temporary Drainage Management Plan (TDMP) submission prepared by the Contractor for ER's approval for the coming wet season is still outstanding. In particular, TDMP for the turf establishment area is very critical because the expected earliest turf establishment will be in mid-February 2007 at Hole 8 but no formal submission of TDMP for approval yet. The Contractor agreed to confirm and provide information on the discrepancy between the actual permanent drainage implemented on site and the temporary drainage implemented at those areas where the permanent drainage is not yet implemented.
- 4.1.5 Silt fence was implemented along the site boundary (major component of the temporary drainage system) for most of the newly exposed areas once after vegetation clearance was completed. According to the site observation, most of the temporary drains (silt fence) were removed along the site boundary of the golf hole and considered unsatisfactory. The Contractor was reminded to rectify the situation to prevent silty runoff to the water sensitive areas, critically review the temporary drainage provided on site and prevent the incident happened in future. Potential heavy rain(s) could still occur during the dry season.
- 4.1.6 The sewage treatment plant was started to operate at the end of May 2006. Water discharge licence for this project was obtained in September 2006.
- 4.1.7 Vegetation stockpiles, general refuse and construction waste stockpiles were temporary stored on site since the start of the project. The construction waste stockpile mixing with general refuse located at Hole 2 was properly disposed during this reporting month. The Contractor was reminded to dispose all other remaining construction wastes gradually off-site.

- 4.1.8 No chemical waste storage area and sorting area were available on site since the start of this project. Insufficient mobile toilets were available on site at remote areas, only few units were located at the southern portion of construction site.
- 4.1.9 No dredging work has been carried out near to the existing pier for the desalination plant pipelines. Summary of implementation status is provided in **Annex D**.

## 5. Monitoring Results

### 5.1 Air Quality

5.1.1 Dust monitoring was conducted as scheduled in the reporting month. Monitoring of air quality was conducted on 5 occasions in December 2006 to January 2007. All monitoring data are provided in **Annex E**. Monitoring of 24-hour TSP was conducted at GCA B1 on 29<sup>th</sup> December 2006, 4<sup>th</sup>, 10<sup>th</sup>, 16<sup>th</sup>, 22<sup>nd</sup> January 2007. The QA/QC results for laboratory testing in the reporting month were acceptable. The QA/QC results are summarised in **Annex F**.

5.1.2 No exceedance of 24-hour TSP was recorded at GCA B1 in the reporting month.

### 5.2 Water Quality

5.2.1 Marine and freshwater water quality monitoring were conducted at the 9 and 7 designated monitoring stations respectively. All monitoring data are provided in **Annex E**.

5.2.2 Monitoring of marine and freshwater locations was conducted on 5 occasions in December 2006 and January 2007 (28<sup>th</sup> December 2006, 3<sup>rd</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 22<sup>nd</sup> January 2007). The QA/QC results for laboratory testing in the reporting month were acceptable. The QA/QC results are summarised in **Annex F**.

5.2.3 No rainstorm signal was hoisted during the reporting month.

#### Marine water

5.1.3 No exceedance was recorded at all marine monitoring stations in the reporting month.

#### Freshwater

- Stream A: one action and one limit level exceedances of turbidity; one action and two limit exceedances of suspended solids.
- Stream B: two action and five limit level exceedances of turbidity; two limit level exceedances of suspended solids.
- Stream C: four action limit level exceedances of turbidity; and
- F\_Inland Marsh: one action and four limit level exceedances of turbidity.

5.2.4 The freshwater water exceedances were summarised in **Table 5.2-2**.

**Table 5.2-2 Freshwater Exceedance Summary December 06 – January 07**

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
F_DA	Limit Level	28 <sup>th</sup> Dec 06	SS	Yes
	Action Level	3 <sup>rd</sup> Jan 07	SS	Yes
	Limit Level	15 <sup>th</sup> Jan 07	Turbidity	Yes
	Action Level	22 <sup>nd</sup> Jan 07	SS, Turbidity	Yes
F_UB	Limit Level	28 <sup>th</sup> Dec 06	SS, Turbidity	Yes
	Action Level	8 <sup>th</sup> Jan 07	Turbidity	Yes
	Limit Level	15 <sup>th</sup> Jan 07	Turbidity	Yes
	Limit Level	22 <sup>nd</sup> Jan 07	SS, Turbidity	Yes
F_DB	Limit Level	28 <sup>th</sup> Dec 06	Turbidity	Yes
	Action Level	8 <sup>th</sup> Jan 07	Turbidity	Yes
	Limit Level	15 <sup>th</sup> Jan 07	Turbidity	Yes
F_UC	Limit Level	28 <sup>th</sup> Dec 06	Turbidity	Yes

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
	Limit Level	15 <sup>th</sup> Jan 07	Turbidity	Yes
F_DC	Limit Level	28 <sup>th</sup> Dec 06	Turbidity	Yes
	Limit Level	15 <sup>th</sup> Jan 07	Turbidity	Yes
F_Inland M	Limit Level	28 <sup>th</sup> Dec 06	Turbidity	Yes
	Limit Level	3 <sup>rd</sup> Jan 07	Turbidity	Yes
	Limit Level	8 <sup>th</sup> Jan 07	Turbidity	Yes
	Limit Level	15 <sup>th</sup> Jan 07	Turbidity	Yes
	Action Level	22 <sup>nd</sup> Jan 07	Turbidity	Yes

Remarks: All exceedances were mainly due to insufficient temporary drainage provided on site.

- 5.2.5 Exceedances of suspended solids and turbidity for all streams and freshwater inland marsh were consider project-related and mainly due to the runoff from construction site.
- 5.2.6 For the upstream monitoring location (F\_UB), it is located downstream to the construction area near Hole 10 and the monitoring location cannot be relocated further upstream (temporary bridges located at Streams B1 and B2) as no water was observed and available for sampling. For Stream C, exceedances were recorded at both upstream and downstream monitoring locations. For the upstream monitoring location (F\_UC), it is located downstream to the construction area near Hole 16 and the monitoring location cannot be relocated further upstream as no water was observed and available for sampling. Therefore, the F\_UC is considered the most upstream location of Stream C. Same as Stream B, it is considered that F\_UC is also the impact monitoring location and F\_UA was used as the representative control monitoring station.

### 5.3 Ecology

- 5.3.1 Terrestrial and marine ecology monitoring photos are provided in **Annex E**.
- 5.3.2 The Monitoring Survey for the reporting month was conducted on 30<sup>th</sup> January 2007. Works fronts had advanced beyond Stream C, and earth works had been being conducted at the majority of the new golf course site, including areas inside the existing golf course. The demarcation of the stream buffer zone had been fully established at Stream A main stream, Stream B and Stream C at the time of the monitoring survey.
- 5.3.3 Although the surveyed streams have not been previously affected by developments or pollution sources, they are relatively small. Water depth was less than 0.3m in most of the stream reaches even during wet season. Currently (still within dry season) these streams had very small surface flow or even had no surface flow for most of the length.
- 5.3.4 Stream A is located within the Project Area. Its main stream section (downstream to the confluence of two tributaries) would be protected by stream buffer zone (**Figure 3.3**). Stream A was heavily silted with sediments from eroded hillsides all year round, particularly at the main stream section. The stream had low flow.
- 5.3.5 In the present monitoring survey, the main stream course of Stream A (the section downstream to the confluence of tributaries A1 and A2) was found still to be filled up by rubbles which was first report in June 2006 (see **Photo Plate 5.3-1**). The rubbles were reported to be washed down from the upper Tributary A2 which was under pipe culvert construction. Although the riparian vegetation were not affected by the rubbles, this section of stream channel was temporarily lost. Tributary A2 had been converted to underground pipeline as proposed in the EIA report. It was found in the present survey that the flow in the main stream course of Stream A was very turbid. It might be attributed to the earthworks on the stream banks of Tributary A1 (just upstream to the main stream). Stream A was of the lowest ecological value among the four natural streams as it was heavily silted with sediments from eroded hillsides all year round. No stream fish and



- only very limited aquatic fauna were recorded in Stream A before. The impact from this temporary loss of stream channel would not be severe. But remedial works should be implemented to clear the rubbles and restore the channel as the conditions of this stream is expected to improve after the construction of the golf course extension (in which the eroded hill slopes would be replaced by turf).
- 5.3.6 Stream B is located within the Project Area. It had clear flow (with little sediment in the stream beds) of moderate volume during the wet season. This stream also has two main tributaries, B1 and B2. The full length of Stream B (two tributaries and the main stream) would all be protected by buffer zone (**Figure 3.3**). Stream B also contains a long estuarine section of muddy sandy substrate.
- 5.3.7 Water levels and flow volume in the 4 streams were all much lower than in previous monitoring surveys during wet season and early dry season. There was only very limited flow in Stream A and Stream C (**Photo Plate 5.3-1 in Annex E**). The flow in B2 tributary and Stream D was also low. Similar conditions (i.e. low water level and flow volume) were recorded before during the EIA study and the baseline survey for the monitoring, so this might be attributed to the seasonal variation rather than the construction works of the present project. Photos of Streams A to D were shown in **Photo Plate 5.3-1 (Annex E)**.
- 5.3.8 The habitats and vegetation generally remained intact within the majority of the stream buffer zone (except and area for Tributary B2 which was accidentally cleared before) and outside the project area. No earthwork, human disturbance or fire disturbance was observed beyond the works fronts other than the historical erosion of hillsides and the access paths to the project site.
- 5.3.9 Aquatic fauna communities were checked during the monitoring survey. Atyid shrimp *Caridina trifasciata* were found in Stream B, Stream C & Stream D during the present monitoring survey (**Annex E - Photo Plate 5.3-1**). Although the low water levels and flow volume, Atyid shrimp *Caridina trifasciata* was still recorded in the streams, especially among the emergent plants, in the present survey. The sedimentation incident in November 2006 made a large portion of the stream bed in Stream C covered by sediment and this limit the habitat size for the shrimps. Measures should be taken to prevent any similar incidents in the future.
- 5.3.10 Another species of Atyid shrimp, *Caridina cantonensis*, which is common and widespread in Hong Kong was found in Stream B, C and D. Other aquatic fauna and flora encountered during the monitoring included Freshwater snail *Brotia hainanensis*, which is usually found in streams with good water quality, found at B2 tributary of Stream B.
- 5.3.11 The demarcation of the stream buffer zone had been fully established at Stream A main stream, the two tributaries of Stream B and Stream C at the time of the monitoring survey. Except at the temporary access bridges crossing Stream A, Stream B and Stream C, riparian vegetation within the buffer zone was not disturbed by construction works.

#### Marine Ecology

- 5.3.12 The reporting month (January 2007) was the Month Thirteen of the construction programme, the monitoring on corals therefore was not required. The next marine ecological monitoring is scheduled in March 2007.

#### **5.4 Archaeology (Watching Brief)**

5.4.1 Excavation was carried out at Holes 11, 12, 14 & 16 during this monitoring month and watching brief monitoring was resumed since September 2006. According to the latest construction programme, part of the Hole 2 will not be completed very late construction stage in 2007. Approximate 40% of the Hole 2 area was being excavated and the watching brief at Hole 2 will have to further extend. The first (January to March 2006) and second (April to September 2006) quarterly progress reports had been sent to AMO for comments on 31<sup>st</sup> March 2006 and 15<sup>th</sup> October 2006 respectively. The next quarterly progress report will be submitted to AMO in January 2007.

5.4.2 The Archaeological Watching Brief (AWB) will consist of 18 days of on-site monitoring of the construction work. An initial site visit was made on 20<sup>th</sup> January 2006 to inspect preliminary vegetation clearance at Hole 2. The second site visit was undertaken on 3<sup>rd</sup> February 2006. The first day of the monitoring was agreed on 14<sup>th</sup> February 2006 after the confirmation with the Contractor that the bulk excavation was being carried out at Hole 2. The site visit at Holes 11, 12, 14, 15 & 16 were started from September 2006 once vegetation clearance commence and in progress.

5.4.3 Monitoring results were shown as follows:

##### Hole 2

5.4.4 Clearance of surface soil was monitored in Areas 1 and 2 (mainly the concrete batching plant and underground water tank location) which is around 60% of the actual bulk earthwork. All monitoring areas were investigated after vegetation clearance and no archaeological material was identified in the first quarterly report. A thirty minute video of the works was recorded. No works have been undertaken outside the Areas 1 and 2 up the reporting period (January to March 2006).

5.4.5 Excavation at Hole 2 will be resumed in the next reporting month. There will be one remain monitoring day for the watching brief at this particular area.

##### Holes 11, 12, 14, 15 & 16

5.4.6 For the excavation at watching brief concern areas (Holes 11, 12, 14, 15 & 16), the excavation programme was commended in early September 2006 after the completion of temporary bridges construction at Streams B1 and B2. Vegetation clearance was started in early September 2006 and completed in the reporting month at Holes 11, 12, 14, 15 & 16. Bulk earthwork at concerned watching brief area was concentrated Holes 11, 12, 14 and 16. No archaeological material was identified in the second quarterly report (April to September 2006) and third quarterly report (October to December 2006). Archaeological watching brief monitoring was completed during this reporting month.

#### **5.5 Land Contamination**

5.5.1 The Contamination Assessment Plan (CAP) was approved by EPD 17<sup>th</sup> February 2006. Site investigation was carried out on 14<sup>th</sup> and 15<sup>th</sup> February 2006. Site audit was carried out with IEC on 14<sup>th</sup> February 2006 with the Contractor's representatives. The CAP was approved on 17<sup>th</sup> February 2006. The Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) were approved on 18<sup>th</sup> August 2006.

5.5.2 Remedial work for the contaminated soil located at the Hotspot L3 (Hole 18) is required to be implemented properly according to the RAP. A confirmation pilot trial on the ratio of cement

and contaminated soil was carried out during the reporting month. According to the Contractor's submitted methodology, the contaminated soil will be transferred from Hole 18 to Hole 17 for remediation. It is because that Hole 17 is the major fill area and the remediation soil to cement mixture can be used as general fill material. The full scale remediation work was carried in the reporting month on 4<sup>th</sup> October 2006. A Final Site Remediation Report (FSRR) was approved by EPD on January 2007.

## **6. Environmental Site Auditing**

6.1.1 The weekly site inspections were conducted by the ET with Contractor's representative and/or Jockey Club's representative on 27<sup>th</sup> December, 1<sup>st</sup>, 9<sup>th</sup>, 16<sup>th</sup> and 23<sup>rd</sup> January 2007, and the monthly joined site inspection with IEC and the Contractor's representative undertaken on 23<sup>rd</sup> January 2007. The following observations and recommendations were made.

### Dust Mitigation Measures

- 6.1.2 Major excavation work was carried at Holes 10, 11, 12, 13 and 14 during the reporting month. No dust suppression measure was provided during rock breaking activities. Dust generation from the haul road, during earth moving operation and excavation were observed at sunny and windy weather, insufficient dust mitigation measures were provided on site. According to the site observation, one water truck (sometimes two numbers) were provided on site for haul road watering to minimize the dust generation from the haul road only.
- 6.1.3 Huge temporary soil stockpiles were mainly located at Holes 1, 16 and 18. The Contractor was repeatedly urged to provide sufficient mitigation measures. There were many sand/aggregates located at Hole 1, these stockpiles are more vulnerable to silty runoff and dust generation due to their particular size are more fine in nature and not suitable for compaction and watering. The Contractor was suggested to cover the stockpiles properly or other equivalent to reduce the dust nuisance to the environment under the APCO requirement.
- 6.1.4 The Contractor was reminded to minimize the dust generated by the site vehicles moving along the haul road by paving the heavy traffic haul road and haul road near to the existing golf course. The Contractor was repeatedly reminded to provide sufficient dust suppression measure at all other excavation / earth moving areas.
- 6.1.5 Concrete batching plant was operating during this reporting month. The concrete produced was mainly for the extension of administration and maintenance buildings, underground water tanks and associated pumping stations. No major dust generation was observed from the concrete batching plant during operation.
- 6.1.6 Dust emission was observed during the unloading of aggregates from the barge to the trucks located at temporary barging point. The Contractor was reminded to keep the aggregates moist in any time during the material transfer.
- 6.1.7 The Contractor claimed the water source for dust suppression was insufficient. They had successfully applied the water supply from WSD to the construction site. The Contractor agreed to fill up the Hole 2 underground water tank at nighttime to reduce the queue up time at the fresh water inland marsh. However, no further action was observed at the construction site.
- 6.1.8 The Contractor was reminded to install the hoarding near to the main exit/entrance near S7 according to the Air Pollution Control Ordinance and its subsidiary regulations. It was outstanding for at least few months.

### Water Quality

#### ***Temporary Drainage Master Plan***

6.1.9 The Contractor agreed and required to submit the TDMP for the (i) turf grass establishment period and (ii) next wet season. The pesticide is a prohibited substance which is not allowed to be discharged to any water bodies under the WPCO. According to the latest turfing programme

submitted by the Contractor, it will start in 12 February 2007 at Hole 8 of the new golf course. The Contractor was reminded to confine, collect and reuse runoff generated from the irrigation area properly. There is no TDMP submitted to the Engineering for approval in this reporting month.

- 6.1.10 The silt fence installed on site was not observed in particular in northern portion of third golf course and other parts of the construction site were not well-maintenance especially at formerly installed areas. The Contractor was repeatedly reminded to improve the effectiveness of the mitigation measures and provide sufficient temporary drainage system on site.
- 6.1.11 Permanent drainage system should be installed properly before turfing at each of the golf hole. Although the installation of the closed low flow drainage system is in progress (runoff cannot pumping back to the existing reservoir directly), runoff will be concentrated at underground water tanks and/or lakes for the temporary storage areas.
- 6.1.12 Construction of the desalination plant was completed and the surrounded slopes were hydroseeded. Testing of the desalination plant's using the temporary arrangement pipelines was completed. No dredging work for the permanent intake and outfall pipelines was carried out during the reporting month.
- 6.1.13 The Contractor was reminded to provide adequate mitigation facilities on site and sufficient temporary drainage at temporary bridges no. 5, 9, 10 (two crossings) and 15 to ensure no polluted runoff discharge from the construction works to Streams A, B, C and freshwater inland marsh. The construction of permanent bridges at Streams A, B and C and fresh water inland marsh were in progress. Construction of a pipe culvert bridge at Stream B2 was completed. Permanent bridges at Stream A, Stream C and fresh water inland marsh should be constructed by precast unit while permanent bridge at Stream B2 will be constructed by in-situ method according to the EP.
- 6.1.14 Construction of drainage system across Stream B2 buffer zone (near to the pipe culvert bridge) was commenced in later January 2007.
- 6.1.15 The Contractor was reminded to maintain the silt curtain and desilt the settled solids within the silt curtain in a routine basis and ensure the effectiveness of its intended use.
- 6.1.16 No turf has been established during this reporting month. The Contractor was reminded to provide temporary drainage system to collect and divert the runoff to the existing reservoir when the permanent closed low flow drainage system is not completed yet.

#### Ecology

- 6.1.17 Buffer zone at Streams A, B1, B2 and C had been established. The whole buffer zone aims to protect the streams and avoid any works/equipment intrusion into the buffer zone.
- 6.1.18 The main stream course of Stream A was found to be filled up by rubbles to the level of the weir at its downstream end since mid-June 2006. Remedial works were implemented to clear the rubbles and restore the channel manually in early November 2006. However, the rocks were filled up the downstream A again after the rainstorm on 21<sup>st</sup> November 2006. Most of the rubbles from Hole 17 covering the downstream of Stream A were removed in the December 2006. There were still some remaining rocks sitting on the stream bed of the downstream of Stream A.

- 6.1.19 Floating pontoon was berthed at EP location at the temporary barging point. No illegal berthing was observed during the site audit. Increase of loading of the sand/aggregates/drainage pipes/irrigation pipes delivery was observed during the reporting month.
- 6.1.20 EPD approved the coral transplantation methodology in the November 2006 under the EP condition. Coral donor site survey and coral mapping survey reports were submitted to EPD and AFCD for comment, EPD and AFCD have no major comments on both reports. All coral communities located within the dredging work area were, therefore, transplanted to the south approximate 100m from the existing KSC pier in the reporting month according to the approved coral transplantation methodology. A coral transplantation report was submitted to EPD and AFCD for comment and no major comment were received. First quarterly transplanted coral monitoring required under the EM&A manual was commenced in December 2006 and will require to monitor for one year.
- 6.1.21 No dredging work was carried out for the construction of desalination plant's intake and discharge pipelines. The desalination plant was in operation to supply water to the third golf course in the reporting month. Thus, no coral monitoring was commenced in this reporting month.

#### ***Stream B2 Buffer Zone***

- 6.1.22 For the Stream B2 buffer zone incident (vegetation clearance at part of the buffer zone area), the Contractor was proposed remedial and mitigation measures for EPD's comment. A letter was issued to Jockey Club from EPD on 12 Dec 2006 and reminded the Project Proponent should pay particular attention to the EP condition due to this incident. The Contractor was requested to submit the detailed remediation work programme to Jockey Club, the Engineer, ET and IEC for review and agreed before carrying out any work within the buffer zone. Detail remedial work proposal was submitted by the Contractor to ER and ET in mid-December 2006. ET commented on the proposal and no formal submission of the revised remedial work proposal was received.

#### ***Silt Deposit at Stream C***

- 6.1.23 Significant silty runoff and silt were deposited at the stream bed of Stream C were recorded after the rainstorm on 22<sup>nd</sup> November 2006. The incident report, proposed remediation work and mitigation measures prepared by the Contractor were submitted to EPD in this previous month. Construction of permanent drainage system including cut-off drain of Hole 16 was in progress. No major improvement on the installation of temporary drains was observed at Holes 14 and 16. The Contractor was reminded to enhance the drainage system to prevent the same incident happened in future again.

#### **Waste / Chemical Management**

- 6.1.24 According to the site observation, vegetation stockpiles, construction wastes stockpiles and general refuse were removed regularly offsite with disposal records prepared by the Contractor.
- 6.1.25 No chemical waste storage area was available on site. The Contractor confirmed that the chemical waste generated would be disposed by their sub-contractor or store on site. The Contractor was reminded to provide chemical storage areas for chemical storage on site, trip-ticket records and disposal records for our reference.
- 6.1.26 Insufficient mobile/chemical toilets were provided at the construction site. The Contractor was repeatedly reminded to provide sufficient in particular distant from the Contractor's office.

Landscape and Visual

- 6.1.27 Existing eroded slopes are being shaped to minimize future erosion and to improve visual value of the area. Planting works at the eroded slope will be carried out before the commencement of wet season.
- 6.1.28 Retained trees, such as T1235, in front of Bungalow A (ER office) were damaged by trenching works. Roots were cut improperly and are exposed. The Contractor shall cut the damage root with sharp tool and cover them with moist Hessian sheet to retain moisture.
- 6.1.29 Retained trees, such as but not limited to T957 and T956, next to administration building were severely damaged by construction. The Contractor was reminded to prevent further damage to those trees and carry out tree surgery works immediately.
- 6.1.30 Mal-pruning of transplanted trees had not been rectified since July 2006. Construction material was still stockpiled within tree protection zones of the retained trees located at Administration building since July 2006.
- 6.1.31 A statement on the cause of death of tree T925 recorded was still outstanding.
- 6.1.32 Transplanted tree T848 was death. The tree was found planted too deep and the root flare was covered by soil. The Contractor was reminded to retain the tree and submit a proposal for replacement for ER's approval before tree removal.

Status of Environmental Licensing and Permitting

- 6.1.33 Permits / licences submission and approval status are summarised in Table 6.1.

**Table 6.1 Summary of Environmental Licensing and Permit Status**

Permit/licence/notification form title	Submission date	Status	Registration No./Remarks
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	21 <sup>st</sup> Jan 2006	Approved on 16 <sup>th</sup> February 2006	GW-RE0012-06 (valid until 3 <sup>rd</sup> July 2006)
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	6 <sup>th</sup> Apr 2006	Approved on 9 <sup>th</sup> Jun 06 (supersede the GW-RE0012-06)	GW-RE0157-06 (valid until 28 <sup>th</sup> Nov 2006)
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive pilling and/or the carrying out of prescribed construction work.	Nov 2006	Approved on 22 <sup>nd</sup> Nov 06 (supersede the GW-RE0157-06)	GW-RE0384-06 (valid until 26 May 2007)

<b>Permit/licence/notification form title</b>	<b>Submission date</b>	<b>Status</b>	<b>Registration No./Remarks</b>
Notification of the air pollution control (construction dust) regulation	21 <sup>st</sup> Jan 2006	Acknowledge receipt from EPD on 27 <sup>th</sup> February 2006	Ref. no.: 001006902
Registration as a chemical waste producer	10 <sup>th</sup> Jan 2006	Register on 7 <sup>th</sup> February 2006	WPN-5213-813-C1186-04
Application for a permit to dump material at sea under the Dumping at Sea Ordinance	10 <sup>th</sup> Jan 2006	Deferred by CHEC on 17 <sup>th</sup> March 2006 (CHEC/KSC3.9.1/0459)	No dredging work will be carried out between May to December 2006.
Application of exemption account for the construction waste charging scheme	12 <sup>th</sup> Jan 2006	Approved on 16 <sup>th</sup> January 2006	A/C no. 5005322 (valid until 2 <sup>nd</sup> August 2007)
Application for a licence for production pursuant to Section 14 of Air pollution Control Ordinance	2 <sup>nd</sup> Mar 2006	The total silo capacity for the cement works was 45 tonnes which is lower than 50 tonnes. It is not a specified process, application is not required.	EPD letter refer. no.: EP640/EA/SK/015
Application for a licence under Water Pollution Ordinance – Construction Site	18 <sup>th</sup> Mar 2006	Approved on 12 <sup>th</sup> Sept 2006 (CHEC/KSC3/9.1/0414)	EPD letter refer. No: EP640/W4/J1003



## **7. Environmental Non-Conformance**

### **7.1 Summary of Environmental Non-Compliance**

#### Air Quality

7.1.1 No non-compliance of 24-TSP was recorded at GCA B1 in this reporting month.

#### Marine Water Quality

7.1.2 No exceedance was recorded at all marine water monitoring stations in this reporting month.

#### Freshwater Quality

7.1.3 Eighteen exceedances of turbidity and five exceedances of suspended were recorded at Stream A, Stream B, Stream C and F\_Inland Marsh. All exceedances recorded at all streams (A, B & C) and fresh water inland marsh was considered project-related.

#### Terrestrial Ecology

7.1.4 No non-compliance was recorded during the monthly site audit.

#### Marine Ecology

7.1.5 Coral monitoring survey at Site B2, Site C and Control site was NOT required in this reporting month. Coral transplantation was carried out in the December 2006 at Site D2. Quarterly monitoring was NOT required in this reporting month. No dredging work was carried out at Site D2 because of the implementation of temporary intake and outfall pipeline arrangement.

### **7.2 Summary of Environmental Complaint**

7.2.1 No environmental complaint was received in this reporting month.

### **7.3 Summary of Environmental Summons**

7.3.1 One summon with respect to environmental issues was registered in this month regarding to the APCO (L/M to EP/AC/11/5000/40032 dated 17 January 2007). Jockey Club sent a copy of the pink form to ET for record and follow up.

7.3.2 According to the EPD latest record, The Contractor (CHEC) was convicted (dated of offence 12 Jun 06) for breaching the Water Pollution Control Ordinance (WPCO) and fined \$50,000 in November 2006. The Contractor did not report this record to ET or Client in November 2006.

## **8. Future Key Issues**

### **8.1 Key Issues for coming month**

8.1.1 Major works to be taken for the coming monitoring period are summarized as follows.

- Operation of temporary barging point
- Operation of sewage treatment plant
- Operation of concrete batching plant
- Operation of wastewater treatment plant
- Drainage and irrigation systems installation at Golf Holes
- Sand capping and turf establishment at Golf Holes
- Gravity drain construction from Lake 1D to existing reservoir
- Implementation of temporary drainage master plan
- Operation of desalination plant if required

### **8.2 Monitoring Schedule for the coming month**

8.2.1 The tentative schedule of air, water, ecology and landscape & visual monitoring for the next three months is presented in **Annex F**. The environmental monitoring will be conducted at the same monitoring locations in this reporting month. The monitoring programme has been reviewed and was considered as adequate to cater the nature of works to be undertaken.

### **8.3 Construction programme for the next three month**

8.3.1 The construction programme for the next three months is presented in **Annex G**.

## **9. Recommendations and Conclusions**

- 9.1.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 25<sup>th</sup> December 2006 to 24<sup>th</sup> January 2007 in accordance with EM&A Manual and the requirement under EP-224-2005/A.
- 9.1.2 The Contractor was repeatedly reminded to improve and provide sufficient temporary drainage system on site to prevent silty runoff to marine and stream courses. The Contractor was reminded to provide sufficient dust suppression mitigation measures especially during rock breaking activity, earth movement (loading and unloading), at haul road (vehicle movement) and large soils stockpiles. In addition, the Contractor was reminded to provide sufficient temporary drainage at the turfing areas.
- 9.1.3 The Contractor was reminded to rectify the part of the vegetation being cleared within the Stream B2 buffer zone area.
- 9.1.4 Same as the last reporting month, no rectification work was done by the Contractor. Regarding the retained trees, the Contractor shall take the following measures:
- Carry out surgery to damaged trees;
  - Report the cause of death of tree T925;
  - Maintain the tree protection zone required and remove all construction material / debris from the tree protection zone; and
  - Rectify the mal-pruning practice of the transplanted trees.
- 9.1.5 No environmental complaint was received but one environmental prosecution was noted during the reporting period. CHEC was convicted (dated of offence 12 Jun 06) for breaching the Water Pollution Control Ordinance (WPCO) and fined \$50,000 in November 2006.
- 9.1.6 The ET will keep track of the EM&A programme with respect to compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

# **Annex A**

## **Tentative Construction Programme**

Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	2005												2006												2007																
						O	D	J	F	M	A	M	J	J	A	S	O	N	D	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O										
<b>SUMMARY PROGRAMME</b>																																														
SU00100	Possession of Site	0	03/01/06A																																											
SU00110	Completion of Section 1	0		27/01/07	-116																																									
SU00120	Completion of Section 2	0		20/07/07	-290																																									
SU00130	Completion of Section 3	0		15/01/07	-40																																									
SU00140	Completion of Section 4	0		11/05/07	-66																																									
SU00150	Completion of Section 9	0		10/11/07	-101																																									
SU00160	S1: Low level intake pumping station	87*	25/10/06A	19/01/07	-108																																									
SU00170	S1: Gravity drain & rising main	230*	10/06/06A	25/01/07	-118																																									
SU00190	S2: Desalination plant	322*	18/02/06A	05/01/07	-94																																									
SU00200	S2: Transformer/switch room	260*	05/06/06A	19/02/07	15																																									
SU00205	S2: Additional Seawater intake & discharge pipe	86*	27/10/06A	20/01/07	-109																																									
SU00210	S2: Seawater pumping station	105*	29/12/06	12/04/07	-219																																									
SU00220	S2: Original Seawater intake & discharge pipe	177*	25/01/07	20/07/07	-323																																									
SU00230	S2: Retaining wall No.1	141*	27/05/06A	14/10/06A																																										
SU00240	S2: Lake No.1 and pump house No.1	97*	16/10/06A	20/01/07	-116																																									
SU00250	S2: Roundabout and access road	35*	08/09/06A	12/10/06A																																										
SU00260	S3: Existing maintenace building	315*	07/03/06A	15/01/07	-40																																									
SU00270	S4: Existing admin. building area 1	417*	21/03/06A	11/05/07	-66																																									
SU00280	S4: Existing admin. building area 2	182*	08/10/06A	07/04/07	-60																																									
SU00290	S4: Existing admin. building area 3	324*	21/03/06A	07/02/07	-55																																									
SU00300	S4: Existing admin. building area 4	304*	21/03/06A	18/01/07	-49																																									
SU00310	S4: Existing admin. building area 5	268*	07/03/06A	29/11/06A																																										
SU00330	S9: Earth/slope construction works	447*	10/03/06A	30/05/07	-83																																									
SU00350	S9: Drainage & Irrigation	150*	16/01/07	14/06/07	-33																																									
SU00360	S9: Sand Capping (GH3, 5, 8, 18)	219*	22/01/07	28/08/07	-101																																									
SU00370	S9: Sand Capping (GH4, 6, 7)	39*	20/02/07	30/03/07	-98																																									
SU00380	S9: Sand Capping (GH1, 2 & 9-17)	139*	11/05/07	26/09/07	-108																																									
SU00390	S9: Grassing (GH3, 5, 8, 18)	116*	19/02/07	14/06/07	-99																																									
SU00400	S9: Grassing (GH4, 6, 7)	51*	29/03/07	18/05/07	-98																																									
SU00410	S9: Grassing (GH1, 2 & 9-17)	144*	20/06/07	10/11/07	-104																																									

2005												2006												2007											
O	D	J	F	M	A	M	J	J	A	S	O	N	D	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O					

Start Date 28/12/05  
 Finish Date 02/02/08  
 Data Date 21/12/06  
 Run Date 06/01/07 09:37

Summary Bar  
 Progress Bar

KS12

Sheet 1 of 1

**China Harbour Engineering Co.**  
 Updated programme from KST7  
 Summary of Programme  
 21/12/06

Date	Revision	Checked	Approved
28/12/05	4th Final for Submission	Tjm	
01/03/06	Ver 5th (KST5)	Tjm	

# **Annex B**

## **Monitoring Programme for the reporting month**

Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
 Monthly EM&A Report

<b>Dec 2006</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
24	25	26	27 LV	28 WQ	29 AQ	30
31						

<b>Jan 2007</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
	1	2	3 WQ	4 AQ	5	6
7	8 WQ	9	10 LV AQ	11	12	13
14	15 WQ	16 AQ	17	18	19	20
21	22 WQ AQ	23	24 LV	25	26	27
28	29	30 TE	31			

Remarks: AQ = TSP, WQ = Freshwater and Marine water quality, TE = Terrestrial Ecology, ME = Marine Ecology;  
 LV = Landscape & Visual

# **Annex C**

## **Event Action Plan**



**Event / Action Plan for Air Quality**

EVENT	ACTION			
	ET	IC(E)	Engineer	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IC(E) and Engineer; 3. Repeat measurement to confirm finding; 4. Increase to daily monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IC(E) and Engineer; 3. Advise Engineer on effectiveness of proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase to daily monitoring; 6. Discuss with IC(E) and Contractor remedial actions required; 7. If exceedance continues, arrange meeting with IC(E) and Engineer; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor possible remedial measures; 4. Advise ET on the effectiveness of proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm in writing receipt of notification of exceedance; 2. Notify Contractor; 3. Supervise proper implementation of remedial measures.	1. Submit proposals for remedial measures to Engineer within three working days of notification; 2. Implement agreed proposals; 3. Amend proposal if appropriate.
<b>LIMIT LEVEL</b>				
1. Exceedance for one sample	1. Identify source, investigate causes of exceedance and propose remedial measures; 2. Inform IC(E), Engineer, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase to daily monitoring; 5. Assess effectiveness of Contractor's	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor possible remedial measures; 4. Advise Engineer on effectiveness of proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm in writing receipt of notification of exceedance; 2. Notify Contractor; 3. Supervise proper implementation of remedial measures.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IC(E) within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposals if appropriate.

EVENT	ACTION			
	ET	IC(E)	Engineer	CONTRACTOR
	remedial actions and keep IC(E), EPD and Engineer informed of results.			
2 Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IC(E), Engineer, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase to daily monitoring;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation measures to be implemented;</li> <li>6. Arrange meeting with IC(E) and Engineer to discuss remedial actions to be taken;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and Engineer informed of results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<p>Discuss amongst Engineer, ET, and Contractor the potential remedial actions;</p> <p>Review Contractor's remedial actions whenever necessary to assure their effectiveness, and advise Engineer accordingly;</p> <p>Supervise implementation of remedial measures.</p>	<p>Confirm receipt of notification of exceedance in writing;</p> <p>Notify Contractor;</p> <p>In consultation with the IC(E), agree with the Contractor the remedial measures to be implemented;</p> <p>Supervise proper implementation of remedial measures;</p> <p>If exceedance continues, consider what portion of the works is responsible and instruct the Contractor to stop that portion of work until exceedance has abated.</p>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IC(E) within three 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 portion of works as instructed by Engineer until the exceedance is abated.</li> </ol>

**Event and Action Plan for Water Quality**

Event	ET Leader	IC(E)	Engineer	Contractor
<b>ACTION LEVEL</b>				
Action level being exceeded by one sampling day	Repeat <i>in situ</i> measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Repeat measurement on next day of exceedance.	Discuss mitigation measures with ET and Contractor ; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss proposed mitigation measures with IC(E); Make agreement on mitigation measures to be implemented. Assess effectiveness of the implemented mitigation measures.	Inform the Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET and IC(E) and propose mitigation measures to IC(E) and Engineer; Implement agreed mitigation measures.
Action level being exceeded by more than two consecutive sampling days	Repeat <i>in situ</i> measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) and Contractor; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E) and Contractor; Ensure mitigation measures are implemented; Prepare to increase to daily monitoring; Repeat measurement on next day of exceedance.	Discuss mitigation measures with ET and Contractor ; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss the proposed mitigation measures with IC(E); Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures.	Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods; Discuss with ET and IC(E) and propose mitigation measures to IC(E) and Engineer within three working days; Implement agreed mitigation measures.
<b>LIMIT LEVEL</b>				
Limit level being exceeded by one sampling day	Repeat <i>in situ</i> measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E) Contractor and EPD; Check monitoring data, all plant, equipment	Discuss mitigation measures with ET and Contractor; Review proposals on mitigation measures submitted by Contractor and advise the Engineer accordingly; Assess effectiveness of implemented	Discuss proposed mitigation measures with IC(E), ET and Contractor; Request Contractor to critically review the working methods; Make agreement on mitigation measures to be implemented;	Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes in working methods;

Event	ET Leader	IC(E)	Engineer	Contractor
	and Contractor's working methods; Discuss mitigation measures with IC(E), Engineer and Contractor; Ensure mitigation measures are implemented; Increase to daily monitoring until no exceedance of Limit level.	mitigation measures.	Assess effectiveness of implemented mitigation measures.	Discuss with ET, IC(E) and Engineer and propose mitigation measures to IC(E) and Engineer within three working days; Implement agreed mitigation measures.
Limit level being exceeded by more than two consecutive sampling days	Repeat <i>in situ</i> measurement to confirm findings; Identify reasons for non-compliance and source(s) of impact; Inform IC(E), Contractor and EPD; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with IC(E), Engineer and Contractor; Ensure mitigation measures are implemented; Increase to daily monitoring until no exceedance of Limit level for two consecutive days.	Discuss mitigation measures with ET and Contractor; Review proposals on mitigation measures submitted by Contractor and advise Engineer accordingly; Assess effectiveness of implemented mitigation measures.	Discuss proposed mitigation measures with IC(E), ET and Contractor; Request Contractor to critically review working methods; Make agreement on mitigation measures to be implemented; Assess effectiveness of implemented mitigation measures; Consider and if necessary instruct Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	Inform Engineer and confirm in writing notification of the non-compliance; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Discuss with ET, IC(E) and Engineer and propose mitigation measures to IC(E) and Engineer within three working days; Implement agreed mitigation measures; As directed by the Engineer, slow down or stop all or part of the construction activities until no exceedance of Limit level.

**Action and Limit level and Event Action Plan for natural corals monitoring**

<b>Parameters</b>	<b>Action Level</b>	<b>Limit Level</b>
Sedimentation	a 15% increase in the percentage of sedimentation on the hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites	a 25% increase in the percentage of sedimentation on the hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites
Bleaching	a 15% increase in the percentage of bleaching of hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites	a 25% increase in the percentage of bleaching of hard corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites
Mortality	a 15% increase in the percentage of partial mortality of corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites	a 25% increase in the percentage of partial mortality of corals occurs at more than 20% of the tagged coral colonies at one or more monitoring sites

<b>Action</b>	<b>Action Level</b>	<b>Limit Level</b>
Construction phase	If the Action Level is exceeded the ET Leader should inform all parties (Contractor, Project Proponent, EPD, AFCD and IEC). The data from the water quality monitoring should also be reviewed. If the water quality monitoring shows no attributable effects of the installation works, then the Action Level is not triggered. If the water quality data indicate exceedances (for SS and/or turbidity) the ET Leader should discuss with the Contractor the most appropriate method of reducing suspended solids during dredging (e.g. reduce the rate of dredging), and/or control sedimentation during earth works (e.g. check the intactness and effectiveness of the temporary drainage system and stream buffer zone). This mitigated method should then be enacted on the next working day.	If the Limit Level is exceeded the ET Leader should inform all parties (Contractor, Project Proponent, EPD, AFCD and IEC) immediately. Should the Limit Level be exceeded, the contractor should stop dredging and/or earth works immediately and work out the solution according to the requirements of EPD and AFCD. The ET Leader should inform the Contractor to suspend dredging and/or earth works until an effective solution is identified. Once the solution has been identified and agreed with all parties dredging and/or earth works may commence
Operation phase	If the Action Level is exceeded the ET Leader should inform Golf Course Operator, EPD, and AFCD. The data from the water quality monitoring should also be reviewed. If the water quality monitoring shows no attributable effects of the installation works, then the Action Level is not triggered. If the water quality data indicate exceedances (salinity and/or pesticides) the ET Leader should discuss with the Golf Course Operator the most appropriate method of reducing salinity (e.g. reduce the daily operation time of the desalination plant), and/or control chemicals from runoff (e.g. reduce the frequency and quantity of chemical applied, check the intactness and effectiveness of the closed drainage system and stream buffer zone). This mitigated method should then be enacted on the next working day.	If the Limit Level is exceeded the ET Leader should inform all parties Golf Course Operator, EPD, and AFCD immediately. Should the Limit Level be exceeded, the Golf Course Operator should stop the operation of the desalination plant and/or the application of chemicals immediately and work out the solution according to the requirements of EPD and AFCD. The operation of the desalination plant and/or the application of chemicals would be suspended until an effective solution is identified.

### Categories of Archaeological Finds and Recommended Action

Categories of Archaeological Material	Retrieval Procedure
Human burial <ul style="list-style-type: none"> <li>• Skeleton remains</li> <li>• Items associated with human burial, i.e. grave goods</li> </ul>	Full recording and recovering of human remains and associated features <ul style="list-style-type: none"> <li>• Complete recoding by photography, drawing, written description</li> <li>• Full measurement of burial and surrounding matrix</li> <li>• Retrieval of human remains and associated materials</li> <li>• Retrieval of surrounding soil for further analysis</li> </ul>
Intact features <ul style="list-style-type: none"> <li>• Structural/architectural remains</li> <li>• Undisturbed context, such as hearth, midden, habitation area, assemblages of artefacts and/or environmental material</li> </ul>	Limited recording and recovery of archaeological features <ul style="list-style-type: none"> <li>• Recording and measurement of salient features by photography, drawing and written description</li> <li>• Retrieval of all archaeological material</li> <li>• Retrieval of samples from the surrounding matrix</li> </ul>
Intact artefacts <ul style="list-style-type: none"> <li>• Complete objects such as pottery, metal objects, stone and bone tools. The objects are complete but isolated and are no part of assemblages or feature.</li> </ul>	Recovery of artefacts <ul style="list-style-type: none"> <li>• Recovery of objects</li> <li>• Sampling of the surrounding matrix</li> <li>• Proper treatment with cleaning, marking and packing under international acceptable standards</li> </ul>
Isolated material <ul style="list-style-type: none"> <li>• Sherds, non-human bone, artefact fragments (metal, pottery, glass). There are no complete objects, the material is isolated and fragmentary in nature.</li> </ul>	Recovery of artefact fragments/archaeological material <ul style="list-style-type: none"> <li>• Recovery of material, such as artefact fragments, environmental material and sampling of surrounding matrix</li> </ul>
Deposits with archaeological potential <ul style="list-style-type: none"> <li>• Soil deposits which exhibit characteristics associated with archaeological remains in Hong Kong</li> </ul>	Sampling of the deposit <ul style="list-style-type: none"> <li>• Collection of soil samples from deposits displaying archaeological potential</li> </ul>

# **Annex D**

## **Implementation status on Environmental Protection Requirements**

**IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES**

**Table 1 Implementation Schedule of Air Quality Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
<b>Air Quality - Construction Phase</b>									
4.7.1		<p>In order that nuisance to air sensitive receivers is minimized, it is important to minimize dust emissions from construction activities including cut and fill operations and trucks movements on haul road.</p> <p>Dust control techniques should be considered to control dust to a level not exceeding the AQOs as well as the 1-hour TSP guideline level. These measures include:</p> <ul style="list-style-type: none"> <li>• Adoption of good site practices;</li> <li>• Avoid practices likely to raise dust level;</li> <li>• Frequent cleaning and damping down of stockpiles, dusty areas of the Site and the haul roads;</li> <li>• Reduce the speed of the vehicles (say 10 kph) on the haul road;</li> <li>• Reducing drop height during material handling;</li> <li>• Provision of wheel-washing facilities for Site vehicles leaving the Site;</li> <li>• Regular plant maintenance to minimize exhaust emission;</li> <li>• If concrete batching plant or rock crushing plant is planned to be used, a license from EPD may be required depending on the total silo capacity since they are specified processes under the APCO. Modern plant should be designed to limit emissions</li> </ul>	Work site / during construction	All contractors		√		EIAO-TM, APCO, Air Pollution Control (Construction Dust) Regulation	Insufficient
								Insufficient	
								Insufficient	
								√	
								√	
								Insufficient	
								Insufficient	
								As confirmed by Contractor, the concrete batching plant is not a specific process.	
4.7.2		Providing watering four times a day for dust suppression.						Insufficient	

\* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

\*\* D=Design, C=Construction, O=Operation; N/A = Not applicable



**Table 2 Implementation Schedule of Water Quality Control Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
<b>Water Quality – Construction phase</b>									
6.11.4		<p><u>Proposed 18 holes Golf Course Layout Design</u> 20m buffer zones on both sides of the streams will be demarcated as a preventative mitigation measure to reduce the disturbance during construction phase of the golf course except for the portions of Streams A which is of low ecological value and an old tributary of Stream B. On one side of part of the Stream B, the buffer zone would be reduced to 5m.</p>	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	Streams A, B1, B2 and C buffer zones fencing were provided. Permanent drainage located at upstream of Stream B1 (within the buffer zone) was started to constructed in mid-Jan 2007.
6.11.5		<p>For the construction activity which is unavoidable near natural streams (within the buffer zone), mainly the construction of crossings, preventative mitigation measures during the construction stage should be follow by the Contractor, they are shown as follows:</p> <ul style="list-style-type: none"> <li>The proposed works site inside or in the proximity of natural streams should be temporarily isolated, through by placement of sandbags or silt curtains and properly supported by props, to prevent adverse impacts on the stream water qualities;</li> <li>The natural bottom and existing flow in the stream should be preserved to avoid disturbance to the stream habitats;</li> <li>No direct and indirect discharge into the natural stream is allowed from any construction work activities;</li> <li>Stockpiling of construction material, if any, should be properly covered and located away from any natural stream;</li> <li>Monitor rain forecast closely and cover any exposed spoil when rainstorms are forecasted. Debris should be properly disposed of before rainstorm to avoid any inadvertent wash away into the stream; and</li> <li>removal of existing vegetation alongside the stream should be avoided. When disturbance to vegetation is unavoidable, all disturbed areas should be hydroseeded or planted with suitable vegetation to blend in with the natural environmental upon completion of works.</li> </ul>						<p>Temporary bridges at nos. 9, 10 and 15 were constructed at Streams A, B1, B2 and C within the buffer zone areas. The Contractor was reminded to ensure no discharge/runoff to the Streams A, B &amp; C from the construction activity especially within the buffer zone areas.</p> <p>Construction of permanent bridge (precast in concrete) no. 5 was in progress at downstream of freshwater inland marsh. The Contractor was reminded to provide sufficient mitigation measures during construction to prevent runoff from the bridge. Permanent bridges construction at Streams A, B2 and C was in progress and expected to be completed before the dry season.</p>	
6.11.13		<p><u>Runoff and Drainage Management</u></p> <ul style="list-style-type: none"> <li><b>Diversion of upstream flows around the works areas for stream crossings and underground pipes:</b> To minimize the impact of upstream runoff on the Works area by preventing storm flows reaching the work areas. This will be done through provision of upstream cut-off drains to intercept the flows and divert them around the Works area. It would convey flows to downstream stream courses, or other elements of temporary drainage systems (such as storage facilities).</li> <li><b>Temporary covering the works areas during severe storm events:</b> Significant rainstorm events can be reasonably well forecast and when heavy rain is predicted, mitigation measures should be provided for the vulnerable areas by using tarpaulins, plastic sheets or other temporary covering to protect works area and minimize damage and erosion. It is recommended not to cover the newly establishment grass areas, and if unavoidable, this should only to be done on a short term basis (less than 24 hours).</li> <li><b>Silt traps and sedimentation tanks for main discharge routes form works area:</b> Sufficient and suitably sized silt traps and/or sedimentation tanks should be provided at the downstream ends of the systems to remove suspended solids prior to discharge. The discharge water quality shall be compliant with the <i>TM on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters</i> under the WPCO. The required volume of the sedimentation tanks will depend on the catchment area served. Multiple tanks in series may also be required where runoff might be expected to be silty.</li> <li>The design details of the temporary drainage system at turf establishment area follow the same principles of the permanent drainage system. However the component pipes, tanks, lakes and/or pumps may differ in size, shape, location, etc. from that of the permanent system, dependent upon the temporary runoff areas as compared with those of the permanent system. Additionally or alternatively, the temporary drainage system may consist of other methods to control soil erosion and/or to facilitate the collection of surface water runoff.</li> </ul> <p>The temporary drainage system will function during the period of time in which the permanent system is not yet completed. This circumstance will arise from the fact that the golf holes, inclusive of the permanent drainage system, will be constructed individually. As a result, the permanent drainage</p>	Work site / During the construction period	All contractors		√	ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	<p>The latest temporary drainage plan has included the whole construction site. The temporary drainage plan will be updated by the Contractor throughout the construction phase to cope with the change of site conditions. The Engineer was reminded the Contractor to prepare the next wet season drainage plan for their approval. The latest submitted drainage plan is the mitigation measures for the silty runoff mainly which has not included the recycling the runoff during the turf establishment.</p> <p>The installation and maintenance of the temporary drainage on site was very low since last two reporting months. The site was mainly surrounded with silt fence with low frequency of maintenance. Permanent temporary drainage (including closed low flow drainage system) was constructed in progress. No turf was established on site yet.</p> <p>The expected earliest turf establishment period will be commenced in 12 February 07 at but subject to further confirmation with the Contractor and agreed with Jockey Club.</p>	

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
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		<p>system may not be completed in its entirety until connection is made from each respective golf hole area to the lake/reservoir. As the permanent drainage system is completed for each hole, the corresponding temporary system will be decommissioned and reused elsewhere.</p> <p>The temporary drainage system will be in use until the permanent system is functional in a given area. Once the permanent system is functional in a given area, the temporary system will be decommissioned and, wherever possible, the components re-used in another temporary drainage system installed elsewhere. It is anticipated that the maximum duration of use for the temporary drainage system in any given area will be one-year.</p> <p>The storage tanks and/or lakes will be designed to segregate suspended solids (or pollutants as may be the case in plant/equipment storage and refueling areas) as may be necessary by contract requirements and reuse.</p> <ul style="list-style-type: none"> <li>No irrigation, fertilizer and pesticide applications to the turf would be permitted during rainstorm events or when heavy rainstorm is predicted 24 hours before the application.</li> <li>Runoff from materials storage areas, particularly fuel and chemicals storage area should be separated from the main drainage systems (bund, if necessary) and provided with dedicated facilities throughout the construction period, such as petrol interceptors.</li> </ul>							
6.11.14		<p>The Contractor shall follow good site practices and be responsible for the design, construction, operation, and maintenance of all the mitigation measures as specified in <i>ProPECC PNI/94</i> on construction site drainage through the construction period. These practices include:</p> <ul style="list-style-type: none"> <li>Temporary ditches should be provided to facilitate run-off discharge into appropriate watercourses, via a silt retention pond.</li> <li>All drainage facilities and erosion and sediment control structures should be inspected monthly and maintained to ensure proper and efficient operation at all times.</li> <li>Excavation of soil that cannot be avoided during the wet season, and exposed surface or open stockpiles should be covered with tarpaulin or other means. Other measures that need to be implemented before, during and after rainstorms are summarized in <i>ProPECC PNI/94</i>.</li> <li>Exposed soil areas should be minimized to reduce potential for increase siltation and contamination of runoff.</li> <li>Earthwork final surfaces should be well compacted and subsequent permanent work (turf establishment) should be immediately performed.</li> <li>The Contractor shall contain within the site all surface runoff generated from the construction works, concreting works, dust control and vehicle washing, etc.</li> <li>The Contractor shall arrange other measures, such as provision of sand bags or temporary diversion systems to prevent washing away of soil, silt or debris into any nearby natural streams. Any runoff shall be diverted into appropriate sediment traps before discharging to the nearby drainage system. The discharge water quality shall be compliant with the <i>TM on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters</i> under the WPCO.</li> <li>The Contractor shall observe and comply with the Water Pollution Control Ordinance (WPCO) and its subsidiary regulations by implementing environmental protection measures (such as the use of silt traps) and preventing any point or non-point source of pollution.</li> </ul>	Work site / During the construction period	All Contractor		√		<p>ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water</p> <p>The latest temporary drainage plan has included the whole construction site. The temporary drainage plan will be updated by the Contractor throughout the construction phase to cope with the change of site conditions. The Engineer was reminded the Contractor to prepare the next wet season drainage plan for their approval. The latest submitted drainage plan is the mitigation measures for the silty runoff mainly which has not included the recycling the runoff during the turf establishment.</p> <p>The installation and maintenance of the temporary drainage on site was very low since last reporting month. The site was mainly surrounded with silt fence with low frequency of maintenance. Permanent temporary drainage (including closed low flow drainage system) was constructed in progress. No turf was established on site yet.</p> <p>The expected earliest turf establishment period will be commenced in 12 February 07 at but subject to further confirmation with the Contractor and agreed with Jockey Club.</p>	

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6.11.15		<p><u>Concrete bridge construction</u></p> <p>No work is allowed to come into contact with the underlying stream bed during the concrete bridge construction. During the construction of precast concrete bridge, if necessary, precaution measures should be taken to ensure no potentially polluting liquid or solid wastes fall into the stream. This is essential to avoid water quality impacts within ecologically sensitive streams.</p> <p>The Contractor shall good site follow practices, including, but no limited to::</p>	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	Construction of bridge culvert at Hole 10 (Stream B2) was completed. Permanent precast bridge no. 5 at the freshwater inland marsh, permanent in-situ bridge (Stream B1), precast bridge no. 15 (Stream C) and precast bridge (Stream A) were under construction during the reporting month.
6.11.16		<ul style="list-style-type: none"> <li>Construction work area for the precast concrete should be outside the designated stream buffer zone area;</li> <li>The designated work area for precast concrete work should be covered to minimize the potential water runoff during rain from the construction area;</li> <li>All water used within the concrete work area should be collected, stored and recycled to reduce resource consumption. Stormwater runoff from the works areas fro precast concreting works should drain under gravity towards a sedimentation basin. The overlying water from the sedimentation basin should be recycled for reuse within the plant. The deposited sediment should be dewatered and the dry matter should require disposal off-site. No water should be discharged outside the boundary of the precast concrete works area;</li> <li>The use of tarpaulin sheet or other means (water impermeable texture) should be placed beneath precast concrete beam level (must be above the stream bed level) to capture any falling object during installation of precast concrete bridge on the footings or abutments;</li> <li>Prohibition of any direct and indirect discharge into the streams;</li> <li>The concrete bridge and footings of abutments must be completely above the high water mark;</li> <li>All equipment and machinery must be free of leaks or excess oil and grease;</li> <li>Equipment refueling or servicing or storage of fuel must be undertaken at a minimum of 30 meters from the stream;</li> <li>Prevent soil and trash from getting into stream during construction by use of silt fence, fiber rolls, gravel bags and other effective means;</li> <li>All bare soil (abutment slope or temporary stockpile) must be covered with tarpaulin or other means before forecast rain; and</li> <li>Wash out concrete trucks or pumps only into designated washout pits.</li> </ul>							
6.11.19		<p><u>Dredging during Construction of Desalination Plant's intake and outfall</u></p> <p>The intake and outfall pipelines will be constructed by dredging the seabed to form a trench and backfilled with a layer of bedding material (quarry run stone) before putting the pipelines in place. Once in place, the pipelines are covered with layers of rock armour on top of the pipelines to protect the pipelines against damage by wave action. The alternative backfilling material is from rock excavated during site formation if suitable.</p>	Work site / During the construction period	All contractors		√		ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	No dredging work for the desalination plant pipelines was carried out. All desalination plant land formation work and temporary pipelines were completed and installed at the existing KSC pier during the reporting month. Testing of the desalination plant was carried out during the first week of this reporting month.
6.11.20		<p>The materials used for the backfilling at the intake and outfall pipelines are stone and rock armour only. Transfer of backfilling materials onto the seabed from barge should be conducted by careful grabbing and unloading to seabed (to minimize sediment migration), thereby minimize impacts on water quality to nearby water sensitive receivers. As a preventative measures, silt curtain will also be required during the backfilling activities. The expected backfilling duration is approximate 2 months.</p>							
6.11.21		<p>The Contractor shall use backhoe for dredging works at a water depth of less than 2m and use close grab dredger for works with water depth of more than 2m. The estimated dredging works is about 50m long (where backhoe should be used for water less than 2m deep) and 70m long (where close grab dredger should be used for water more than 2m deep). Only one dredging method should be used at any one time.</p>							
6.11.22		<p>In order to avoid pollution during dredging, transporting and dumping of marine mud. Pollution avoidance measures shall include but not be limited to the following:</p> <ul style="list-style-type: none"> <li>The maximum daily dredging rate for closed grab dredger should be 45m<sup>3</sup>/day;</li> <li>The maximum daily dredging rate for backhoe should be 20m<sup>3</sup>/day;</li> <li>Silt curtain should be installed for any dredging methods to protect the WSRs;</li> <li>Closed grabs or sealed grabs should only be used for locations with water depths ≥ 2m;</li> <li>Backhoe should only be used for locations with water depths ≤ 2m;</li> <li>All equipment should be designed and maintained to minimise the risk of silt and other contaminants</li> </ul>							

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6.11.23		<p>being released into the water column or deposited in locations other than designated location;</p> <ul style="list-style-type: none"> <li>• Mechanical grabs should be designed and maintained to avoid spillage and should seal tightly while being lifted;</li> <li>• No trailing suction hopper dredgers would be deployed for the dredging of marine mud;</li> <li>• All vessels should be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;</li> <li>• All pipe leakages should be repaired promptly and plant shall not be operated with leaking pipes;</li> <li>• Before moving the vessels which are used for transporting dredged materials excess material should be cleaned from the decks and exposed fittings of vessels and the excess materials should never be dumped into the sea except at the approved locations;</li> <li>• Adequate freeboard should be maintained on barges to ensure that decks are not washed by wave action;</li> <li>• The Contractor should monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The contractor should keep and produce logs and other records to demonstrate compliance and that journey times are consistent with designated locations and copies of such records should be submitted to the engineer;</li> <li>• All bottom dumping vessels should be fitted with tight fitting seals to their bottom openings to prevent leakage of material;</li> <li>• Loading of barges and hoppers should be controlled to prevent splashing of dredged material to the surrounding water, and vessels should not be filled to a level which will cause overflowing of material or polluted water during loading or transportation; and</li> <li>• The engineer may monitor any or all vessels transporting material to check that no dumping outside the approved location nor loss of material during transportation takes place. The contractor should provide all reasonable assistance to the engineer for this purpose.</li> </ul> <p>In addition, baseline water quality monitoring before commencement of the marine works shall be carried out in the nearby waters to obtain baseline information for subsequence monitoring. Regular and frequent water quality monitoring shall be carried out throughout the whole construction period to ensure the water quality during construction is well within the established environmental guidelines and standards.</p>							
6.11.24		<p>Silt Curtain In order to minimize impacts during the whole construction period of desalination plant's intake and discharge outfall, silt curtains should be utilized to minimize sediment migration. The Contractor shall be responsible for the design, installation and maintenance of the silt curtains to minimize the impacts on the water quality and the protection of water sensitive receivers. The design and specification of the silt curtains shall be submitted by the Contractor to the Engineer for approval. Area of the silt curtain to enclose the works area should be minimized in order to reduce the disturbance of ecological sensitive areas nearby.</p>							
6.11.25		<p>A typical suspended solids reduction of 75% can be achieved with the incorporation of silt curtain. Two-layer silt curtains have generally been used for dredging projects of larger scale to further ensure this reduction. However, as the scale of proposed project is considered small, it is recommended to use single layer silt curtain which can achieve a minimum 75% suspended solids reduction.</p>							
6.11.26		<p>Silt curtains shall be formed from tough, abrasion resistant, permeable membranes, suitable for the purpose, supported on floating booms in such a way as to ensure that the sediment plume shall be restricted to within the limit of the works area.</p>							
6.11.27		<p>The silt curtain shall be formed and installed in such a way that tidal rise and fall are accommodated, with the silt curtains always extending from the surface to the bottom of the water column. The removal and reinstallation of such curtains during typhoon conditions shall be as agreed with the Director of Marine Department.</p>							
6.11.28		<p>The Contractor shall regularly inspect the silt curtains and check that they are moored and marked to avoid danger to marine traffic. Any damage to the silt curtain shall be repaired by the Contractor promptly and the works shall be stopped until the repair is effected to the satisfaction of the Engineer.</p>							

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6.11.29		<u>General Construction Activities</u> Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering adjacent watercourse. Stockpiles of construction materials should be kept covered when not being used.	Work site / During the construction period	All contractors		√	ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	The Contractor was submitted the disposal records for the general refuse and construction waste for this reporting month. The major disposal waste were vegetation and construction waste.  Not observed Not observed	
6.11.30	Oils and fuels should only be stored/handled in designated areas with pollution prevention facilities. Oil interceptors need to be regularly inspected and cleaned to avoid wash-out of oil during storm conditions.								
6.11.32	All fuel tanks should be provided with locks and be sited on sealed areas within bunds of capacity equal to 110% of the storage capacity of the largest tank.								
6.11.33		Good housekeeping practices and staff training are required to minimize careless spillage and keep the work space in a tidy and clean conditions at all times. Accidental spillage of chemicals in the works area would directly affect the aquatic environment. It is recommended that the Contractor should develop management procedures for chemical and implement an emergency plan to deal with chemical spillage in case of an accident.	Work site / During the construction period	All contractors		√	ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	No observed	
6.11.34	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The chemical waste should be transported to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Facility at Tsing Yi. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes details the requirements to deal with chemical wastes.	No chemical waste disposal recorded was submitted by the Contractor. No chemical waste storage area was observed within the construction site.							
6.11.35	<u>On-Site Sewage Effluents</u> In order to prevent sewage effluents affecting water courses, the following mitigation measures should be provided by the Contractor:-  <ul style="list-style-type: none"> <li>• Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site to handle sewage from the workforce;</li> <li>• The toilet facilities should be more than 30 m from any watercourse;</li> <li>• Temporary storage tank should be provided to collect wastewater from kitchens or canteen, if any;</li> <li>• A licensed waste collector should be deployed to clean the chemical toilets on a regular basis which will be and disposed of at government sewage treatment facilities</li> <li>• Regular environmental audit on the construction site can provide an effective control of any malpractices and can achieve continual improvement of environmental performance on site. It is anticipated that sewage generation during the construction phase of the project would not cause water pollution problem after undertaking all required measures; and</li> <li>• Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the project.</li> </ul>	√. A sewage treatment plant was provided at the site office. Two to three mobile toilets were available on site at southern portion of the construction site.  No canteen was available. √ √							
		No observed							
6.11.36		<u>Concrete batching plant</u> All water used within the concrete batching plant will be collected, stored and recycled to reduce resource consumption. This includes water used in the concrete batching process, truck cleaning, yard washing and dust suppression spraying. All spent dust suppression effluent will be collected and recycled. To minimize the potential water quality impacts that may generate from the concrete batching plant, a drainage system should be provided in this site. The batching plant area should be channelled to collect concrete washings for further treatment before reuse on-site and prevent concrete washings from directly entering the any stream or seawater. Site runoff should also be collected through the drainage system. To minimize the generation of contaminated site runoff from concrete production area, the concrete batching plant should be sheltered.	Work site / During the construction period	All contractors		√	ProPECC PN 1/94; WPCO; TM-Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water	The concrete batching plant is operating during the reporting month. Temporary drains to cut-off the water from haul road was not observed. Concrete bund was provided at the downstream periphery end of the site to confine the wastewater. There was a sedimentation pit within the concrete batching plant area to collect the wastewater and used as a wheel waste facilities. The collected water will pump to sedimentation columns for recycle use. No discharge was expected from the plant. The site condition of the concrete batching plant was satisfactory.	
6.11.37	Concrete washings and site runoff should be pumped to a wastewater treatment system with a sedimentation unit for removal of suspended solids such as waste concrete particles, silt and grit in order to achieve the discharge standards. pH adjustment should also be applied if the pH value of the collected concrete washings and site runoff is higher than the pH range specified in the discharge licence. This can be achieved by adding neutralizing regents, i.e. acidic additive. A discharge licence should be applied from EPD for discharge of effluent from the site. Analysis of effluent quality may be required as one of the licensing conditions of the discharge licence. The Contractor should collect effluent samples at the final discharge point in accordance with the required sampling frequency to test the specified water quality parameters. The quality of the discharged effluent should comply with the discharge licence requirements.								

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6.11.38		It is recommended to reuse the treated effluent for dust suppression and general cleaning on site, wherever possible.							
6.11.39		The drainage system should be maintained on a regular basis to remove the deposits on the channels. The sedimentation and pH adjustment systems should also be checked and maintained by competent persons to ensure that the systems are functioning properly at all times.							
6.11.40		The deposited sediment will be dewatered and the dry matter will require disposal off-site. The estimated maximum concentrate batching operation period during construction is 20 months.							
6.11.41		Sand, gravel and other bulk materials will be delivered from the production area by conveyor boats or derrick barges to the temporary barging point, and the material will then be loaded onto dump trucks by loaders and delivered to the on-site storage areas.							
		Regular environmental inspections should be conducted to check the environmental performance of daily operation. These inspections will ensure proper installation and maintenance of pollution control measures, such as checking of sedimentation basin, wastewater recycling facility and enclosure of stockpiles, and the implementation of other mitigation measures.							

\* All recommendations and requirements resulted during the course of EIA/EA Process, including ACE and/or accepted public comment to the proposed project.

\*\* Des - Design, C = Construction, O = Operation

N/A Not applicable

**Table 3 Implementation Schedule of Waste Management Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
<b>Waste Management - Construction Phase</b>									
7.7.2		<p>Good site practice to minimize solid waste generation, including:</p> <ul style="list-style-type: none"> <li>nomination of approved personnel, such as a site manager, to be responsible for good site practices, and making arrangements for collection of all wastes generated at the site and effective disposal to an appropriate facility;</li> <li>training of site personnel in proper waste management and chemical waste handling procedures;</li> <li>provision of sufficient waste disposal points and regular collection for disposal;</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> <li>regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;</li> <li>a Waste Management Plan should be prepared and should be submitted to the Engineer for approval. One may make reference to ETWB TCW No. 15/2003 for details; and</li> <li>a recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.</li> </ul>	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	Construction waste disposal records were submitted by the Contractor for this reporting month.
7.7.4		<p>Good management and control can prevent the generation of significant amounts of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <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> <li>separate labelled bins shall be provided to segregate aluminium cans from other general refuse generated by the work force, and to encourage collection of by individual collectors;</li> <li>any unused chemicals or those with remaining functional capacity shall be recycled;</li> <li>maximising the use of reusable steel formwork to reduce the amount of C&amp;D material;</li> <li>prior to disposal of C&amp;D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;</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> <li>minimize over ordering of concrete, mortars and cement grout by doing careful check before ordering.</li> </ul>	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	<p>Not observed</p> <p>Not observed</p> <p>Not observed</p> <p>√</p> <p>Not observed</p> <p>Not observed</p> <p>√</p> <p>√</p>
7.7.6		<p><u>Site Clearance Waste</u> Scrub and other vegetation will be stripped for the tees, fairways, greens and access roads. The normal route for disposal for such material is landfill but in this case it is proposed that vegetation is passed through a "chipper" to break down the material into a medium that can be used as mulch / compost and provide a seed-bank for natural hydroseeding of exposed areas.</p>	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance ; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	Vegetation stockpiles and construction waste stockpiles were disposed offsite.
7.7.7		Non-inert materials should be kept separate and reused on-site as fill in preference to disposal at public filling areas which are operated by CEDD or disposal at landfill.							√
7.7.8		<p><u>Excavated Materials</u> Material generated during open cut works, and access route formation will comprise rock and soil and all this material will be reused in the site shaping process. It is anticipated that there will be no material requiring disposal off-</p>	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance;	√

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					D	C	O		
		site in public filling areas.						ETWB TCW NO. 15/2003.	
7.7.9		<u>Construction and Demolition (C&amp;D) Material</u> The C&D material generated from the site formation and demolition works should be sorted on-site into inert C&D material and C&D waste. In order to minimise the impact resulting from collection and transportation of C&D material for off-site disposal, the excavated material comprising fill material should be reused on-site as backfilling material. C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill. A suitable area(s) should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. The stockpiling/sorting area should be located far away from the identified sensitive receivers.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	Two large soil stockpiles were located at the upstream of Stream C.
7.7.10		<u>Site fencing</u> Some site fencing may be required. Attention should be paid to WBTC No. 19/2001 which introduces a new policy requiring the use of metallic site hoardings and signboards in order to reduce the amount of timber used on construction sites.	Work site / During the construction period	All Contractors		√		WBTC No. 19/2001	√ Plastic fencing / metallic hoarding was used on site.
7.7.12		<u>Chemical Waste</u> Where the construction processes produce chemical waste, the Contractor must register with EPD as a Chemical Waste Producer. Wastes classified as chemical wastes are listed in the <i>Waste Disposal (Chemical Waste) (General) Regulation</i> . These wastes are subject to stringent disposal routes. EPD requires information on the particulars of the waste generation processes including the types of waste produced, their location, quantities and generation rates. A nominated contact person must be provided.	Work site / During the construction period	All Contractors		√		Waste Disposal (Chemical Waste) (General) Regulation	Chemical storage area was not large enough to hold all of the chemicals on site. No chemical waste storage area was found. The only one wastewater treatment plant at Hole 10 was removed and relocated at temporary storage area at Hole 18.
7.7.14		Hard standing surfaces draining via oil interceptors shall be provided in works area compounds. Interceptors will be regularly emptied to prevent release of oils and grease into the surface water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain. Oil and fuel bunkers should be banded to prevent discharge due to accidental spillages or breaches of tanks. Waste collected from any grease traps should be collected and disposed of by a licensed contractor.							
7.7.15		Any construction plant which is likely to leak oil, should have absorbent inert material e.g. sand, placed beneath it. This material should be replaced on a regular basis and the contaminated material should be stored in a designated, secure place. Any sand used for soaking oil waste is classified as chemical waste and should be disposed of in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulations</i> .							
7.7.16		Lubricants and waste oils are likely to be generated during the maintenance of vehicles and mechanical equipment. Used lubricants will be collected and stored in individual containers which are fully labelled. The containers should be stored in a designated secure place. If possible such waste should be sent to oil recycling companies; there are also companies which collect empty oil drums for reuse or refill.							
7.7.17		Oil and lubricant wastes are classified as chemical wastes, and if not recycled, should be collected by licensed collector and should be treated at the Chemical Waste Treatment Centre, Tsing Yi, or other sites licensed for disposal of waste oil. A trip ticket system operates to control the movement of such chemical waste and tickets have to be produced upon the request of EPD.							
7.7.18		Some paints and solvents are classified as chemical waste and, if used on site, will be subject to the stringent requirements of the <i>Waste Disposal (Chemical Waste) (General) Regulation</i> . Empty paint cans should be							



EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
7.7.19		recycled or collected as waste. Any dry paint waste should be swept up and collected in containers for disposal.  No lubricants, oils, solvents or paint products should be allowed to discharge into water courses, either by direct discharge, or as contaminants carried in surface water runoff from the construction site.							
7.7.20		<u>Sewage</u> An adequate number of portable toilets should be provided for the on-site construction workforce. The portable toilets shall be maintained in a state that will not deter the workers from using them.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	Few portable toilets were not available at remote area to the site office. Site office with provision of flushing toilets for workers and staffs.
7.7.21		<u>General Refuse</u> General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous Provisions) Ordinance; ETWB TCW NO. 15/2003.	Temporary stored on site without properly covered and disposed around two weeks time of the reporting month.
7.7.22		Solid and liquid wastes will be generated by the construction workers during the clearance/construction period. The refuse (mainly non-recyclable materials) will be collected regularly in black refuse bags and delivered to the existing solid waste disposal system and transferred to landfill for disposal.							
7.7.23		<u>Marine Sediments</u> The basic requirements and procedures for dredged mud disposal are specified under the ETWB TCW No. 34/2002. The management of the dredging, use and disposal of marine mud is monitored by the Marine Fill Committee (MFC), while the licensing of marine dumping is the responsibility of the Director of Environmental Protection (DEP). The dredged marine sediments will be loaded onto barges and transported to the designated disposal site.	Marine Dredging area / During the construction period	All Contractors		√		ETWB TCW NO. 34/2002.	No dredging works was carried out during the reporting month. No dumping licence was applied by the Contractor.
7.7.25		During transportation and disposal of the dredged marine sediments, the following measures should be taken to minimise potential impacts on water quality: <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 hopper 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 DEP.</li> </ul>							

\* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

\*\* D=Design, C=Construction, O=Operation; N/A = Not applicable

**Table 4 Implementation Schedule of Ecological Impact Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
<b>Construction Phase</b>									
8.7.1		<u>Terrestrial Ecology</u> Haul roads would be located on future fairway and cart paths alignments to minimise temporary disturbance of habitats.	Work site / During the construction period	All Contractor		√		-	√
8.6.39		Avoid disturbance of stream bed during the construction of the permanent bridges by using precast unit of the bridge segments transported from other locations and installed to the proposed locations.	Stream crossing/ During the construction period	All Contractor		√		-	Vegetation clearance at Stream B2 buffer zone during Nov 2006. No remediation work was carried out at Stream B2 buffer zone. The Contractor agreed to complete the remedial work before coming wet season.
8.7.4		Good site practice. Construction materials must be stored at locations away the stream courses. Site runoff would be desilted in settling ponds to reduce the potential for suspended sediments, organics and other contaminants to enter stream and marine environment.	Work site / During the construction period	All Contractor		√		-	Stream C condition (silt deposit at the stream bed) was remained the same as last month. Temporary drains (permanent cut off drains) were implemented at Hole 16 to reduce the clean catchment water mixing with construction site. Silt fence installation for the buffer zone at Stream C remained the same.
8.9	Table 4.1	Streams B, C, and D will be monitored monthly during the construction phase to determine the status of <i>Caridina trifasciata</i> (shrimp) and <i>Nanhaipotamon hongkongensis</i> (freshwater crab). Stream condition will be recorded with reference to the protective buffer zone. Encroachment onto the buffer zone will be reported to the ER/ET. Sheet piling will be installed at the buffer zone perimeter as needed to prevent further encroachment. Stream sedimentation will be reported to the ER/ET, the agent causing sedimentation will be discovered, and sedimentation will be stopped.	Stream B, C & D/ During the construction phase	All Contractor		√			Monitoring has been carried out during this reporting month. There were small amount of artificial rocks filling sitting on the stream bed of downstream A during this reporting month.
9.7.22		<u>Marine Ecology</u> The temporary drainage system, which would receive flows from all areas subject to earth works, would collect all site runoff. The collected runoff would be retained for turf grass irrigation.	Work site / During the construction period	All Contractor		√			On-going with enhancement on the effectiveness of temporary drainage system for silty runoff. Turf establishment was not started yet.
9.8.5		Dredging for the two pipelines for the desalination plant would be require 50 days and would be scheduled to the extent possible from January to April 2006. This would avoid the flowering season for the seagrass <i>Halophila ovalis</i> , i.e. November and December (Fong et al. 2005) and the spawning season for corals, i.e. July to October (Lam 2000; Storlazzi, C. D. 2004).	Dredging area/ during dredging period	All Contractor		√			N/A
9.8.2	4.2.12	Coral colonies within the silt curtain, in particular the 79 colonies identified during the coral mapping survey, (see Appendix A9.2) would be transplanted. Prior to commencement of any marine construction works for the proposed project, the affected coral colonies would be tagged using plastic labels and a number would be assigned to each. The tagged corals in the dredging area at D2 site will be transplanted to the bedrock area about 80 m south of the ferry pier. All these transplantation works should be conducted by experienced marine ecologist(s) and should be completed before the commencement of marine construction works.	Dredging area/Prior to dredging	All Contractor		√			No transplanted coral transplantation at Site D2 was carried out the reporting month.
9.8.5		Silt curtains will be deployed during dredging for the desalination plant. With the deployment of silt curtains around the dredging area for the desalination plant, adverse water quality impacts associated with the dredging and backfilling would be controlled to acceptable levels.	Dredging area/Prior to dredging	All Contractor		√			N/A
		All anchoring points/structures of the floating pier would be located on the shore and/or at least 40m seaward to avoid the coral colonies at Site B2 which are concentrated within the first 15m seaward from the coastline and none recorded over 35m seaward.	Temporary barging point/ during construction of the barging point	All Contractor		√			Floating pontoon was located at designated location according to EP during the reporting month.
		The location of the floating pier would also be shifted from the original location for barging point at Zone 2 and Zone 3 of the mapping area in Site B2 (see Figure 2 in Appendix A9.2), to Zone 5 to further protect corals. Impacts to corals are not expected.	Temporary barging point/ during the entire construction phase	All Contractor		√			√

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\*\* D=Design, C=Construction, O=Operation

N/A Not applicable

**Table 5 Implementation Schedule of Fisheries Impact Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
10.8.2		<u>Construction phase</u> In addition to the temporary drainage system which would collect site runoff for re-use for irrigation, site runoff would also be controlled by general site practices during the construction period.	Work site / During the construction period	All Contractor		√		N/A	Not observed
10.8.3		Silt curtains will be deployed during dredging for the desalination plant. With the deployment of silt curtains around the construction area, adverse water quality impacts associated with the dredging and back-filling would be controlled.	Work site / During the construction period	All Contractor		√		N/A	No dredging work for the desalination plant was carried out during the reporting month.
10.7.12		The majority of the heavy construction works, in particular, the cut and fill earth works, would be conducted within the 2005-2006 dry season.	Work site / During the construction period	All Contractor		√		N/A	Master Programme indicated that excavation will carried out throughout the year 2006 to mid 2007.

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\*\* D=Design, C=Construction, O=Operation

N/A Not applicable

**Table 6 Implementation Schedule of Landscape and Visual Impact Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
<b>Landscape and Visual Impact - Construction Phase</b>									
Table 12.13	MC1	Site offices and construction yards: • Site offices and the construction yard shall be decommissioned after construction. • Haul roads shall be decommissioned and restored with hydroseeding works after construction.	All site offices	All contractors		√		EIAO Guidance Note No. 8/2002	To commence
Table 12.13	MC2	Height of site offices: • The height of site offices shall be controlled in order to avoid visual impacts.	All site offices	All contractors		√		EIAO Guidance Note No. 8/2002	Complied. A two-storey high site office painted in green color has been constructed.
Table 12.13	MC3	Hoarding and screening: • Where practical the site offices areas, construction yards and storage areas shall be screened using olive green coated hoarding or vegetation around the peripheries of the works area until the completion of relevant construction phases.	All site office and construction yard areas.	All contractors		√		EIAO Guidance Note No. 8/2002	Complied. Green hoarding erected.
Table 12.13	MC4	Construction plant and building material: • Shall be orderly and carefully stored in order to appear neat and avoid visibility from outside where practical; • Excess materials shall be removed from site as soon as practical; • All construction plant shall be removed from site upon completion of construction works.	In all construction yards.	All contractors		√		EIAO Guidance Note No. 8/2002	Complied.
Table 12.13	MC5	Construction light: • To be oriented away from the viewing location of VSRs; and • All lighting shall have frosted diffusers and reflective covers. • While construction at night might be required from time to time, this should be controlled and minimised.	All construction lights.	All contractors		√		EIAO Guidance Note No. 8/2002	No construction lights at present.
Table 12.13	MC6	Vegetation: • Temporary construction sites shall be restored to standards as good as, or better than, the original condition. In this respect, areas that are not covered by golf course grassing works shall be hydro seeded; • The potential for soil erosion shall be reduced at the construction stage by minimizing the extent of vegetation disturbance on site and providing a protective cover over exposed ground; and • No plant or building materials shall be stored under the dripline of retained trees and no vehicle movement or other construction activities like washing, concrete mixing etc shall be carried out under the dripline of trees.	All temporary construction sites.	All contractors		√		EIAO Guidance Note No. 8/2002	Complied. Hydroseeding has been carried out for erosion control.  NOT complied. Building material has been stored under dripline of trees.
Table 12.13	MT1	Compensation for losses: • The tree compensation to tree loss ratio shall be between 1:2 and 1:3; • At least 700 new trees shall have be of light standard or larger size.	As shown on mitigation measures plans.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	MT2	The majority of compensation species shall comprise species that already occurs within the LIA boundaries;	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	MT3	Where practical, trees that require removal shall be transplanted on Site;	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Partial completed of transplantation works on site.
Table 12.13	MT4	New trees shall be planted in groups in order to screen visual impacts and to provide additional shade at the administration building, rain shelters and halfway houses.	As shown on mitigation measure plans.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Table 12.13	MT5	Tree Planting on Slopes: <ul style="list-style-type: none"> <li>New slopes with a gradient larger than 30° shall have whip tree planting.</li> <li>Such whip trees shall comprise tree species with shrub-like characteristics, such as <i>Gordonia axillaries</i> (大頭茶) and <i>Raphiolepis indica</i> (車輪梅).</li> </ul>	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied  Construction Stage: Shrubs planting are being carried out on slopes.
Table 12.13	MT6	Tree planting works at the hill where the desalination plant will be located shall be carefully positioned in order to represent its original profile.	At the desalination plant.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: complied  Construction Stage : Commence
Table 12.13	MT7	Tree Preservation: <ul style="list-style-type: none"> <li>No tree shall be transplanted or felled without prior approval by relevant Government departments in accordance with WBTC 24/94, WBTC 14/2002 and ETWB 2/2004;</li> <li>All trees that are marked for retention shall be fenced off with a 1.2m high fence around the dripline of trees or larger area;</li> <li>Transplant preparation works shall be carried as soon as possible after commencement of construction. Rootball and crown pruning shall be carried out over at least 1 month.</li> </ul>	All areas with existing trees	All contractors	√	√		WBTC 24/94, WBTC 14/2002, ETWB 2/2004	Design Stage: Tree felling approved.  Construction Stage : Some trees were found damaged or dead.  Tree transplantation commenced.
Table 12.13	MT8	Buffer Areas <ul style="list-style-type: none"> <li>For streams the width of the buffer zones will be 20m from the stream bank. The only exception would be the buffer zone in the reach of upper tributary of stream B lying between the two parts of Hole 10, where the buffer will zone will be 5m, the dry tributary of stream B that will be converted to an underground culvert and the secondary tributary of stream A that will also be converted to an underground culvert.</li> <li>No construction activities will be allowed in the buffer zones, except for site formation works, which are required for the construction of bridge footings.</li> </ul>	At streams	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: complied  Construction Stage: Commenced. Permanent bridges constructed within the buffer zone areas of Streams A, B & C commenced.
Table 12.13	MS1	Bulk hydroseeding: <ul style="list-style-type: none"> <li>Bulk site formation works shall be followed with bulk hydroseeding as soon as practical.</li> </ul>	General.	All contractors		√		EIAO Guidance Note No. 8/2002	Design Stage: Complied  Construction Stage: Permanent slope hydroseeding commenced.
Table 12.13	MS2	Grassing: <ul style="list-style-type: none"> <li>In the case of golf course areas, grassing shall be carried out as soon as practical after sanding and shaping; and</li> <li>Sanding, shaping and grassing works shall be phased in sections.</li> </ul>	At proposed grassing areas.	All contractors		√		EIAO Guidance Note No. 8/2002	To commence.
	MS3	Restoration: <ul style="list-style-type: none"> <li>In the case of residual areas that were disturbed during construction, which will not be part of the golf course areas, detailed site formation works and shaping shall be followed by hydroseeding and shrub planting as soon as practical; and</li> <li>The hydroseeding mix shall be composed of the following grass species: <i>Erograstic curvula</i> <i>Lolium Perenne</i> <i>Neyraudia reynaudiana</i> <i>Pennisetum purpureum</i>; and the following shrub / small tree species: <i>Gordonia axillaries</i>, <i>Raphiolepis indica</i> and <i>Rhodomyrtus tomentosa</i>.</li> </ul>	At all residual areas.	All contractors		√		EIAO Guidance Note No. 8/2002	To commence.
Table 12.13	ME1	Screening: <ul style="list-style-type: none"> <li>Bridges and pumping stations shall be screened by tree and shrub planting; and</li> <li>Retaining wall shall be covered with climber plants.</li> </ul>	All bridges and pumping stations.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied  Construction Stage: To commence.
Table 12.13	ME2	Abutments of bridges shall be surfaced with stone of volcanic origin with a colour and texture similar to that of rock in the surrounding landscape;	All bridges.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied  Construction Stage: To commence.

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
Table 12.13	ME3	Above-ground walls and foundations of pumping stations shall be surfaced with stone of volcanic origin with a colour and texture similar to that of rock in the surrounding landscape.	All pumping stations.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	ME4	Above-ground covers of pumping stations shall have an olive green coating.	All pumping stations.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	ME5	The desalination plant shall be located within the hill behind the pier. Slope cutting of this hill shall have a natural appearance with hydroseeding cover.	As shown on the mitigation measure plans.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Desalination plant construction completed.
Table 12.13	ME6	Water tanks shall be located below surface level. Above-ground components shall be coated in olive green.	All water tanks.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	MB1	Extensions of the clubhouse shall have a surface cover that is in visual harmony with the clubhouse itself.	All new extensions of the clubhouse.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	MB2	Shrub planting shall be implemented in front of the new golf cart parking area in order to screen low-level views.	The new golf cart parking area.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	MB3	Tree and shrub planting shall be implemented on the peripheries of the maintenance building and its extensions.	At the maintenance building.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
Table 12.13	MB4	Halfway houses and rain shelters shall be surfaced with either stone or beige and olive green paint.	At all halfway houses and rain shelters.	All contractors		√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.

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\*\* D=Design, C=Construction, O=Operation

N/A Not applicable

**Table 7 Implementation Schedule of Cultural Heritage Mitigation Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
<b>Construction Phase</b>									
Table 13.4		Wan Chai Archaeological Site - Archaeological Watching Brief	Site formation and construction works	All Contractors		√		EIAO	√ Remaining golf Hole 2 will be carried out and expected completed in May 07.
Table 13.4		Grave #1 – Preservation in-situ - Fenced off three metre buffer zone around the grave	Site formation and construction works	All Contractors		√		EIAO	Buffer zone fencing was provided around at Grave 1.
Table 13.4		Grave #5 - Preservation by record; and recovery of structural elements (if required by AMO)	Construction phase (prior to commencement of works)	All Contractors		√		EIAO	The revised golf course design will not disturb the Grave 5 and will keep in-situ. No preservation record for this grave is required.
Table 13.4		Grave #20 - Preservation by record; and recovery of structural elements (if required by AMO)	Construction phase (prior to commencement of works)	All Contractors		√		EIAO	The preservation by record was completed in 23 <sup>rd</sup> October 2006 and submitted to AMO for record.
Table 13.4		Any, as of yet unidentified graves at Kap Lo Kok. If a grave is found works will stop in the immediate vicinity of the grave until it can be inspected by AMO staff.	Site formation and construction works	All Contractors		√		EIAO	√

\* All recommendations and requirements resulted during the course of EIA Process, including ACE and/or accepted public comment to the proposed project.

\*\* D=Design, C=Construction, O=Operation

N/A Not applicable

**Table 8 Implementation Schedule of Land Contamination Mitigation Measures**

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages **			Relevant Legislation & Guidelines	Implementation status
					D	C	O		
<b>Land Contamination - Construction Phase</b>									
11.9.2		<p>Since the exact cut areas on site during construction by the Contractor have not been determined at this stage, the Contractor should implement the suitable precautions and preventive measures for the discovery of buried or abandoned ordnance during the construction. Moreover, it is recommended that standard good practice should be implemented during the construction phase in order to minimize any potential exposure to contaminated soils or groundwater. These measures include:</p> <ul style="list-style-type: none"> <li>• The Contractor should sweep the area of intended excavation with a metal detector to check any ordnance underneath the ground prior to any excavation.</li> <li>• For any detection of metals under the ground, the Contractor should cease work immediately before confirming the identity of the cause. For any suspect of artillery ordnance, Hong Kong Police Force should be informed.</li> <li>• The use of bulk earth-moving excavator equipment would minimise construction workers' potential contact with the contaminated materials;</li> <li>• Exposure to any contaminated materials can be minimised by the wearing of appropriate clothing and personal protective equipment such as gloves (when interacting directly with suspected contaminated material), providing adequate hygiene and washing facilities and preventing smoking and eating during such activities;</li> <li>• Stockpiling of contaminated soil should be avoided. If this cannot be avoided, the stockpile of contaminated materials should be segregated from the uncontaminated ones. Moreover, the contaminated materials should be properly covered with waterproof material (e.g. tarpaulin sheet) to avoid leaching of contaminants, especially during rainy season.</li> <li>• Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any leakage during transport or during wet conditions;</li> <li>• Only licensed waste haulers should be used to collect and transport any contaminated material to an appropriate disposal site and procedures should be developed to ensure that illegal disposal of waste does not occur;</li> <li>• Necessary waste disposal permits should be obtained, as required, from the appropriate authorities, in accordance with the <i>Waste Disposal Ordinance (Cap 354)</i>, <i>Waste Disposal (Chemical Waste) (General) Regulation (Cap 35)</i>, as required;</li> <li>• Records of the quantities of wastes generated and disposed of should be maintained;</li> <li>• Adequate washing facilities should be provided on site; and</li> <li>• In accordance with good construction practice, silt traps should be used to reduce the impact to drainage caused by suspended solids arising from disturbed ground, or any construction materials such as cement and gravel. Groundwater should be disposed of in accordance with the <i>Water Pollution Control Ordinance (Cap 358)</i>.</li> </ul>	Work site / During the construction period	All Contractors		√		Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 35); Water Pollution Control Ordinance (Cap 358).	CAR and RAP was approved on 18 <sup>th</sup> August 2006. The pilot trial of the remedial work was started during the reporting month. The full scale remediation work was carried out during this reporting month. A final site remediation report (FSRR) prepared by the Contractor and submitted to EPD for comments during last reporting month and no comment was received from EPD during this reporting month.
11.11.1		Based on preliminary site investigation, the site is considered as a potentially land contaminated site as hotspots of contamination of lead and sulphur were identified. Further investigation for land contamination at this site is therefore required and is detailed in the Contamination Assessment Plan (CAP) of this section to be undertaken prior to commencement of excavation works. A Contamination Assessment Report (CAR) should be prepared and if the results of the site investigation reveal contamination at the subject site, a Remediation Action Plan (RAP) should also be prepared and submitted together with the CAR to EPD for approval.	Work site / During the construction period	All Contractors		√		Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 35); Water Pollution Control Ordinance (Cap 358).	Same as above.

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\*\* D=Design, C=Construction, O=Operation; N/A Not applicable



# **Annex E**

## **Monitoring results**

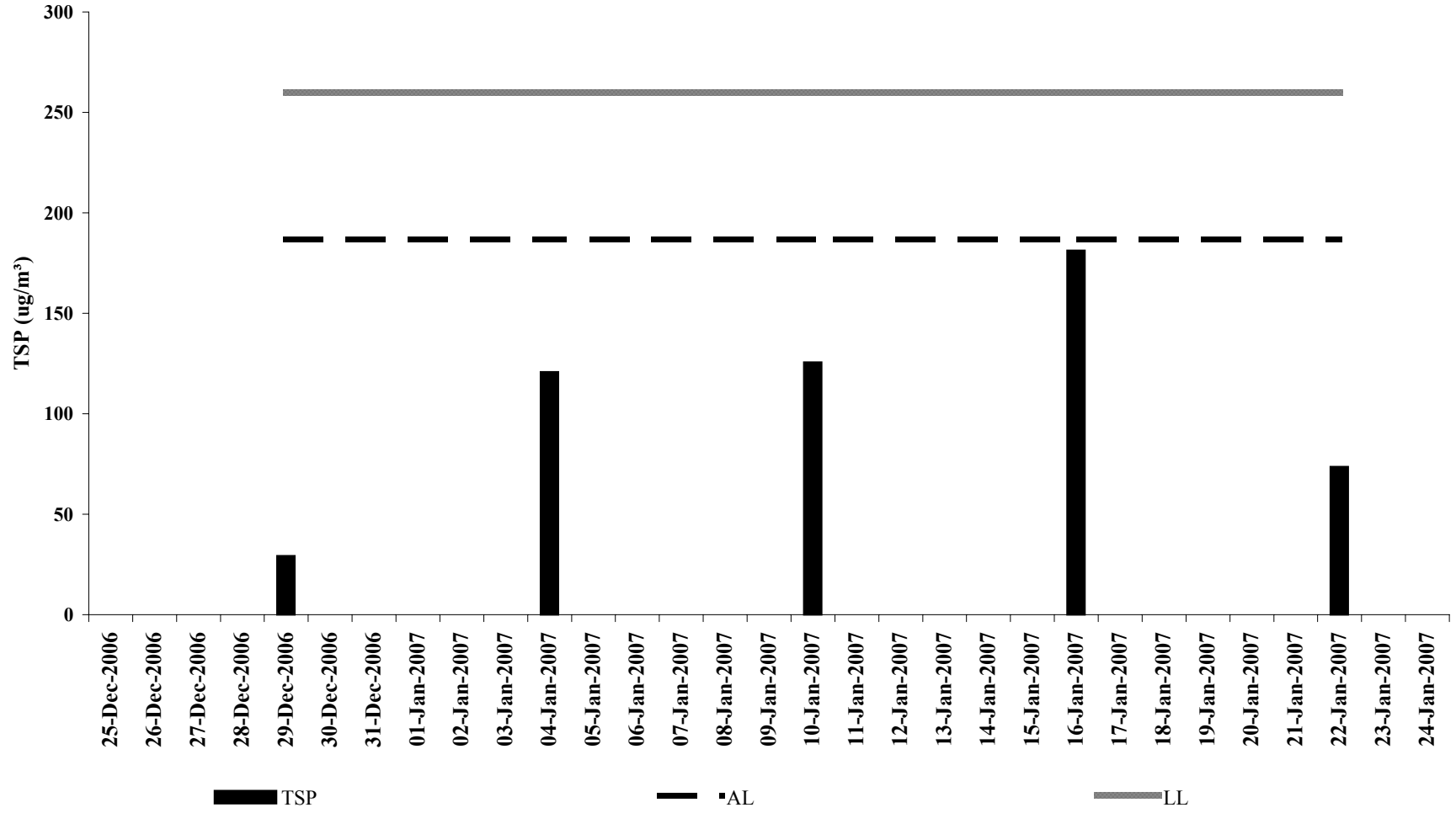
# Air Quality

**Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung**  
**24-hour TSP Monitoring Results at Station GCA B1**

Date	Filter Weight (g)		Flow Rate (m <sup>3</sup> /min.)		Elapse Time		Sampling Time(hrs.)	Conc. (µg/m <sup>3</sup> )	Weather Condition	Particulate weight(g)	Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )
	Initial	Final	Initial	Final	Initial	Final						
29-Dec-06	3.5135	3.5666	1.26	1.26	10918.6	10942.6	24.0	29.3	Fine	0.05	1.26	1814.4
04-Jan-07	3.6195	3.8464	1.31	1.31	10942.6	10966.6	24.0	120.7	Sunny	0.23	1.31	1879.2
10-Jan-07	3.5133	3.7426	1.27	1.27	10966.6	10990.6	24.0	125.6	Sunny	0.23	1.27	1825.9
16-Jan-07	3.5069	3.8546	1.33	1.33	10990.4	11014.4	24.0	181.3	Cloudy	0.35	1.33	1918.1
22-Jan-07	3.6551	3.7894	1.27	1.27	11014.4	11038.4	24.0	73.6	Sunny	0.13	1.27	1825.9
								Min	29.3			
								Max	181.3			
								Average	106.1			

Remark:      Bold value indicated an Action level exceedance  
                   Bold & Italic value indicated an Limit level exceedance

### 24-hour TSP Monitoring Results at Station GCA B1



Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
 Monthly EM&A Report

Date		Weather description	Temp (°C)	Relative Humidity (%)	Mean amount of cloud (%)	Total Rainfall (mm)	Wind direction
12月25日	Mon	Fine	18.1	50	15	-	N to NE
12月26日	Tue	Fine apart from some haze	17.7	77	29	-	E to NE
12月27日	Wed	Fine apart from some haze	17.7	77	10	-	E to NE
12月28日	Thu	Sunny period	17.5	67	11	-	E to NE
12月29日	Fri	Mainly fine	15.2	71	43	-	E to NE
12月30日	Sat	Sunny periods	15.9	71	29	-	E to NE
12月31日	Sun	Sunny intervals	17.4	76	38	-	E to NE
1月1日	Mon	Cloudy with light rain	18.5	80	64	-	E to NE
1月2日	Tue	Sunny periods and haze.	18.8	82	86	Trace	E to NE
1月3日	Wed	Mainly cloudy.	18.6	92	92	8.5	E to NE
1月4日	Thu	Cloudy with a few rain patches, visibility relatively low.	17.4	77	79	-	N
1月5日	Fri	Cloudy, a few rain patches at first.	16.1	69	36	-	N
1月6日	Sat	Becoming fine and dry later.	14.3	58	43	-	N
1月7日	Sun	Fine and dry.	13.5	55	22	-	N
1月8日	Mon	Fine and dry.	13.6	52	26	-	NE
1月9日	Tue	Fine and dry.	14.3	52	23	-	NE
1月10日	Wed	Fine.	16.1	61	86	Trace	E to NE
1月11日	Thu	Sunny periods.	17.2	77	87	-	E to NE
1月12日	Fri	Fine.	17.9	81	86	-	N to NE
1月13日	Sat	Mainly Fine.	17.2	77	53	-	NE
1月14日	Sun	Sunny periods.	17.2	79	81	-	NE
1月15日	Mon	Mainly Cloudy.	18.3	78	87	Trace	NE
1月16日	Tue	Mainly Cloudy.	20.4	76	81	0.4	NE

Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
 Monthly EM&A Report

Date		Weather description	Temp (°C)	Relative Humidity (%)	Mean amount of cloud (%)	Total Rainfall (mm)	Wind direction
1月17日	Wed	Cloudy with a few rain patches.	17.4	95	97	20	NE
1月18日	Thu	Cloudy with a few rain patches.	15.9	80	88	0.2	NE
1月19日	Fri	Cloudy with a few rain patches.	16.8	78	88	Trace	NE
1月20日	Sat	Cloudy with a few rain patches.	16.9	86	90	0.5	NE
1月21日	Sun	Mainly Cloudy.	16.7	87	94	-	NE
1月22日	Mon	Sunny intervals.	16.6	85	88	Trace	E to NE
1月23日	Tue	Sunny intervals.	16.7	80	70	-	E
1月24日	Wed	Mainly cloudy, becoming fine.	14.1	70	69	-	N

# Water Quality

M RO1		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	15:56	5.5	1.0	18.5	29.6	8.0	8.1	1.4
Mid-Ebb	03/01/2007	10:01	5.6	1.0	18.3	29.4	7.6	8.2	2.0
Mid-Ebb	08/01/2007	13:31	5.5	1.0	17.9	29.3	7.7	8.2	1.9
Mid-Ebb	15/01/2007	08:01	5.6	1.0	18.1	29.4	7.6	8.2	1.1
Mid-Ebb	22/01/2007	12:01	5.3	1.0	17.5	29.1	7.9	8.1	±0

M RO1		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:01	5.6	1.0	20.1	31.2	7.6	8.3	1.6
Mid-Flood	03/01/2007	14:01	5.8	1.0	19.1	31.1	7.7	8.3	2.2
Mid-Flood	08/01/2007	08:31	5.7	1.0	18.1	31.5	7.5	8.4	2.0
Mid-Flood	15/01/2007	12:01	5.8	1.0	18.6	31.3	7.7	8.3	1.3
Mid-Flood	22/01/2007	08:01	5.5	1.0	17.1	30.8	8.0	8.3	1.1

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



M RO1		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006								
Mid-Ebb	03/01/2007								
Mid-Ebb	08/01/2007								
Mid-Ebb	15/01/2007								
Mid-Ebb	22/01/2007								

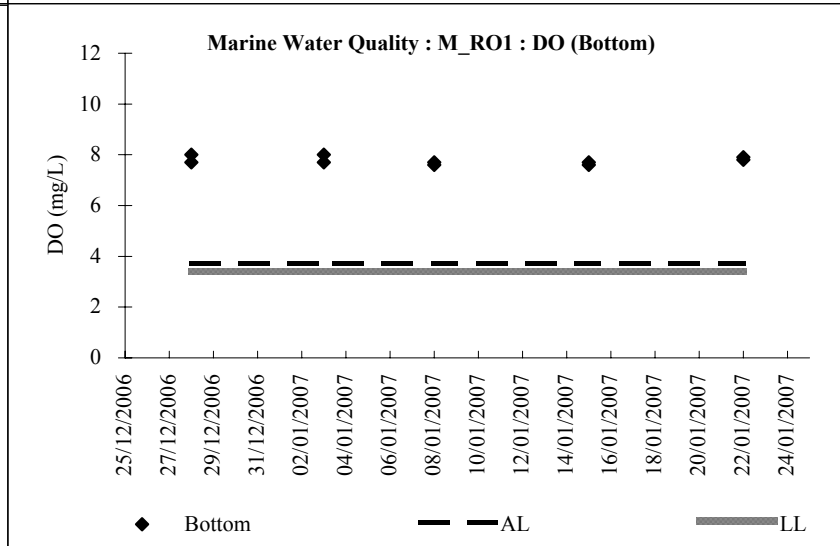
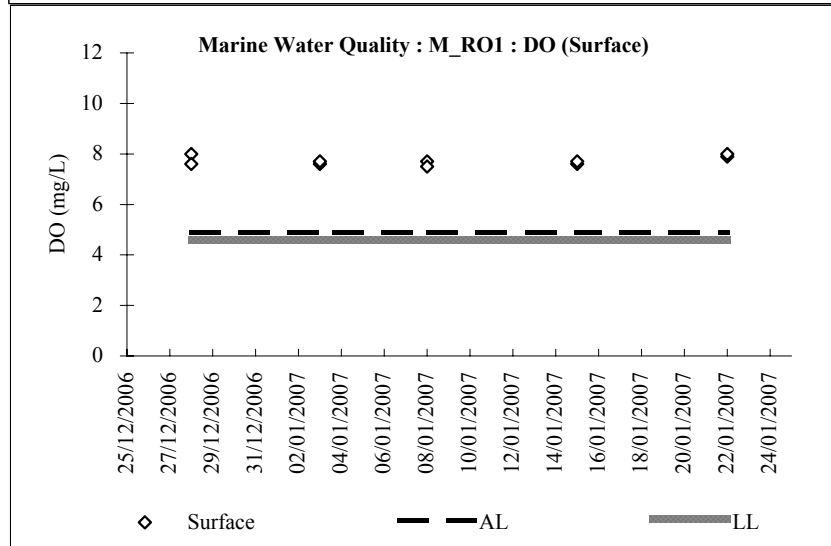
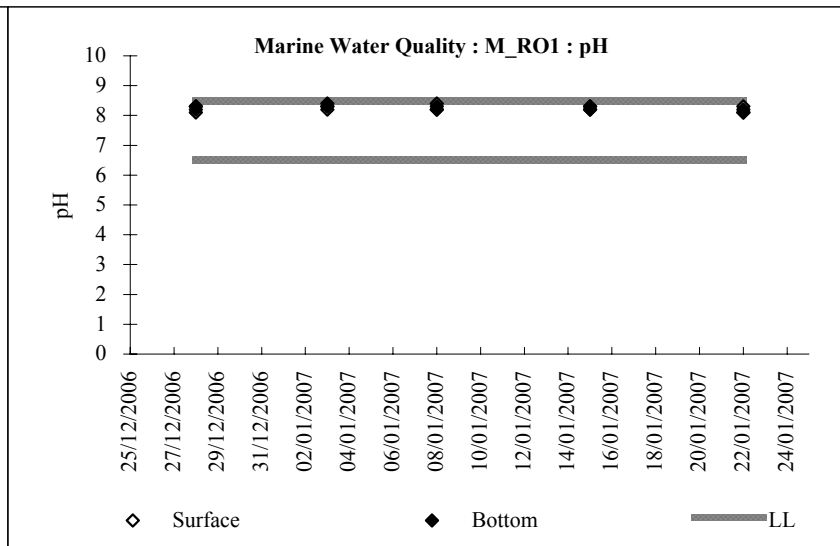
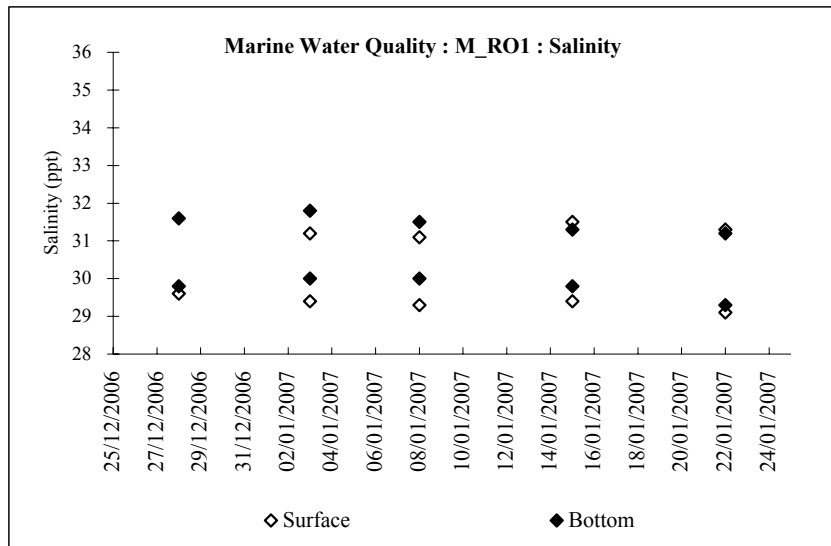
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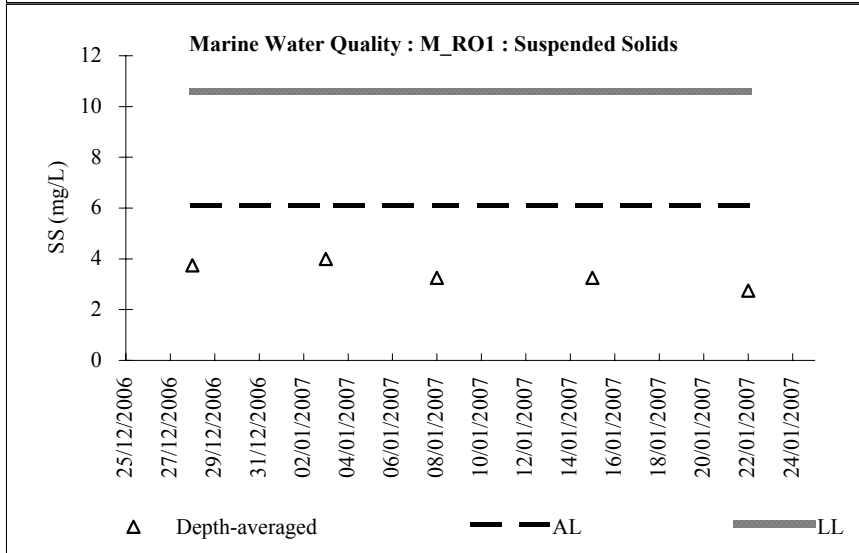
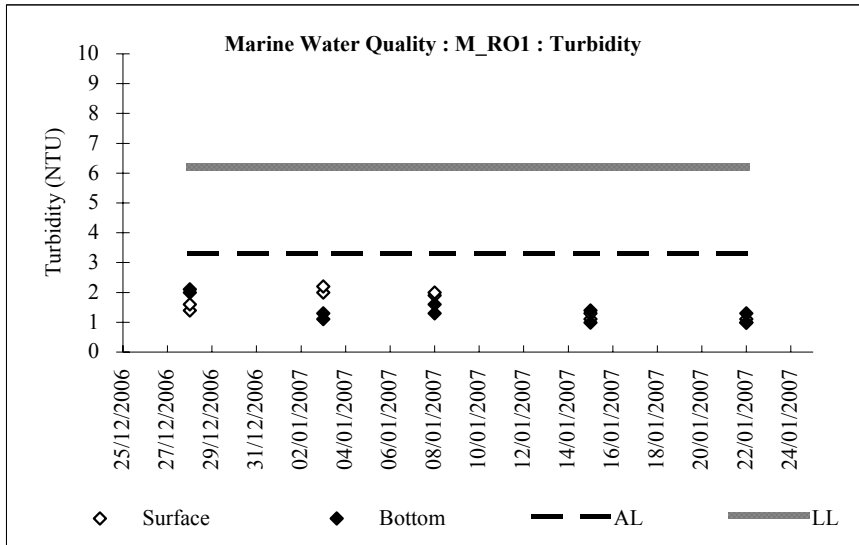
M RO1		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006								
Mid-Flood	03/01/2007								
Mid-Flood	08/01/2007								
Mid-Flood	15/01/2007								
Mid-Flood	22/01/2007								

M RO1		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	15:55	5.5	4.5	18.6	29.8	8.0	8.2	2.1
Mid-Ebb	03/01/2007	10:00	5.6	4.6	18.4	30.0	8.0	8.3	1.3
Mid-Ebb	08/01/2007	13:30	5.5	4.5	18.1	30.0	7.7	8.2	1.6
Mid-Ebb	15/01/2007	8:00	5.6	4.6	18.2	29.8	7.6	8.2	1.4
Mid-Ebb	22/01/2007	12:00	5.3	4.3	17.5	29.3	7.8	8.1	1.3

M RO1		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	9:00	5.6	4.6	19.2	31.6	7.7	8.3	2.0
Mid-Flood	03/01/2007	14:00	5.8	4.8	18.8	31.8	7.7	8.4	1.1
Mid-Flood	08/01/2007	8:30	5.7	4.7	18.3	31.5	7.6	8.3	1.3
Mid-Flood	15/01/2007	12:00	5.8	4.8	18.4	31.3	7.7	8.3	1.0
Mid-Flood	22/01/2007	8:00	5.5	4.5	17.1	31.2	7.9	8.2	1.0

M_RO1	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	5.0	-	3.0	3.0	-	4.0	3.8
03/01/2007	4.0	-	3.0	3.0	-	6.0	4.0
08/01/2007	3.0	-	4.0	4.0	-	2.0	3.3
15/01/2007	3.0	-	4.0	4.0	-	2.0	3.3
22/01/2007	<del>2.0</del>	-	<del>2.0</del>	5.0	-	2.0	2.8





KLW		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:07	12.6	1.0	18.5	29.7	8.0	8.1	1.1
Mid-Ebb	03/01/2007	10:12	12.9	1.0	18.3	29.9	7.7	8.2	1.0
Mid-Ebb	08/01/2007	13:42	12.7	1.0	17.9	29.8	7.6	8.1	1.3
Mid-Ebb	15/01/2007	08:12	12.9	1.0	18.1	29.7	7.5	8.2	1.1
Mid-Ebb	22/01/2007	12:12	12.6	1.0	17.4	29.1	7.9	8.1	1.0

KLW		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:12	14.5	1.0	19.3	31.5	7.9	8.3	1.3
Mid-Flood	03/01/2007	14:12	13.8	1.0	19.0	31.7	7.6	8.4	1.2
Mid-Flood	08/01/2007	08:42	13.4	1.0	18.2	31.9	7.7	8.3	1.4
Mid-Flood	15/01/2007	08:11	13.5	1.0	18.5	31.5	7.6	8.3	1.5
Mid-Flood	22/01/2007	08:12	13.1	1.0	17.1	31.3	7.8	8.1	1.3

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey

KLW		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:06	12.6	6.3	18.7	29.7	8.0	8.1	1.6
Mid-Ebb	03/01/2007	10:11	12.9	6.5	18.5	29.9	7.7	8.2	1.6
Mid-Ebb	08/01/2007	13:41	12.7	6.4	18.2	29.9	7.6	8.2	1.9
Mid-Ebb	15/01/2007	08:11	12.9	6.5	18.1	29.7	7.6	8.3	1.3
Mid-Ebb	22/01/2007	12:11	12.6	6.3	17.4	29.1	7.8	8.1	1.0

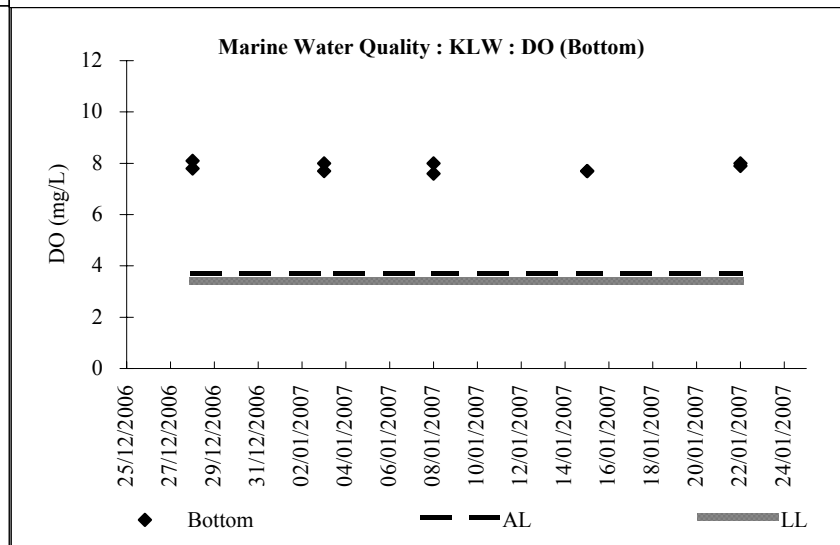
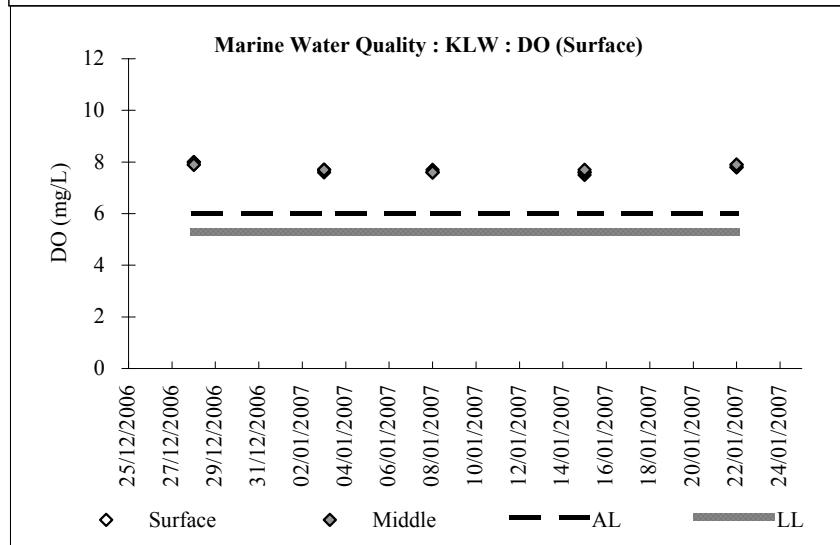
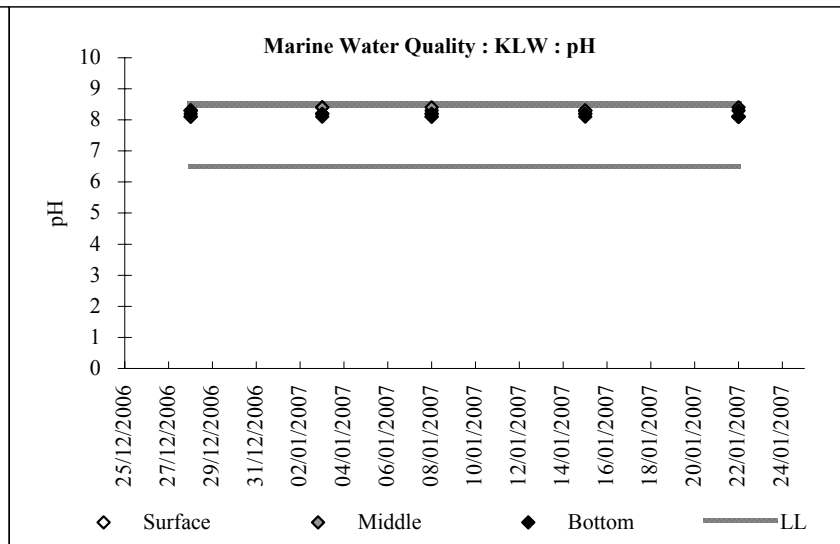
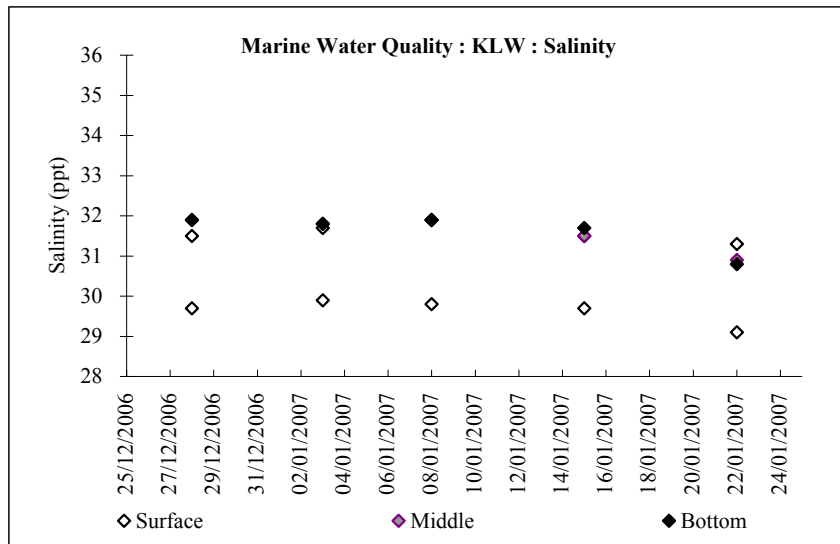
KLW		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:11	14.5	7.3	19.1	31.9	7.9	8.3	1.5
Mid-Flood	03/01/2007	14:11	13.8	6.9	19.0	31.8	7.7	8.4	1.3
Mid-Flood	08/01/2007	08:41	13.4	6.7	18.3	31.9	7.6	8.4	1.9
Mid-Flood	15/01/2007	08:10	13.5	6.8	18.3	31.5	7.7	8.3	1.2
Mid-Flood	22/01/2007	08:11	13.1	6.6	17.2	30.9	7.9	8.4	1.0

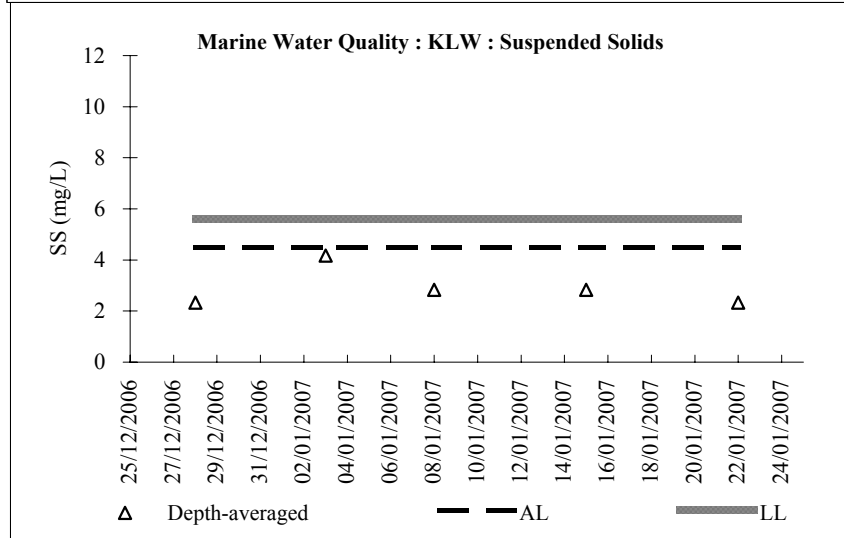
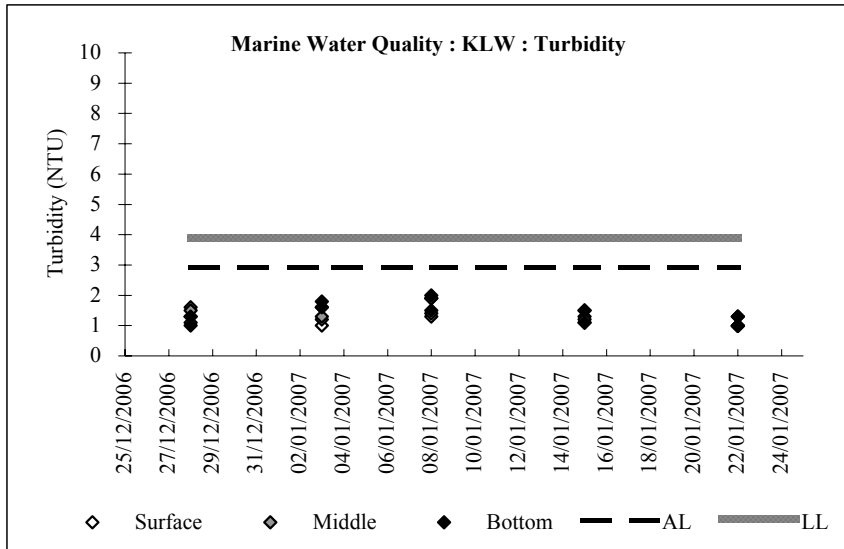
KLW		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:05	12.6	11.6	18.7	29.8	8.1	8.2	1.0
Mid-Ebb	03/01/2007	10:10	12.9	11.9	18.5	29.9	8.0	8.1	1.8
Mid-Ebb	08/01/2007	13:40	12.7	11.7	18.3	29.9	8.0	8.1	2.0
Mid-Ebb	15/01/2007	8:10	12.9	11.9	18.1	29.7	7.7	8.2	1.1
Mid-Ebb	22/01/2007	12:10	12.6	11.6	17.2	29.0	7.9	8.1	1.0

KLW		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	9:10	14.5	13.5	19.1	31.9	7.8	8.3	1.3
Mid-Flood	03/01/2007	14:10	13.8	12.8	19.1	31.8	7.7	8.2	1.6
Mid-Flood	08/01/2007	8:40	13.4	12.4	18.4	31.9	7.6	8.2	1.5
Mid-Flood	15/01/2007	12:10	13.5	12.5	18.3	31.7	7.7	8.1	1.5
Mid-Flood	22/01/2007	8:10	13.1	12.1	17.3	30.8	8.0	8.3	1.3



KLW	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	<del>2.0</del>	2.0	2.0	<del>2.0</del>	4.0	<del>2.0</del>	2.3
03/01/2007	4.0	3.0	4.0	3.0	8.0	3.0	4.2
08/01/2007	5.0	<del>2.0</del>	<del>2.0</del>	3.0	<del>2.0</del>	3.0	2.8
15/01/2007	5.0	<del>2.0</del>	<del>2.0</del>	3.0	<del>2.0</del>	3.0	2.8
22/01/2007	3.0	<del>2.0</del>	3.0	<del>2.0</del>	2.0	<del>2.0</del>	2.3





M_A		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:27	7.8	1.0	18.4	29.7	7.8	8.1	1.9
Mid-Ebb	03/01/2007	10:32	7.9	1.0	18.4	29.7	7.7	8.2	1.6
Mid-Ebb	08/01/2007	14:02	7.8	1.0	18.0	29.5	7.7	8.1	1.8
Mid-Ebb	15/01/2007	08:32	7.7	1.0	18.1	29.3	7.6	8.2	1.1
Mid-Ebb	22/01/2007	12:32	7.8	1.0	17.5	29.0	8.0	8.1	1.4

M_A		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:32	8.6	1.0	20.3	31.3	7.7	8.3	2.2
Mid-Flood	03/01/2007	14:32	8.3	1.0	19.1	31.6	7.5	8.3	1.9
Mid-Flood	08/01/2007	09:02	8.3	1.0	18.3	31.8	7.6	8.3	2.1
Mid-Flood	15/01/2007	12:32	8.3	1.0	18.3	31.9	7.7	8.3	1.0
Mid-Flood	22/01/2007	08:32	8.5	1.0	17.1	31.5	7.9	8.4	1.3

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey

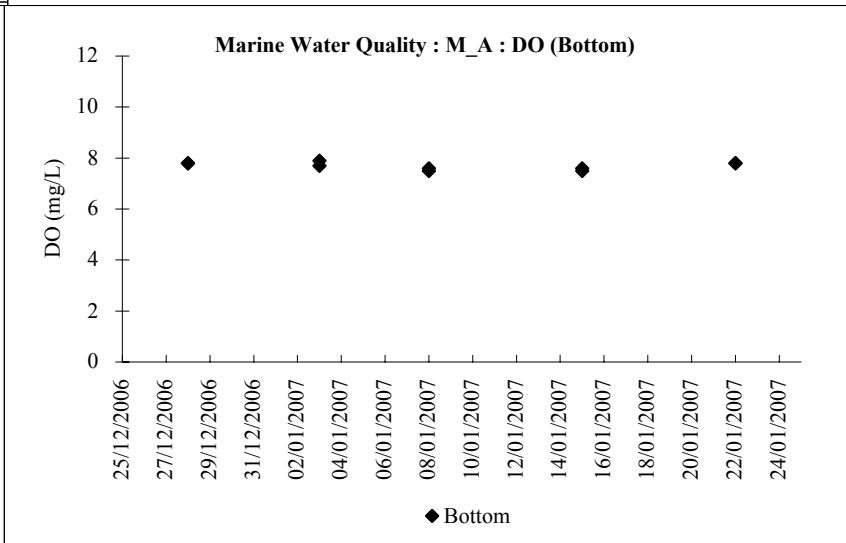
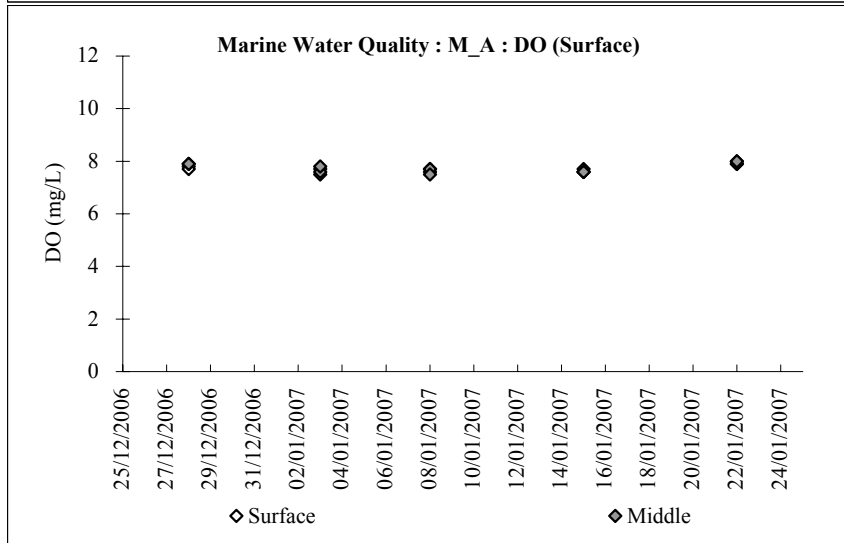
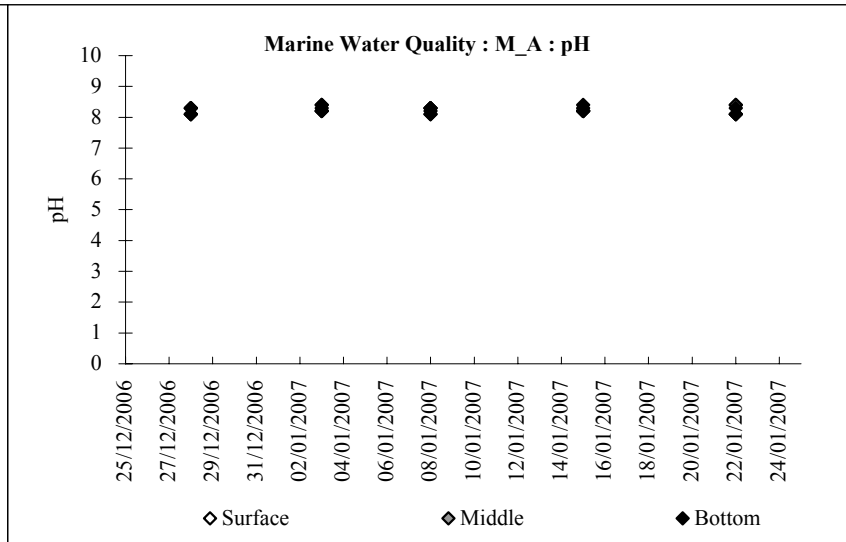
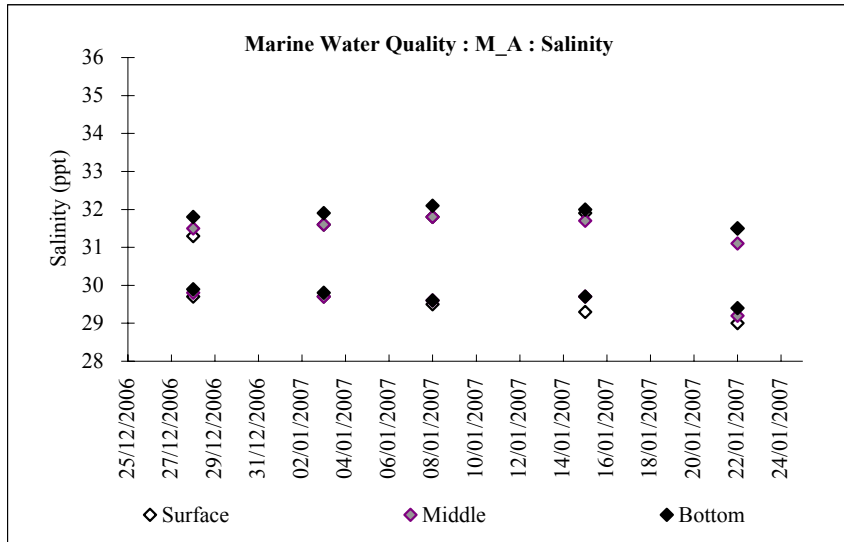
M_A		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:26	7.8	3.9	18.5	29.8	7.9	8.1	1.6
Mid-Ebb	03/01/2007	10:31	7.9	4.0	18.4	29.7	7.6	8.2	1.9
Mid-Ebb	08/01/2007	14:01	7.8	3.9	18.3	29.6	7.7	8.2	1.8
Mid-Ebb	15/01/2007	08:31	7.7	3.9	18.1	29.7	7.6	8.2	1.8
Mid-Ebb	22/01/2007	12:31	7.8	3.9	17.4	29.2	7.9	8.1	1.1

M_A		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:31	8.6	4.3	19.3	31.5	7.9	8.3	1.3
Mid-Flood	03/01/2007	14:31	8.3	4.2	19.1	31.6	7.8	8.4	1.6
Mid-Flood	08/01/2007	09:01	8.3	4.2	18.5	31.8	7.5	8.3	2.1
Mid-Flood	15/01/2007	12:31	8.3	4.2	18.3	31.7	7.6	8.2	1.4
Mid-Flood	22/01/2007	08:31	8.5	4.3	17.0	31.1	8.0	8.4	1.2

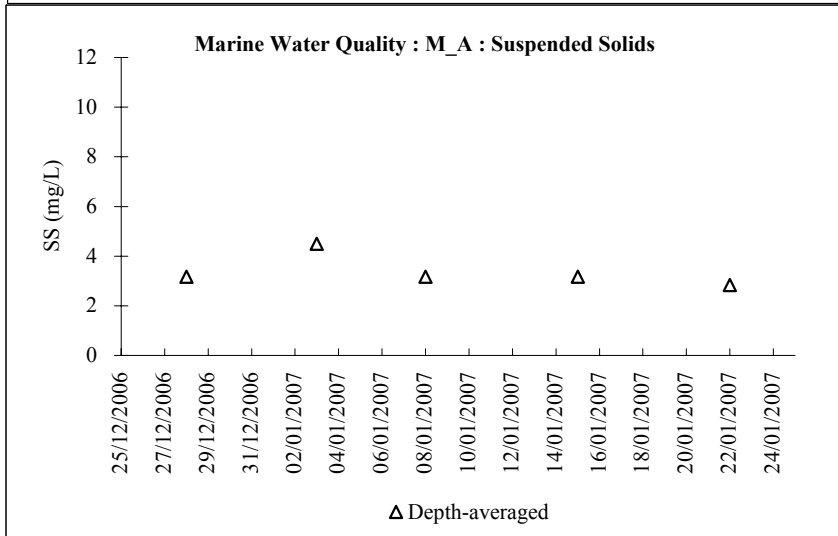
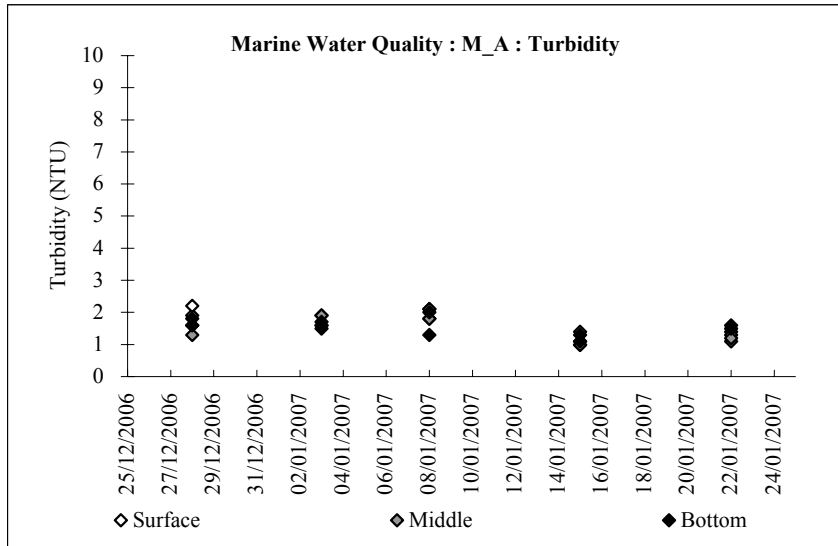
M_A		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:25	7.8	6.8	18.5	29.9	7.8	8.1	1.8
Mid-Ebb	03/01/2007	10:30	7.9	6.9	18.5	29.8	7.7	8.2	1.7
Mid-Ebb	08/01/2007	14:00	7.8	6.8	18.3	29.6	7.6	8.1	1.3
Mid-Ebb	15/01/2007	8:30	7.7	6.7	18.2	29.7	7.5	8.2	1.1
Mid-Ebb	22/01/2007	12:30	7.8	6.8	17.4	29.4	7.8	8.1	1.5

M_A		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	9:30	8.6	7.6	19.1	31.8	7.8	8.3	1.6
Mid-Flood	03/01/2007	14:30	8.3	7.3	19.1	31.9	7.9	8.4	1.5
Mid-Flood	08/01/2007	9:00	8.3	7.3	18.4	32.1	7.5	8.3	2.0
Mid-Flood	15/01/2007	12:30	8.3	7.3	18.4	32.0	7.6	8.4	1.3
Mid-Flood	22/01/2007	8:30	8.5	7.5	17.2	31.5	7.8	8.3	1.6

M_A	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	3.0	5.0	3.0	2.0	4.0	2.0	3.2
03/01/2007	8.0	2.0	5.0	5.0	3.0	4.0	4.5
08/01/2007	4.0	4.0	3.0	<del>2.0</del>	4.0	<del>2.0</del>	3.2
15/01/2007	4.0	4.0	3.0	<del>2.0</del>	4.0	<del>2.0</del>	3.2
22/01/2007	3.0	<del>2.0</del>	3.0	3.0	2.0	4.0	2.8







<b>M_Marsh</b>		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:37	8.1	1.0	18.4	29.8	7.5	8.1	1.9
Mid-Ebb	03/01/2007	10:47	8.3	1.0	18.4	29.7	7.6	8.2	1.6
Mid-Ebb	08/01/2007	14:17	8.0	1.0	18.3	29.7	7.7	8.1	1.5
Mid-Ebb	15/01/2007	08:47	8.1	1.0	18.2	29.9	7.7	8.2	1.0
Mid-Ebb	22/01/2007	12:47	7.9	1.0	17.5	29.3	7.7	8.2	<del>1.0</del>

<b>M_Marsh</b>		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:47	8.6	1.0	19.7	31.6	7.6	8.3	2.3
Mid-Flood	03/01/2007	14:47	8.4	1.0	19.1	31.4	7.6	8.4	1.9
Mid-Flood	08/01/2007	09:17	8.3	1.0	18.2	31.9	7.5	8.3	2.1
Mid-Flood	15/01/2007	12:47	8.5	1.0	18.5	31.7	7.6	8.2	1.2
Mid-Flood	22/01/2007	08:47	8.3	1.0	17.2	31.1	7.8	8.3	<del>1.0</del>

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey

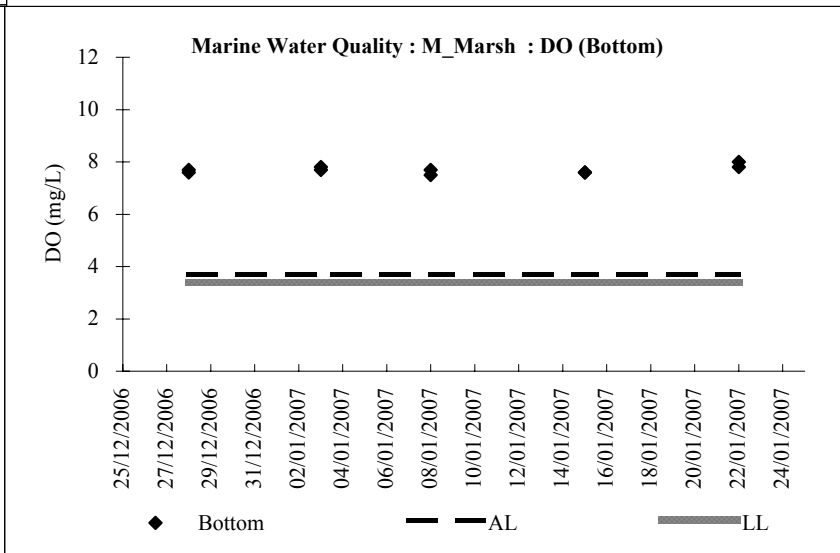
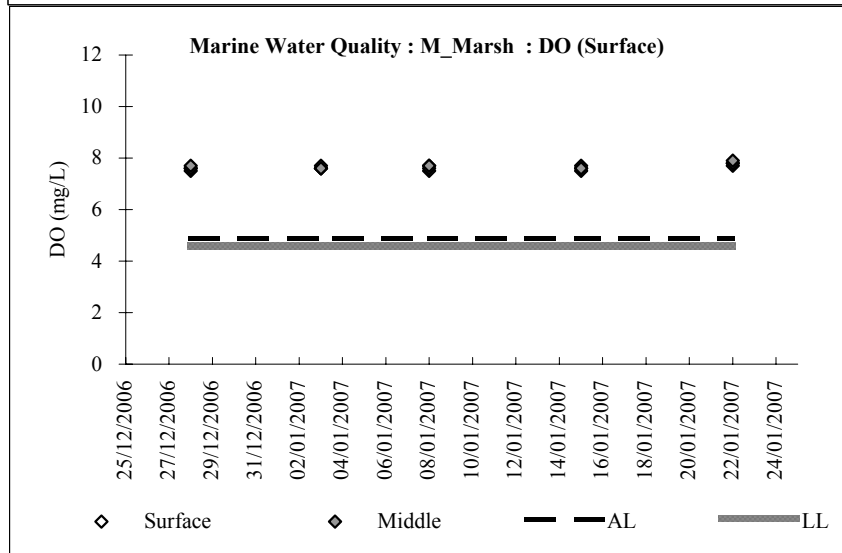
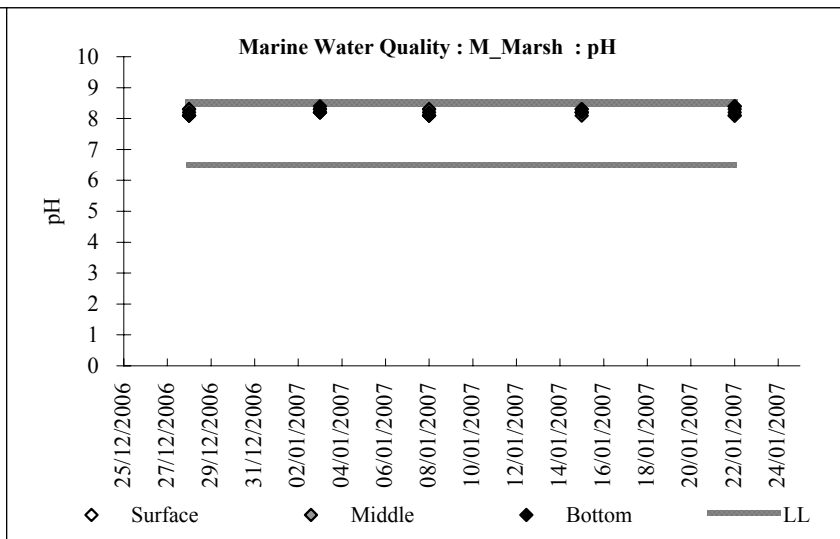
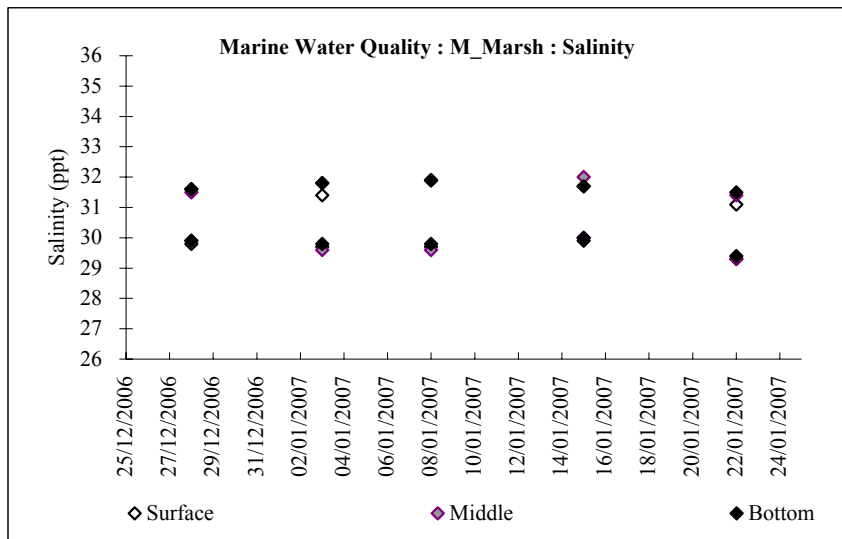
<b>M_Marsh</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:36	8.1	4.1	18.4	29.9	7.6	8.1	1.8
Mid-Ebb	03/01/2007	10:46	8.3	4.2	18.4	29.6	7.7	8.2	1.8
Mid-Ebb	08/01/2007	14:16	8.0	4.0	18.3	29.6	7.6	8.1	2.1
Mid-Ebb	15/01/2007	08:46	8.1	4.1	18.2	30.0	7.5	8.1	1.7
Mid-Ebb	22/01/2007	12:46	7.9	4.0	17.5	29.3	7.8	8.1	1.1

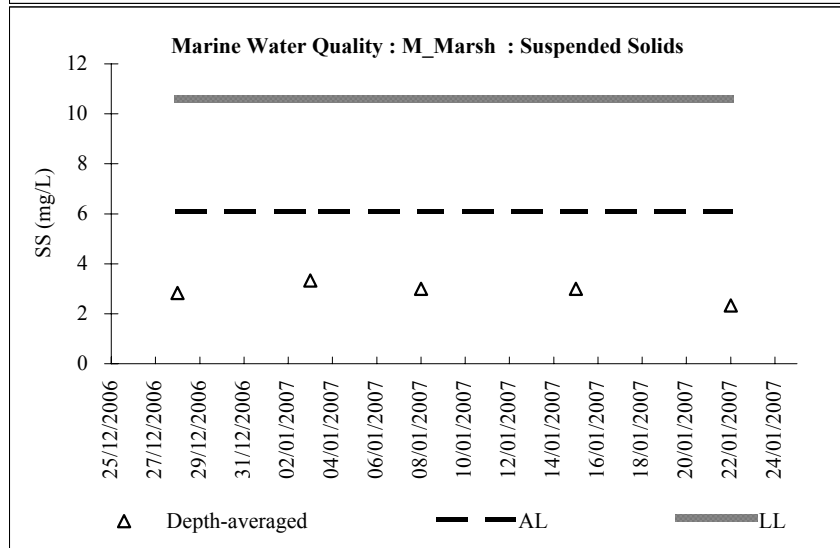
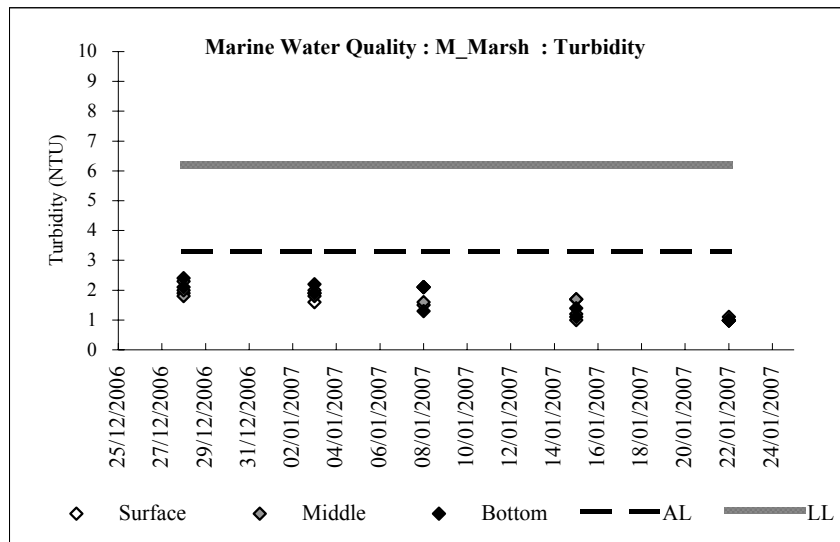
<b>M_Marsh</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	09:46	8.6	4.3	19.3	31.5	7.7	8.3	2.0
Mid-Flood	03/01/2007	14:46	8.4	4.2	19.1	31.8	7.6	8.3	2.0
Mid-Flood	08/01/2007	09:16	8.3	4.2	18.4	31.9	7.7	8.3	1.6
Mid-Flood	15/01/2007	12:46	8.5	4.3	18.5	32.0	7.6	8.3	1.7
Mid-Flood	22/01/2007	08:46	8.3	4.2	17.2	31.4	7.9	8.4	<del>1.0</del>

<b>M_Marsh</b>		<b>Bottom</b>							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:35	8.1	7.1	18.5	29.9	7.6	8.1	2.1
Mid-Ebb	03/01/2007	10:45	8.3	7.3	18.4	29.8	7.7	8.2	2.2
Mid-Ebb	08/01/2007	14:15	8.0	7.0	18.3	29.8	7.7	8.1	1.3
Mid-Ebb	15/01/2007	8:45	8.1	7.1	18.2	30.0	7.6	8.2	1.4
Mid-Ebb	22/01/2007	12:45	7.9	6.9	17.4	29.4	7.8	8.1	±0

<b>M_Marsh</b>		<b>Bottom</b>							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	9:45	8.6	7.6	19.1	31.6	7.7	8.2	2.4
Mid-Flood	03/01/2007	14:45	8.4	7.4	19.1	31.8	7.8	8.3	1.9
Mid-Flood	08/01/2007	9:15	8.3	7.3	18.2	31.9	7.5	8.2	2.1
Mid-Flood	15/01/2007	12:45	8.5	7.5	18.4	31.7	7.6	8.3	1.1
Mid-Flood	22/01/2007	8:45	8.3	7.3	17.3	31.5	8.0	8.4	±0

M_Marsh	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	3.0	<del>2.0</del>	3.0	3.0	<del>2.0</del>	4.0	2.8
03/01/2007	3.0	3.0	3.0	3.0	2.0	6.0	3.3
08/01/2007	3.0	5.0	<del>2.0</del>	<del>2.0</del>	4.0	<del>2.0</del>	3.0
15/01/2007	3.0	5.0	<del>2.0</del>	<del>2.0</del>	4.0	<del>2.0</del>	3.0
22/01/2007	<del>2.0</del>	3.0	<del>2.0</del>	2.0	2.0	3.0	2.3





TTC		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:47	9.5	1.0	18.5	29.8	7.6	8.0	1.9
Mid-Ebb	03/01/2007	11:07	9.8	1.0	18.4	29.7	7.7	8.1	2.3
Mid-Ebb	08/01/2007	14:37	9.6	1.0	18.0	29.6	7.6	8.0	1.6
Mid-Ebb	15/01/2007	09:07	9.8	1.0	18.2	29.9	7.7	8.2	<del>1.0</del>
Mid-Ebb	22/01/2007	12:57	9.6	1.0	17.5	29.4	7.8	8.1	1.1

TTC		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	10:07	10.2	1.0	20.0	31.6	7.6	8.2	2.3
Mid-Flood	03/01/2007	14:57	10.3	1.0	19.2	31.7	7.8	8.3	1.7
Mid-Flood	08/01/2007	09:27	10.3	1.0	17.9	31.5	7.5	8.3	1.8
Mid-Flood	15/01/2007	12:57	10.2	1.0	18.6	31.8	7.6	8.3	1.1
Mid-Flood	22/01/2007	09:07	10.0	1.0	17.3	31.5	7.9	8.4	1.2

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



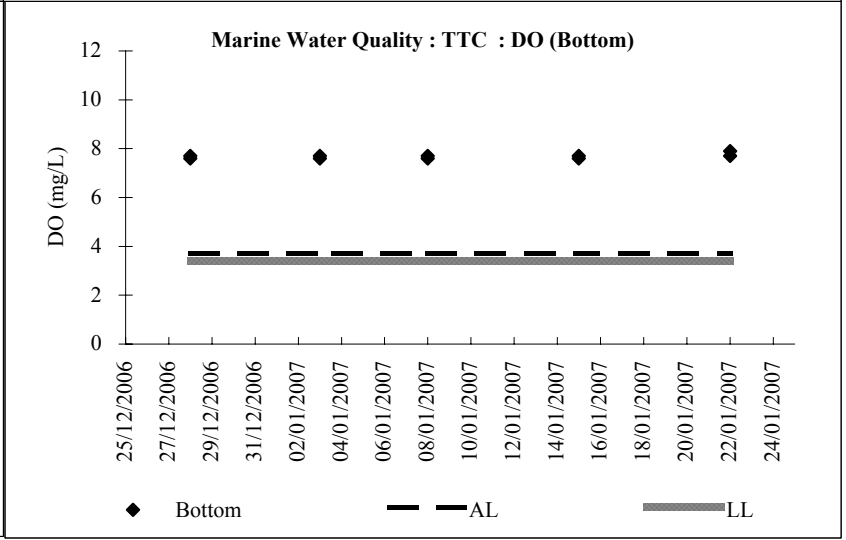
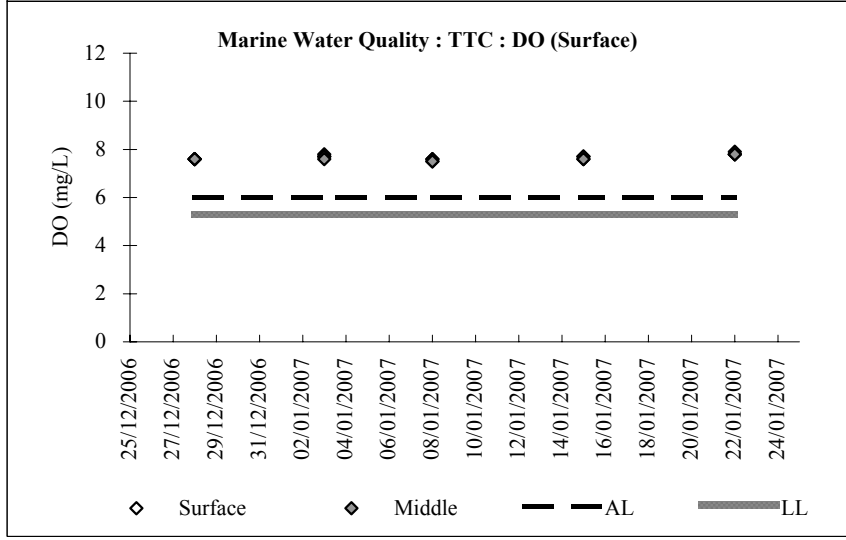
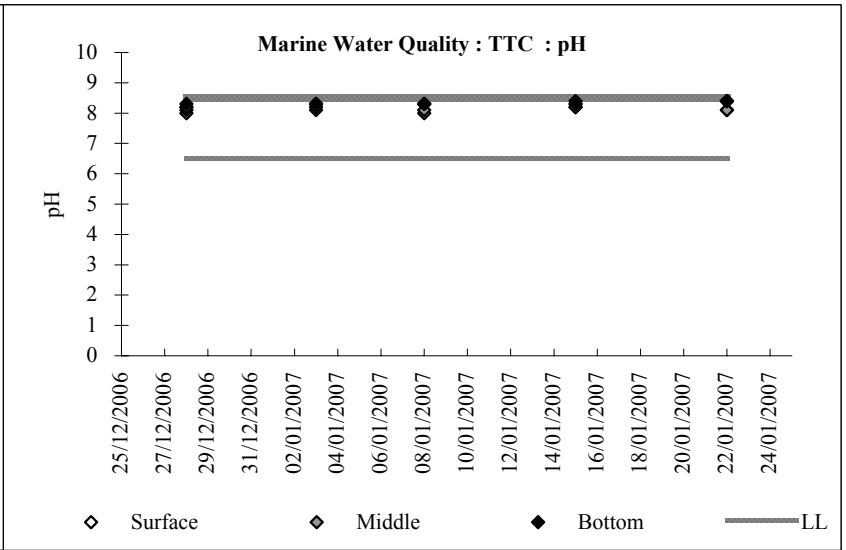
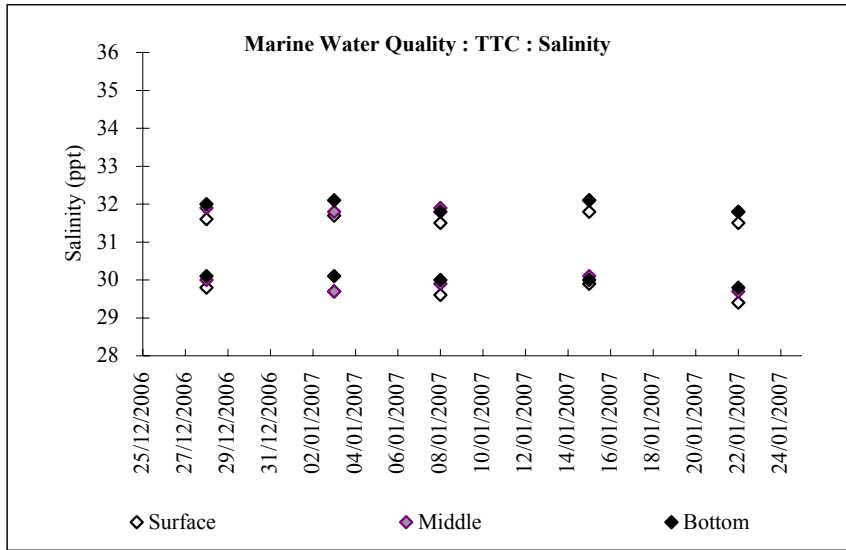
TTC		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:46	9.5	4.8	18.7	30.0	7.6	8.1	1.6
Mid-Ebb	03/01/2007	11:06	9.8	4.9	18.4	29.7	7.7	8.2	1.3
Mid-Ebb	08/01/2007	14:36	9.6	4.8	18.2	29.9	7.6	8.1	1.8
Mid-Ebb	15/01/2007	09:06	9.8	4.9	18.2	30.1	7.7	8.2	1.3
Mid-Ebb	22/01/2007	12:56	9.6	4.8	17.4	29.7	7.8	8.1	1.1

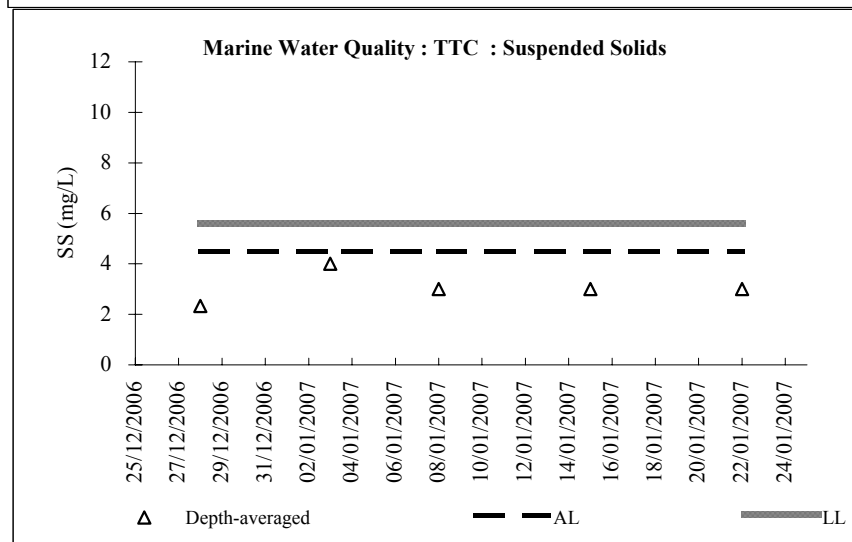
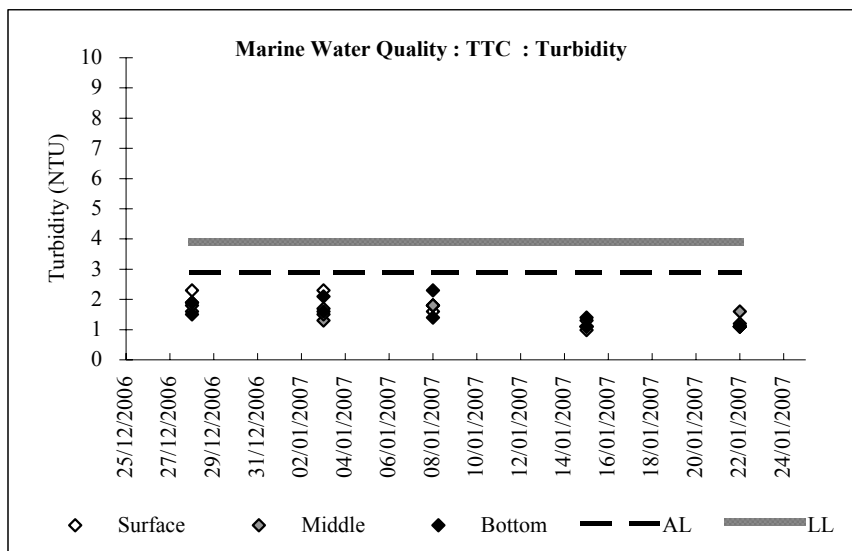
TTC		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	10:06	10.2	5.1	19.0	31.9	7.6	8.2	1.8
Mid-Flood	03/01/2007	14:56	10.3	5.2	19.1	31.8	7.6	8.3	1.5
Mid-Flood	08/01/2007	09:26	10.3	5.2	18.1	31.9	7.5	8.3	1.8
Mid-Flood	15/01/2007	12:56	10.2	5.1	18.4	32.1	7.6	8.4	1.1
Mid-Flood	22/01/2007	09:06	10.0	5.0	17.3	31.8	7.8	8.4	1.6

TTC		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:45	9.5	8.5	18.8	30.1	7.6	8.1	1.5
Mid-Ebb	03/01/2007	11:05	9.8	8.8	18.4	30.1	7.7	8.2	1.6
Mid-Ebb	08/01/2007	14:35	9.6	8.6	18.2	30.0	7.6	8.1	2.3
Mid-Ebb	15/01/2007	9:05	9.8	8.8	18.2	30.0	7.7	8.2	1.4
Mid-Ebb	22/01/2007	12:55	9.6	8.6	17.3	29.8	7.7	8.1	1.1

TTC		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	10:05	10.2	9.2	19.0	32.0	7.7	8.3	1.9
Mid-Flood	03/01/2007	14:55	10.3	9.3	19.2	32.1	7.6	8.3	2.1
Mid-Flood	08/01/2007	9:25	10.3	9.3	18.2	31.8	7.7	8.3	1.4
Mid-Flood	15/01/2007	12:55	10.2	9.2	18.3	32.1	7.6	8.3	1.1
Mid-Flood	22/01/2007	9:05	10.0	9.0	17.4	31.8	7.9	8.4	1.1

TTC	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	2.0	2.0	4.0	2.0	2.0	2.0	2.3
03/01/2007	3.0	6.0	4.0	3.0	5.0	3.0	4.0
08/01/2007	4.0	3.0	4.0	3.0	2.0	2.0	3.0
15/01/2007	4.0	3.0	4.0	3.0	2.0	2.0	3.0
22/01/2007	2.0	3.0	3.0	4.0	3.0	3.0	3.0





M_BP		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:57	8.1	1.0	18.7	30.1	7.6	8.1	1.8
Mid-Ebb	03/01/2007	11:17	8.2	1.0	18.5	30.2	7.7	8.2	1.5
Mid-Ebb	08/01/2007	14:47	8.2	1.0	18.1	30.0	7.7	8.1	1.4
Mid-Ebb	15/01/2007	09:17	8.0	1.0	18.2	30.1	7.7	8.2	1.3
Mid-Ebb	22/01/2007	13:07	8.1	1.0	17.5	30.0	7.9	8.2	1.0

M_BP		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	10:17	8.7	1.0	20.2	32.0	7.6	8.3	1.5
Mid-Flood	03/01/2007	15:07	8.5	1.0	19.1	32.2	7.6	8.3	1.9
Mid-Flood	08/01/2007	09:37	8.5	1.0	17.9	32.1	7.7	8.2	2.0
Mid-Flood	15/01/2007	13:07	8.6	1.0	18.5	32.1	7.8	8.4	1.0
Mid-Flood	22/01/2007	09:17	8.4	1.0	17.3	31.9	7.9	8.4	1.4

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey

<b>M_BP</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:56	8.1	4.1	18.7	30.2	7.7	8.1	1.5
Mid-Ebb	03/01/2007	11:16	8.2	4.1	18.5	30.2	7.6	8.2	2.1
Mid-Ebb	08/01/2007	14:46	8.2	4.1	18.2	30.1	7.6	8.1	1.9
Mid-Ebb	15/01/2007	09:16	8.0	4.0	18.3	30.4	7.5	8.2	1.0
Mid-Ebb	22/01/2007	13:06	8.1	4.1	17.5	30.0	7.9	8.2	1.1

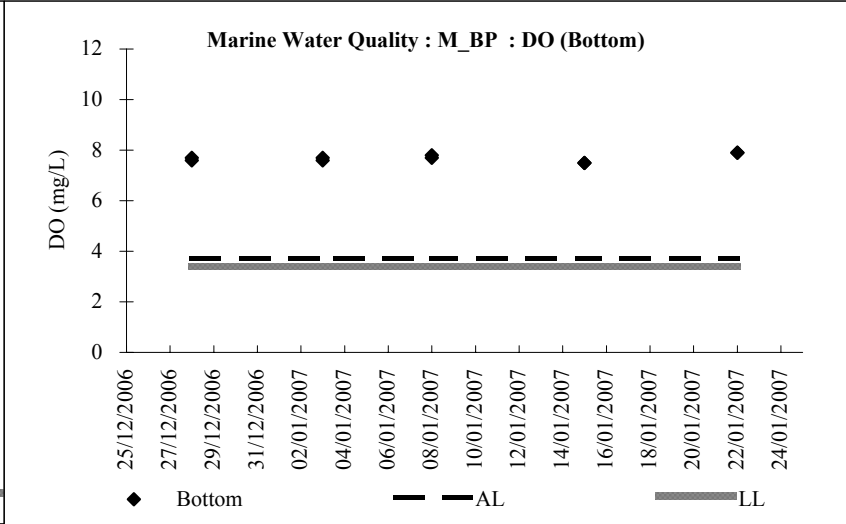
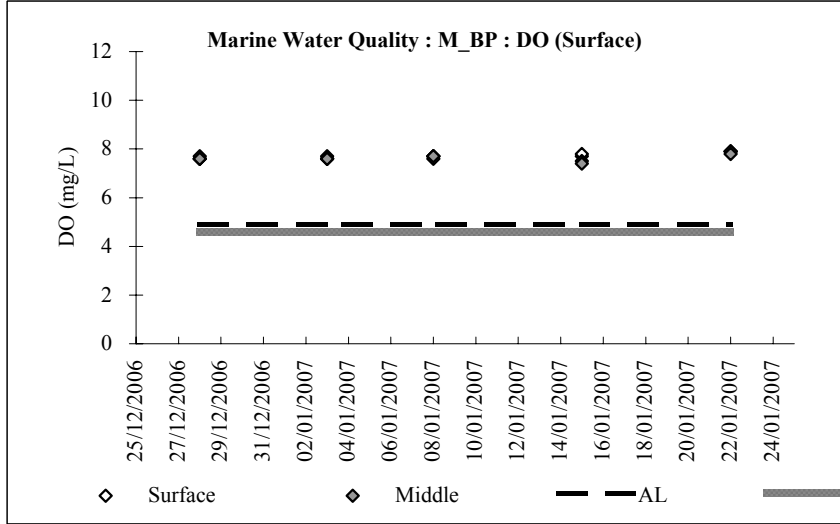
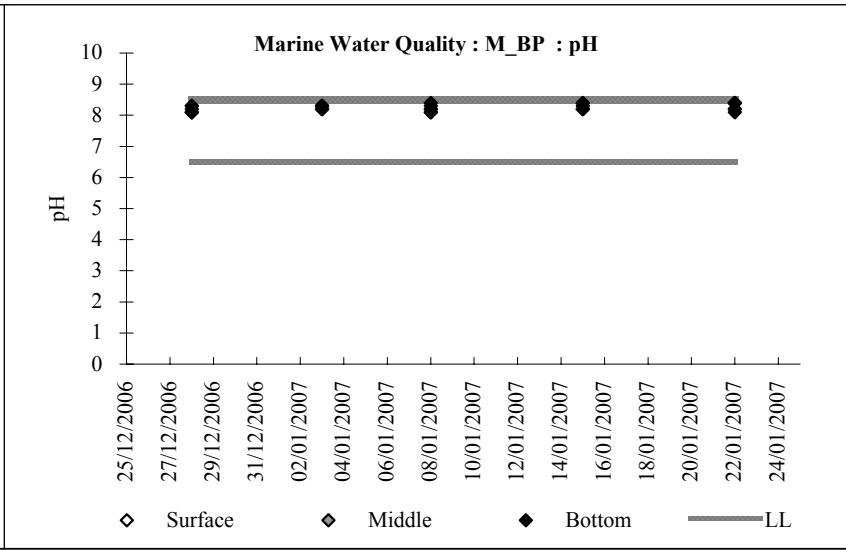
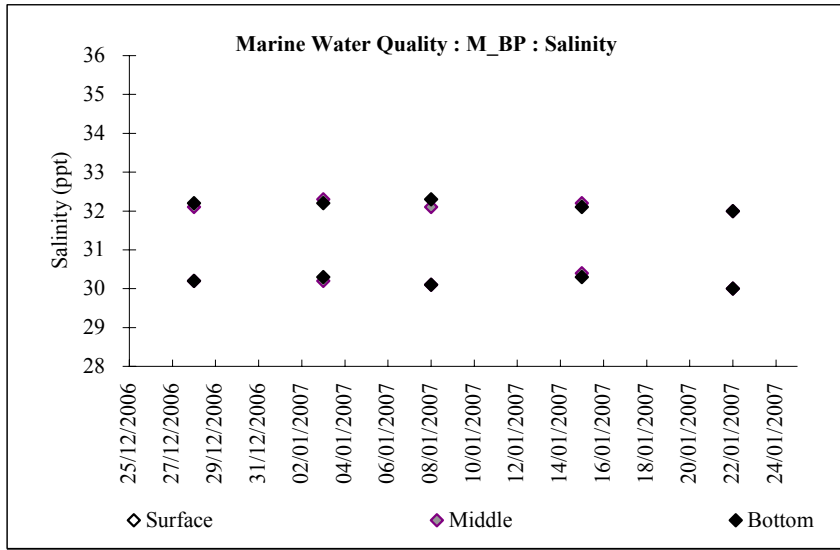
<b>M_BP</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	10:16	8.7	4.4	19.1	32.1	7.6	8.2	1.6
Mid-Flood	03/01/2007	15:06	8.5	4.3	19.2	32.3	7.6	8.3	1.8
Mid-Flood	08/01/2007	09:36	8.5	4.3	18.1	32.1	7.7	8.3	1.5
Mid-Flood	15/01/2007	13:06	8.6	4.3	18.5	32.2	7.4	8.4	1.2
Mid-Flood	22/01/2007	09:16	8.4	4.2	17.4	32.0	7.8	8.4	1.1

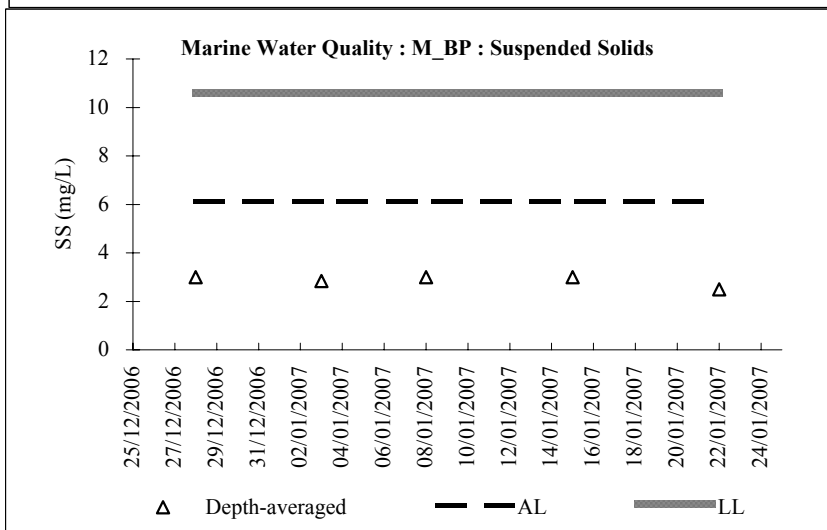
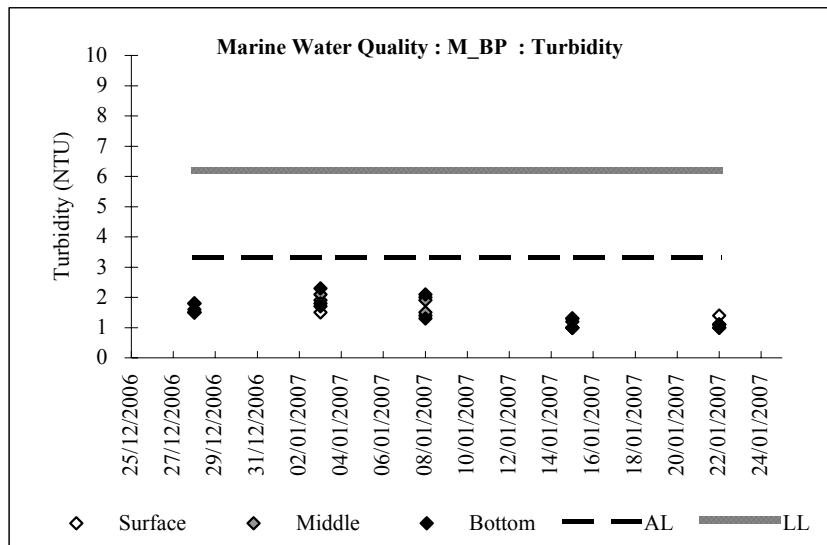
M_BP		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	16:55	8.1	7.1	18.8	30.2	7.7	8.1	1.8
Mid-Ebb	03/01/2007	11:15	8.2	7.2	18.5	30.3	7.7	8.2	2.3
Mid-Ebb	08/01/2007	14:45	8.2	7.2	18.1	30.1	7.8	8.2	1.3
Mid-Ebb	15/01/2007	9:15	8.0	7.0	18.2	30.3	7.5	8.2	1.0
Mid-Ebb	22/01/2007	13:05	8.1	7.1	17.5	30.0	7.9	8.1	1.0

M_BP		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	10:15	8.7	7.7	19.1	32.2	7.6	8.3	1.5
Mid-Flood	03/01/2007	15:05	8.5	7.5	19.2	32.2	7.6	8.3	1.7
Mid-Flood	08/01/2007	9:35	8.5	7.5	18.2	32.3	7.7	8.4	2.1
Mid-Flood	15/01/2007	13:05	8.6	7.6	18.4	32.1	7.5	8.3	1.3
Mid-Flood	22/01/2007	9:15	8.4	7.4	17.4	32.0	7.9	8.4	1.1



M_BP	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	5.0	<del>2.0</del>	3.0	<del>2.0</del>	3.0	3.0	3.0
03/01/2007	2.0	5.0	3.0	<del>2.0</del>	<del>2.0</del>	3.0	2.8
08/01/2007	5.0	3.0	3.0	3.0	<del>2.0</del>	<del>2.0</del>	3.0
15/01/2007	5.0	3.0	3.0	3.0	<del>2.0</del>	<del>2.0</del>	3.0
22/01/2007	<del>2.0</del>	3.0	<del>2.0</del>	<del>2.0</del>	<del>2.0</del>	4.0	2.5





<b>M_Coral</b>		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:07	8.2	1.0	18.8	30.1	7.7	8.1	1.6
Mid-Ebb	03/01/2007	12:27	8.3	1.0	18.5	30.2	7.7	8.2	1.9
Mid-Ebb	08/01/2007	15:57	8.3	1.0	18.2	30.1	7.7	8.1	1.5
Mid-Ebb	15/01/2007	10:27	8.4	1.0	18.2	30.3	7.6	8.1	1.1
Mid-Ebb	22/01/2007	13:17	8.4	1.0	17.5	29.9	7.8	8.1	1.0

<b>M_Coral</b>		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:07	8.9	1.0	20.1	32.1	7.6	8.3	1.5
Mid-Flood	03/01/2007	15:17	8.6	1.0	19.2	32.3	7.8	8.3	2.1
Mid-Flood	08/01/2007	09:47	8.7	1.0	18.1	32.2	7.5	8.4	1.6
Mid-Flood	15/01/2007	13:17	8.8	1.0	18.5	32.4	7.8	8.3	1.3
Mid-Flood	22/01/2007	09:27	8.8	1.0	17.3	32.0	7.9	8.4	1.5

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey

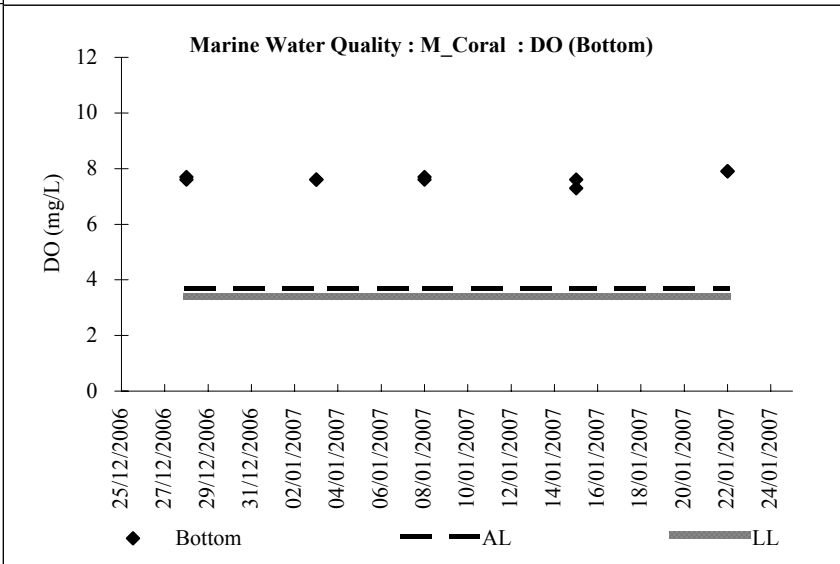
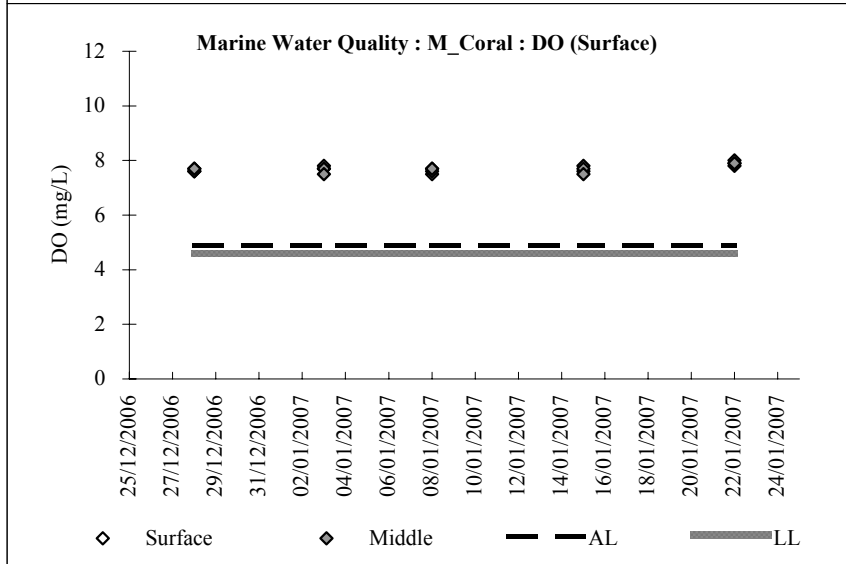
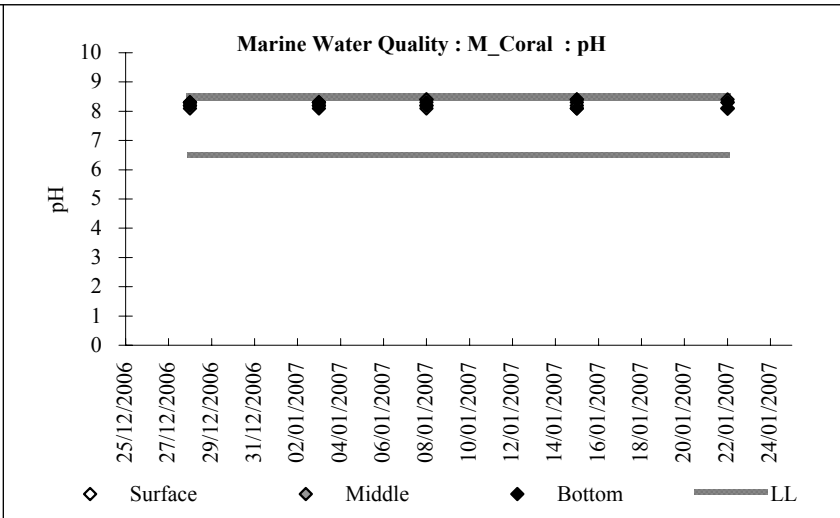
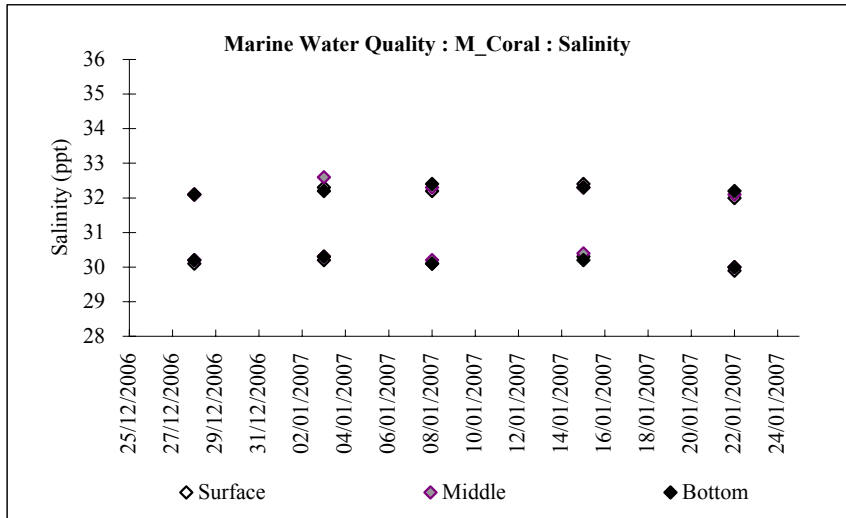
<b>M_Coral</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:06	8.2	4.1	18.7	30.2	7.6	8.2	1.9
Mid-Ebb	03/01/2007	12:26	8.3	4.2	18.5	30.3	7.7	8.2	1.4
Mid-Ebb	08/01/2007	15:56	8.3	4.2	18.2	30.2	7.6	8.2	1.6
Mid-Ebb	15/01/2007	10:26	8.4	4.2	18.3	30.4	7.7	8.2	1.6
Mid-Ebb	22/01/2007	13:16	8.4	4.2	17.5	30.0	8.0	8.1	1.1

<b>M_Coral</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:06	8.9	4.5	19.9	32.1	7.7	8.3	2.1
Mid-Flood	03/01/2007	15:16	8.6	4.3	19.2	32.6	7.5	8.3	1.7
Mid-Flood	08/01/2007	09:46	8.7	4.4	18.1	32.3	7.7	8.4	1.9
Mid-Flood	15/01/2007	13:16	8.8	4.4	18.4	32.3	7.5	8.4	1.2
Mid-Flood	22/01/2007	09:26	8.8	4.4	17.3	32.1	7.9	8.3	1.0

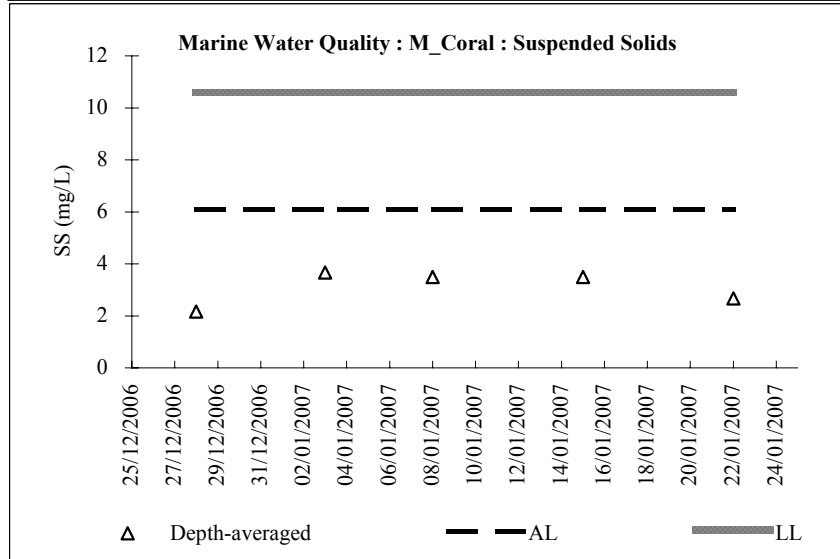
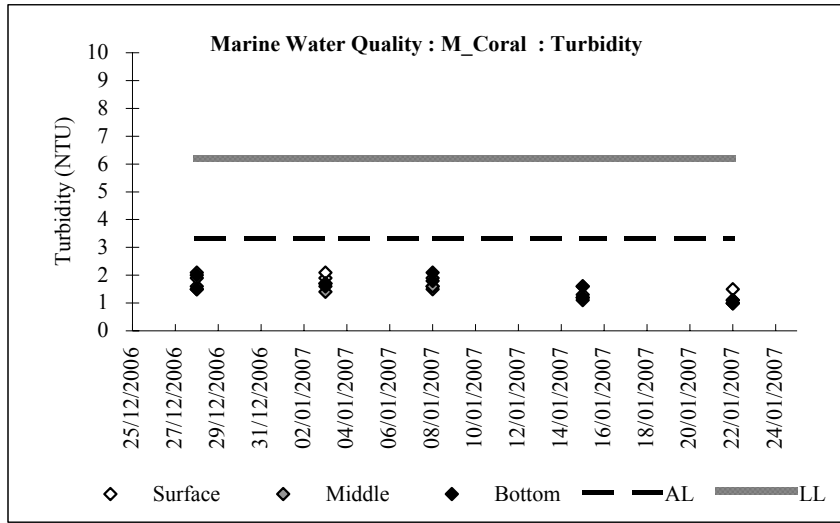
<b>M_Coral</b>		<b>Bottom</b>							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:05	8.2	7.2	18.7	30.2	7.7	8.2	1.5
Mid-Ebb	03/01/2007	12:25	8.3	7.3	18.6	30.3	7.6	8.1	1.6
Mid-Ebb	08/01/2007	15:55	8.3	7.3	18.2	30.1	7.7	8.2	1.8
Mid-Ebb	15/01/2007	10:25	8.4	7.4	18.3	30.2	7.6	8.1	1.6
Mid-Ebb	22/01/2007	13:15	8.4	7.4	17.5	30.0	7.9	8.1	1.1

<b>M_Coral</b>		<b>Bottom</b>							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:05	8.9	7.9	20.0	32.1	7.6	8.3	2.0
Mid-Flood	03/01/2007	15:15	8.6	7.6	19.3	32.2	7.6	8.3	1.7
Mid-Flood	08/01/2007	9:45	8.7	7.7	18.1	32.4	7.6	8.3	2.1
Mid-Flood	15/01/2007	13:15	8.8	7.8	18.5	32.3	7.3	8.4	1.2
Mid-Flood	22/01/2007	9:25	8.8	7.8	17.3	32.2	7.9	8.3	1.0

M_Coral	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	2.0	2.0	<del>2.0</del>	3.0	2.0	<del>2.0</del>	2.2
03/01/2007	5.0	3.0	5.0	2.0	4.0	3.0	3.7
08/01/2007	4.0	4.0	4.0	3.0	2.0	4.0	3.5
15/01/2007	4.0	4.0	4.0	3.0	2.0	4.0	3.5
22/01/2007	2.0	4.0	2.0	4.0	2.0	2.0	2.7







M B		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:17	16.7	1.0	18.9	30.2	7.7	8.2	1.3
Mid-Ebb	03/01/2007	13:12	16.9	1.0	18.5	30.4	7.6	8.2	1.7
Mid-Ebb	08/01/2007	16:42	17.0	1.0	18.0	30.3	7.8	8.1	1.3
Mid-Ebb	15/01/2007	11:12	16.8	1.0	18.2	30.1	7.9	8.1	1.0
Mid-Ebb	22/01/2007	13:27	16.7	1.0	17.6	30.0	7.8	8.1	1.0

M B		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:17	17.8	1.0	19.5	32.2	7.6	8.3	1.6
Mid-Flood	03/01/2007	15:27	17.5	1.0	19.2	32.3	7.6	8.3	1.9
Mid-Flood	08/01/2007	09:57	17.6	1.0	17.8	32.0	7.8	8.4	1.2
Mid-Flood	15/01/2007	13:27	17.5	1.0	18.5	32.4	7.8	8.4	1.0
Mid-Flood	22/01/2007	09:37	17.3	1.0	17.3	32.0	7.9	8.4	1.3

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey

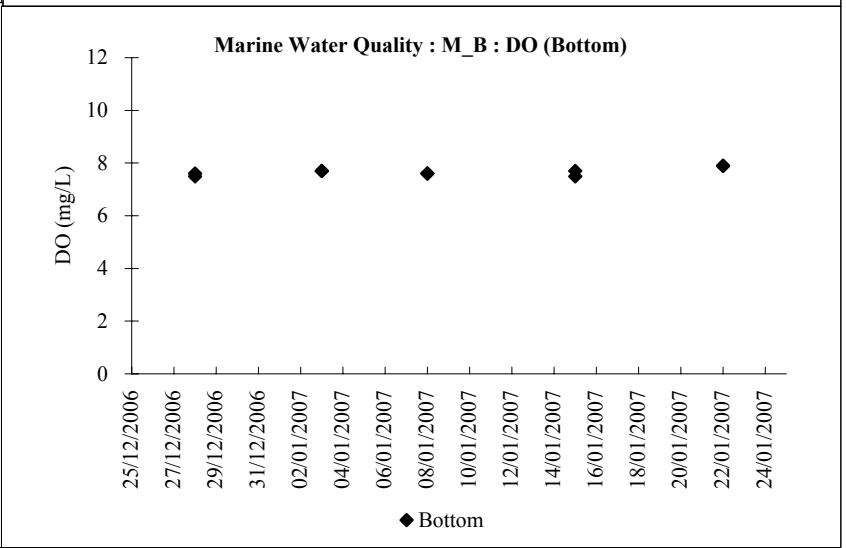
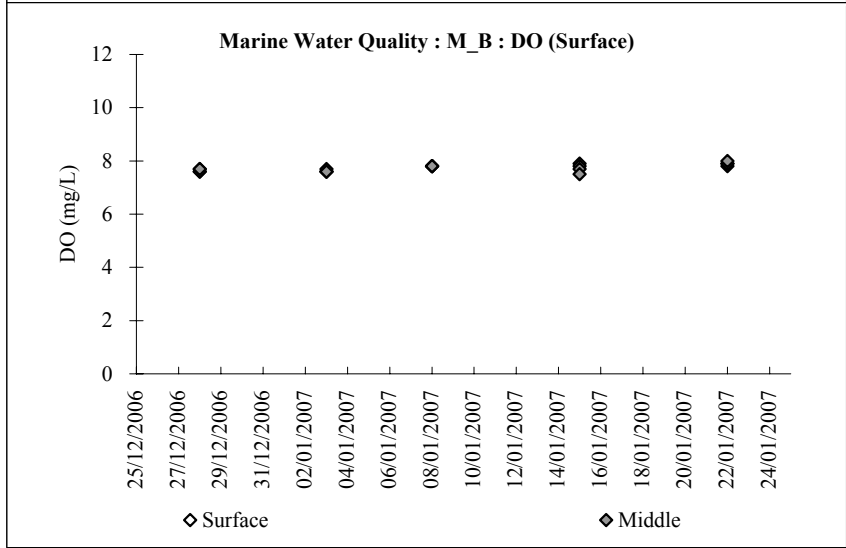
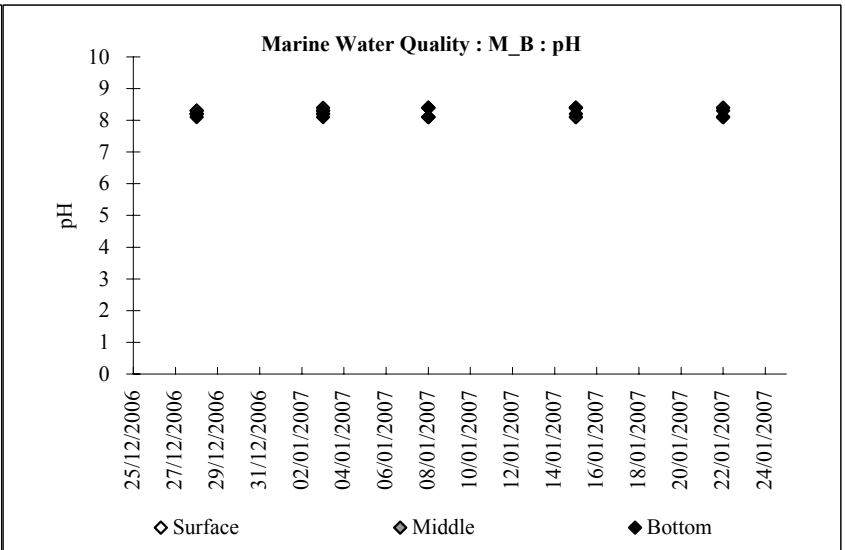
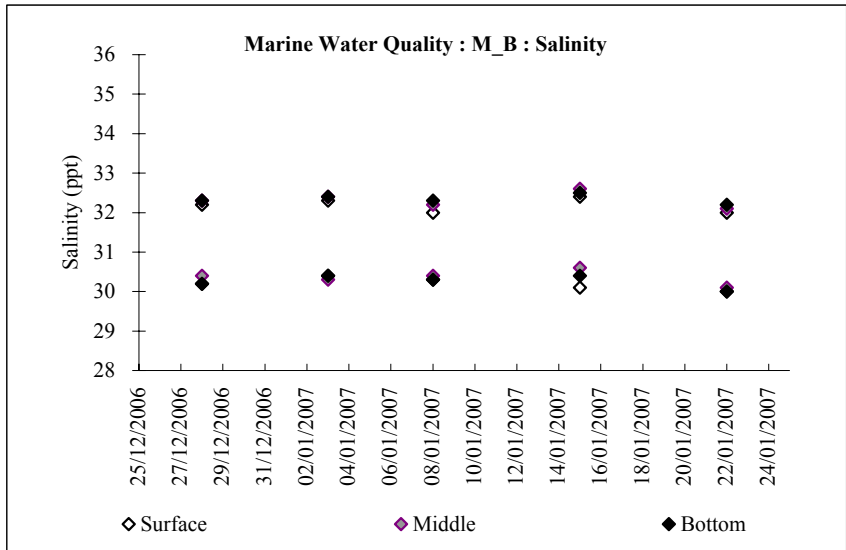
<b>M B</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:16	16.7	8.4	19.2	30.4	7.6	8.2	1.1
Mid-Ebb	03/01/2007	13:11	16.9	8.5	18.5	30.3	7.7	8.2	1.3
Mid-Ebb	08/01/2007	16:41	17.0	8.5	18.1	30.4	7.8	8.1	1.1
Mid-Ebb	15/01/2007	11:11	16.8	8.4	18.3	30.6	7.7	8.1	±0
Mid-Ebb	22/01/2007	13:26	16.7	8.4	17.6	30.1	7.9	8.1	±0

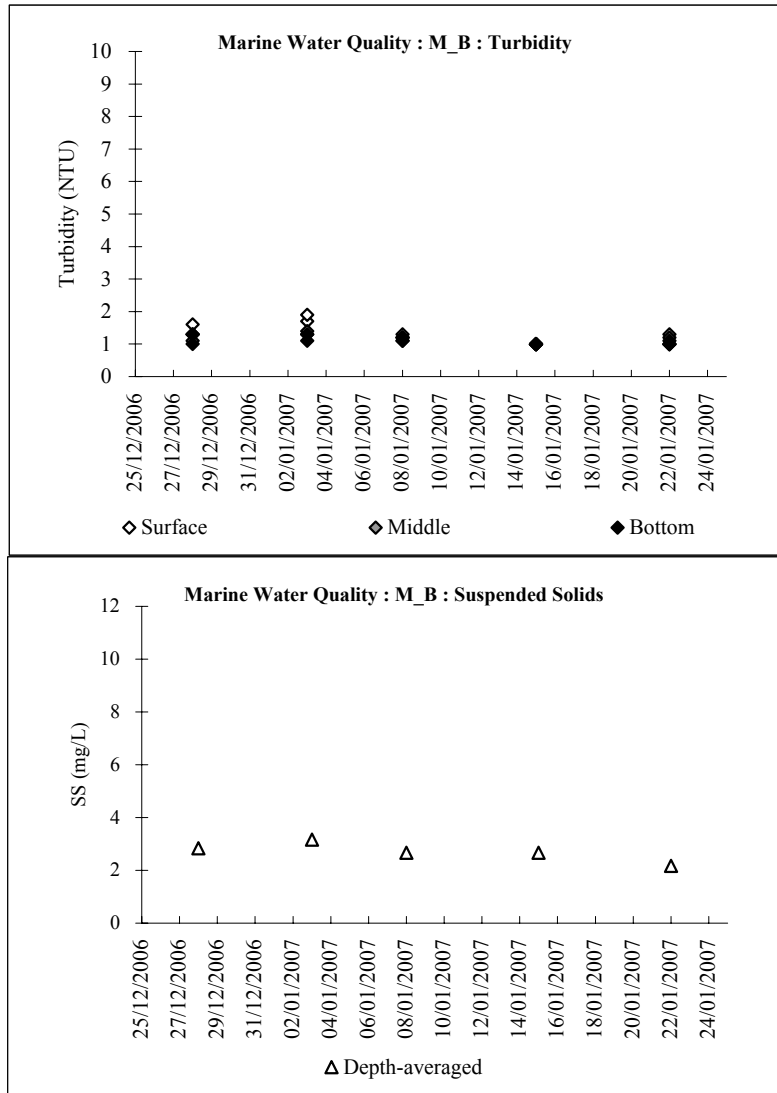
<b>M B</b>		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:16	17.8	8.9	19.7	32.3	7.7	8.3	1.3
Mid-Flood	03/01/2007	15:26	17.5	8.8	19.3	32.4	7.6	8.4	1.4
Mid-Flood	08/01/2007	09:56	17.6	8.8	17.9	32.2	7.8	8.4	1.2
Mid-Flood	15/01/2007	13:26	17.5	8.8	18.5	32.6	7.5	8.4	±0
Mid-Flood	22/01/2007	09:36	17.3	8.7	17.3	32.1	8.0	8.4	1.2

<b>M B</b>		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:15	16.7	15.7	19.2	30.2	7.6	8.1	1.0
Mid-Ebb	03/01/2007	13:10	16.9	15.9	18.5	30.4	7.7	8.1	1.3
Mid-Ebb	08/01/2007	16:40	17.0	16.0	18.2	30.3	7.6	8.1	1.1
Mid-Ebb	15/01/2007	11:10	16.8	15.8	18.1	30.4	7.5	8.2	1.0
Mid-Ebb	22/01/2007	13:25	16.7	15.7	17.6	30.0	7.9	8.1	±0

<b>M B</b>		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:15	17.8	16.8	19.6	32.3	7.5	8.2	1.3
Mid-Flood	03/01/2007	15:25	17.5	16.5	19.3	32.4	7.7	8.3	1.1
Mid-Flood	08/01/2007	9:55	17.6	16.6	18.1	32.3	7.6	8.4	1.2
Mid-Flood	15/01/2007	13:25	17.5	16.5	18.3	32.5	7.7	8.4	±0
Mid-Flood	22/01/2007	9:35	17.3	16.3	17.4	32.2	7.9	8.3	1.1

M_B	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	5.0	3.0	2.0	2.0	3.0	2.0	2.8
03/01/2007	2.0	5.0	3.0	2.0	5.0	2.0	3.2
08/01/2007	3.0	2.0	2.0	2.0	2.0	5.0	2.7
15/01/2007	3.0	2.0	2.0	2.0	2.0	5.0	2.7
22/01/2007	2.0	3.0	2.0	2.0	2.0	2.0	2.2





KS		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:37	12.9	1.0	18.9	30.1	7.6	8.2	1.8
Mid-Ebb	03/01/2007	13:32	13.1	1.0	18.5	30.3	7.6	8.1	2.1
Mid-Ebb	08/01/2007	17:02	12.9	1.0	18.1	30.1	7.7	8.2	2.3
Mid-Ebb	15/01/2007	11:32	12.7	1.0	18.2	30.3	7.5	8.1	1.1
Mid-Ebb	22/01/2007	13:47	12.6	1.0	17.6	30.2	7.8	8.1	1.0

KS		Surface							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:47	13.6	1.0	19.9	32.3	7.7	8.3	1.9
Mid-Flood	03/01/2007	15:57	13.4	1.0	19.2	32.4	7.7	8.3	1.7
Mid-Flood	08/01/2007	10:27	13.3	1.0	18.1	32.2	7.6	8.4	1.2
Mid-Flood	15/01/2007	13:57	13.6	1.0	18.2	32.4	7.6	8.3	1.3
Mid-Flood	22/01/2007	10:07	13.2	1.0	17.4	32.3	7.9	8.4	1.0

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



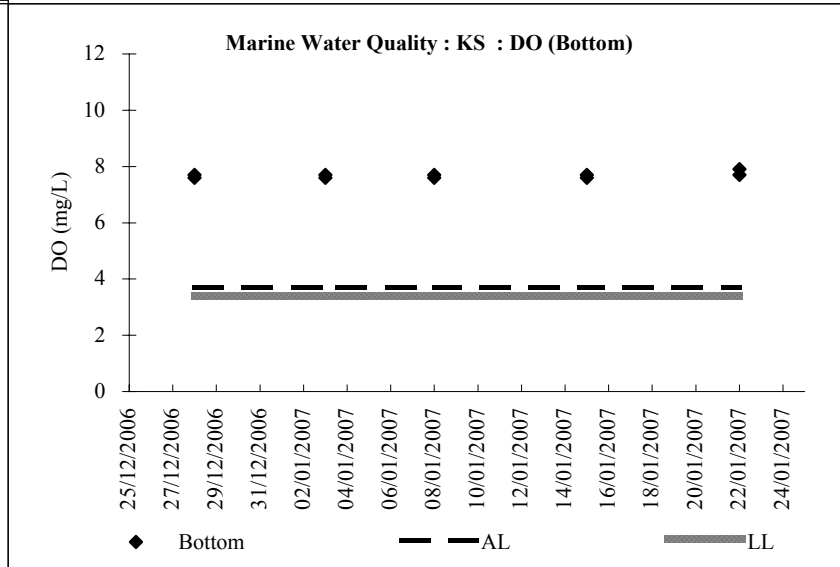
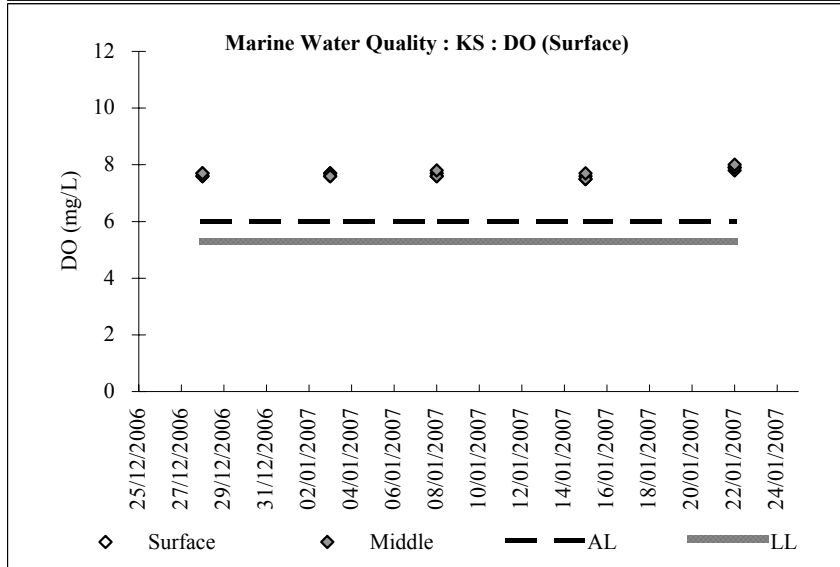
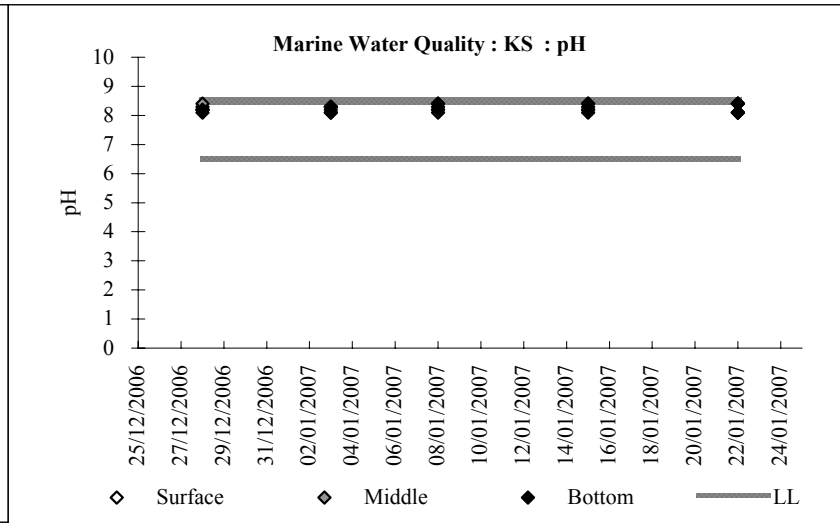
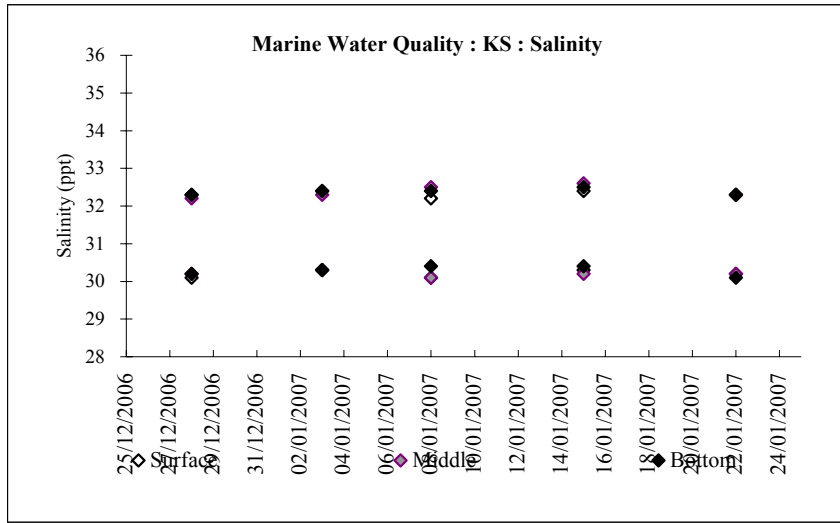
KS		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:36	12.9	6.5	18.7	30.2	7.6	8.2	1.6
Mid-Ebb	03/01/2007	13:31	13.1	6.6	18.6	30.3	7.7	8.2	1.1
Mid-Ebb	08/01/2007	17:01	12.9	6.5	18.3	30.1	7.6	8.1	1.3
Mid-Ebb	15/01/2007	11:31	12.7	6.4	18.3	30.2	7.5	8.2	1.1
Mid-Ebb	22/01/2007	13:46	12.6	6.3	17.6	30.2	7.9	8.1	1.1

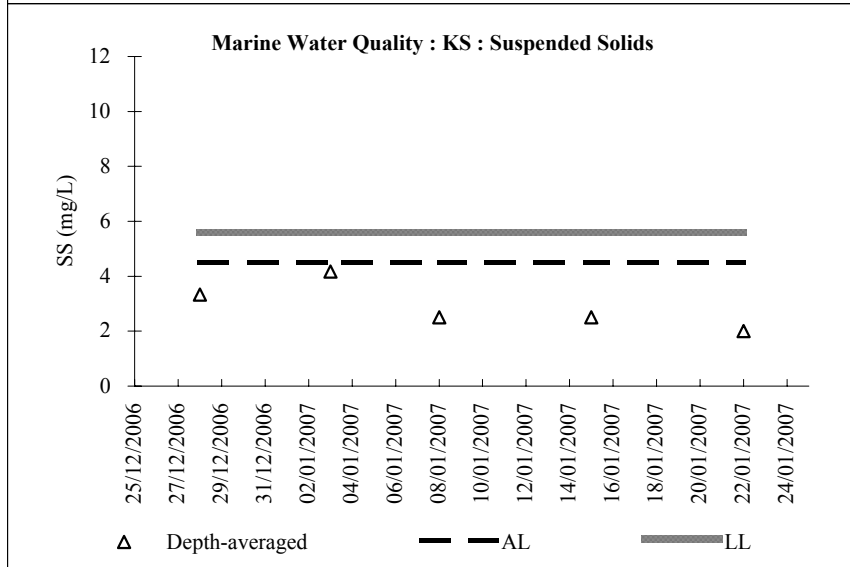
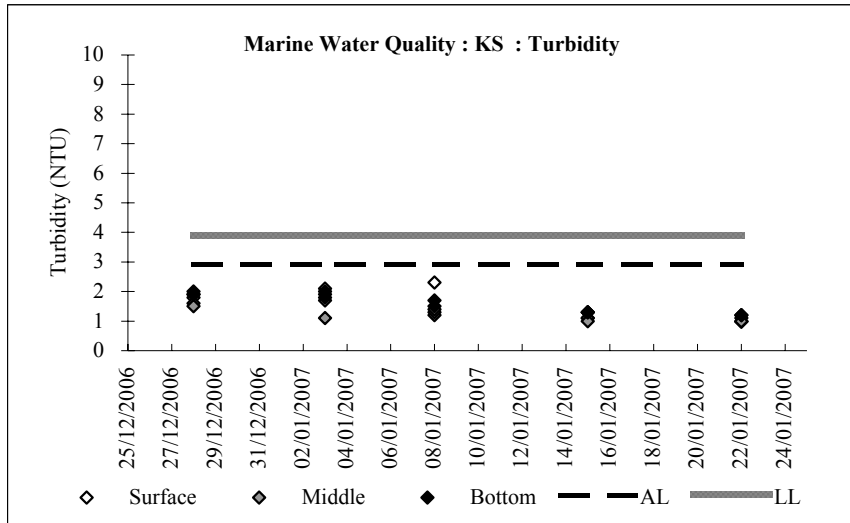
KS		Middle							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:46	13.6	6.8	19.9	32.2	7.7	8.4	1.5
Mid-Flood	03/01/2007	15:56	13.4	6.7	19.3	32.3	7.6	8.3	1.9
Mid-Flood	08/01/2007	10:26	13.3	6.7	18.2	32.5	7.8	8.3	1.4
Mid-Flood	15/01/2007	13:56	13.6	6.8	18.4	32.6	7.7	8.4	1.0
Mid-Flood	22/01/2007	10:06	13.2	6.6	17.4	32.3	8.0	8.4	1.0

KS		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Ebb	28/12/2006	17:35	12.9	11.9	18.8	30.2	7.6	8.1	1.9
Mid-Ebb	03/01/2007	13:30	13.1	12.1	18.6	30.3	7.7	8.1	1.8
Mid-Ebb	08/01/2007	17:00	12.9	11.9	18.3	30.4	7.5	8.2	1.5
Mid-Ebb	15/01/2007	11:30	12.7	11.7	18.3	30.4	7.7	8.2	1.3
Mid-Ebb	22/01/2007	13:45	12.6	11.6	17.6	30.1	7.9	8.1	1.2

KS		Bottom							
tide condition	Date	time	Water depth (m)	Sampling depth (m)	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)
Mid-Flood	28/12/2006	12:45	13.6	12.6	19.9	32.3	7.7	8.2	2.0
Mid-Flood	03/01/2007	15:55	13.4	12.4	19.3	32.4	7.8	8.3	2.0
Mid-Flood	08/01/2007	10:25	13.3	12.3	18.2	32.4	7.5	8.4	1.7
Mid-Flood	15/01/2007	13:55	13.6	12.6	18.5	32.5	7.7	8.4	1.3
Mid-Flood	22/01/2007	10:05	13.2	12.2	17.4	32.3	7.9	8.4	1.2

KS	Mid-Ebb			Mid-Flood			Depth-averaged
	Surface	Middle	Bottom	Surface	Middle	Bottom	SS (mg/L)
28/12/2006	4.0	3.0	6.0	3.0	<del>2.0</del>	2.0	3.3
03/01/2007	3.0	5.0	2.0	5.0	4.0	6.0	4.2
08/01/2007	4.0	<del>2.0</del>	3.0	<del>2.0</del>	2.0	<del>2.0</del>	2.5
15/01/2007	4.0	<del>2.0</del>	3.0	<del>2.0</del>	2.0	<del>2.0</del>	2.5
22/01/2007	2.0	2.0	<del>2.0</del>	2.0	<del>2.0</del>	<del>2.0</del>	2.0



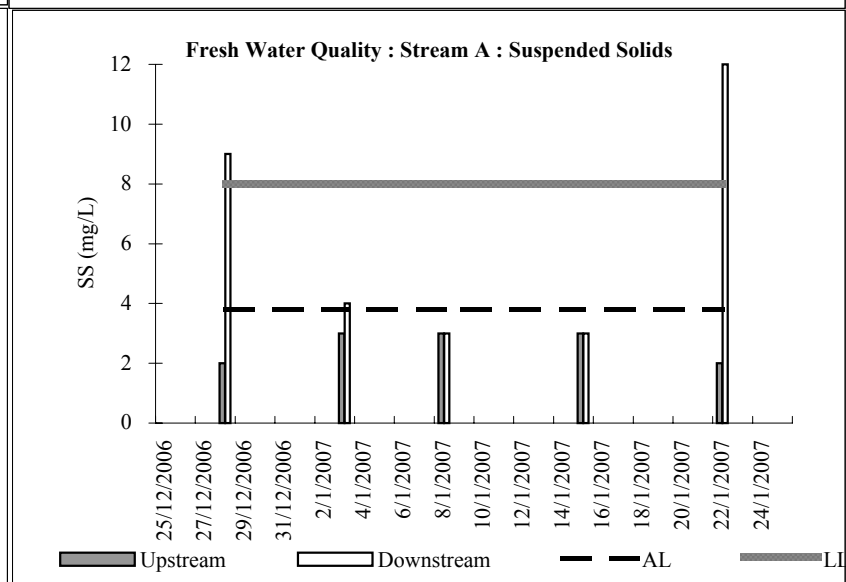
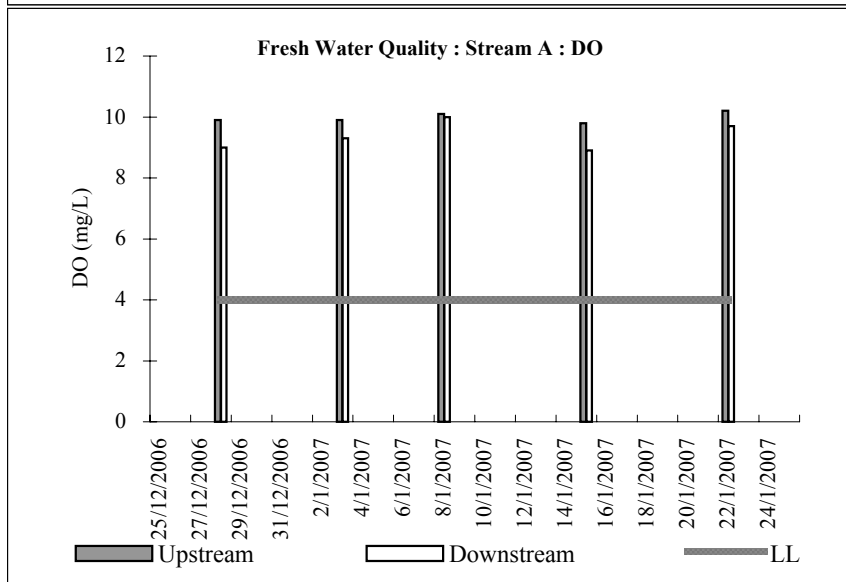
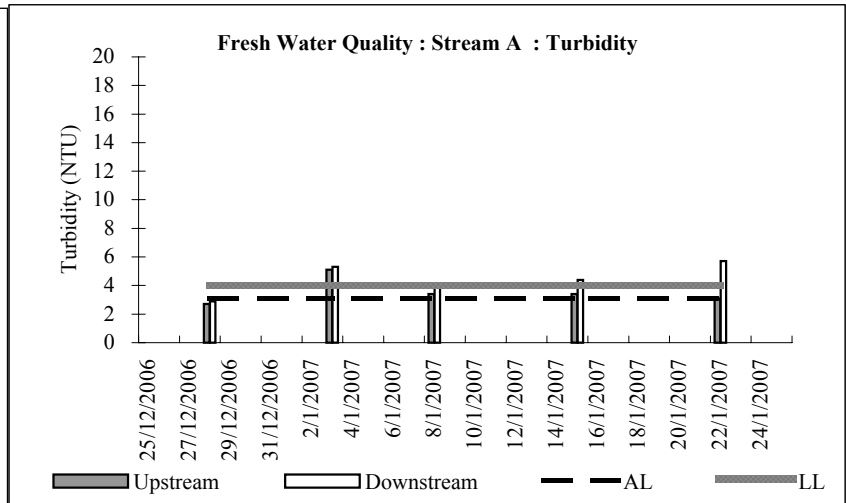
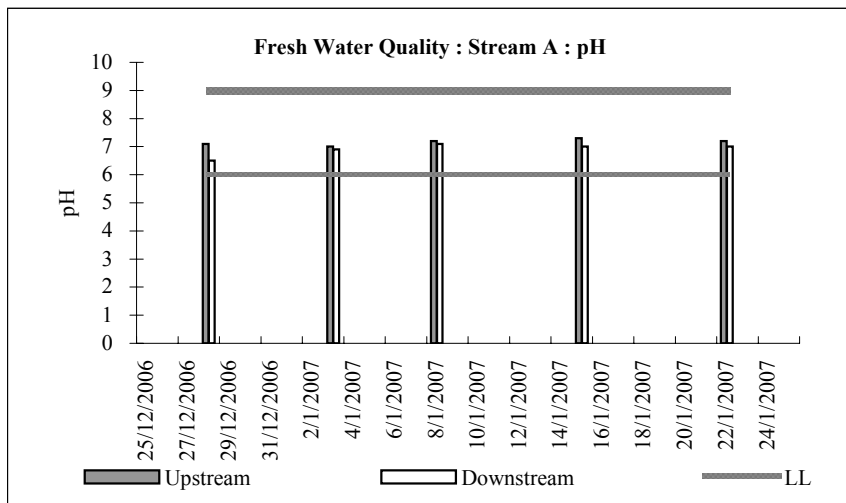


<b>F UA</b>	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	10:40	15.6	<0.1	9.9	7.1	2.7	2.0
03/01/2007	12:05	15.4	<0.1	9.9	7.0	5.1	3.0
08/01/2007	15:35	14.1	<0.1	10.1	7.2	3.4	3.0
15/01/2007	10:05	16.7	<0.1	9.8	7.3	3.4	3.0
22/01/2007	10:05	15.0	<0.1	10.2	7.2	3.1	2.0

<b>F DA</b>	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	10:45	16.8	<0.1	9.0	6.5	2.9	<b>9.0</b>
03/01/2007	12:10	15.8	<0.1	9.3	6.9	<b>5.3</b>	<b>4.0</b>
08/01/2007	15:40	14.4	<0.1	10.0	7.1	<b>3.9</b>	3.0
15/01/2007	10:10	18.9	<0.1	8.9	7.0	<b>4.4</b>	3.0
22/01/2007	10:10	15.2	<0.1	9.7	7.0	<b>5.7</b>	<b>12.0</b>

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



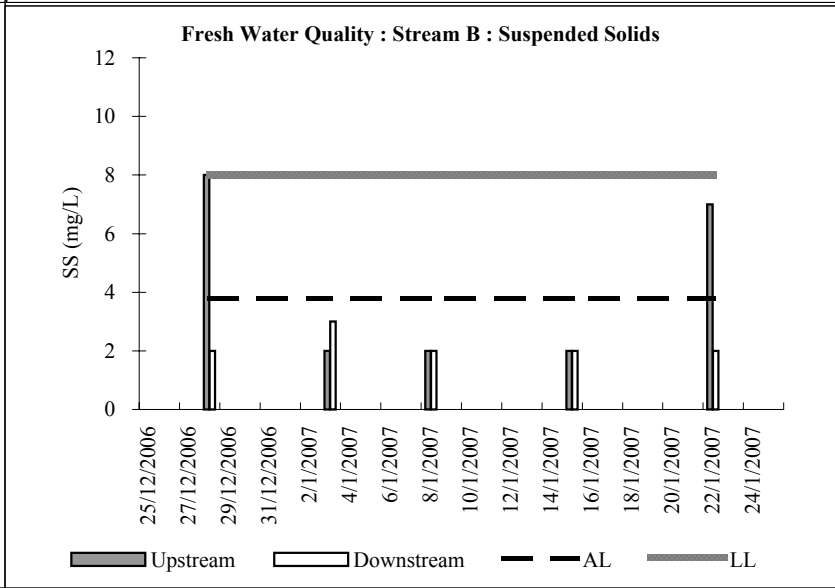
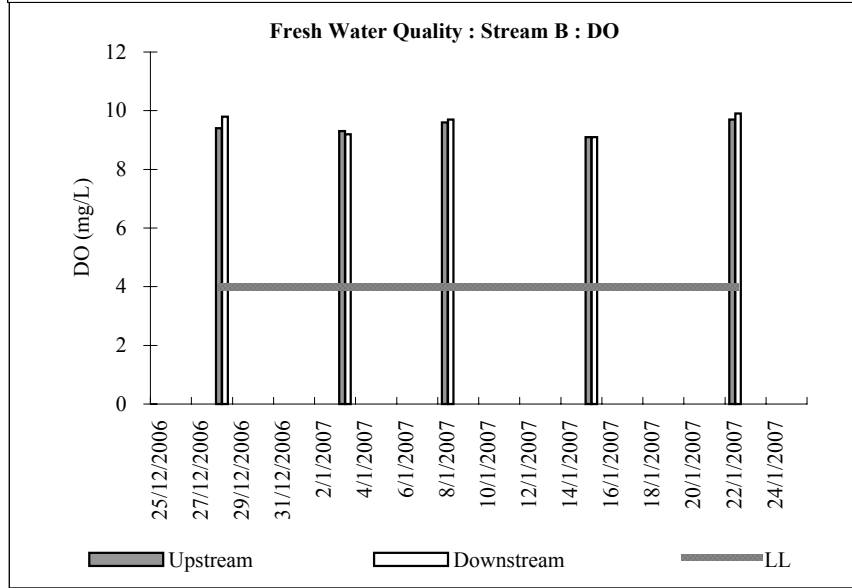
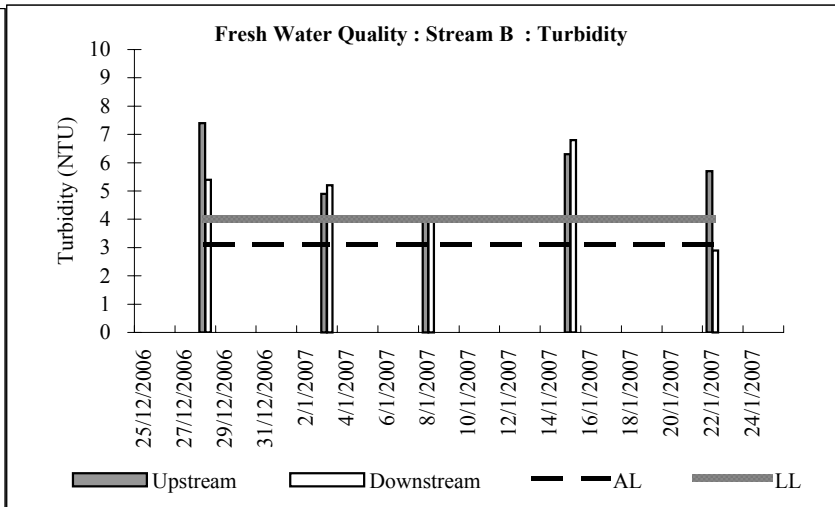
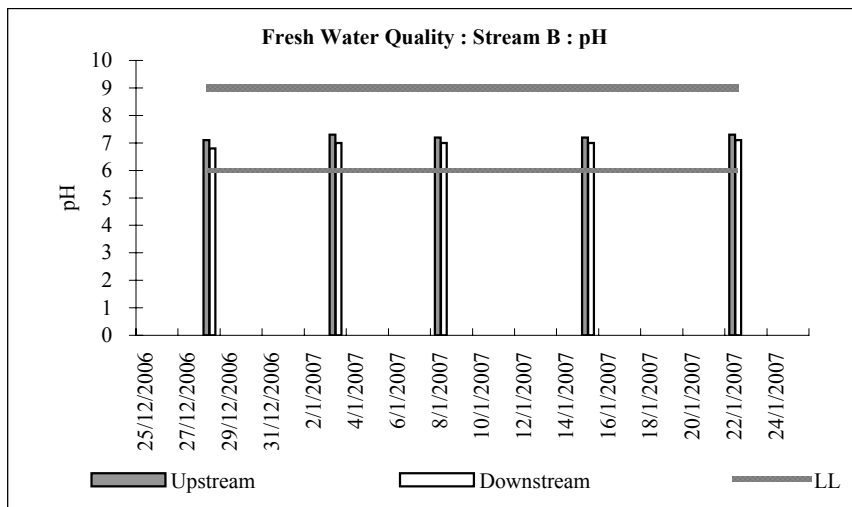
<b>F UB</b>	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	11:00	16.2	<0.1	9.4	7.1	7.4	8.0
03/01/2007	11:40	16.1	<0.1	9.3	7.3	4.9	2.0
08/01/2007	15:10	14.6	<0.1	9.6	7.2	4.1	2.0
15/01/2007	09:40	17.7	<0.1	9.1	7.2	6.3	2.0
22/01/2007	09:40	15.1	<0.1	9.7	7.3	5.7	7.0

<b>F DB</b>	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	11:10	15.5	<0.1	9.8	6.8	<b>5.4</b>	2.0
03/01/2007	11:50	16.3	<0.1	9.2	7.0	<b>5.2</b>	3.0
08/01/2007	15:20	14.3	<0.1	9.7	7.0	<b>4.0</b>	2.0
15/01/2007	09:50	17.6	<0.1	9.1	7.0	<b>6.8</b>	2.0
22/01/2007	09:50	14.9	<0.1	9.9	7.1	2.9	2.0

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



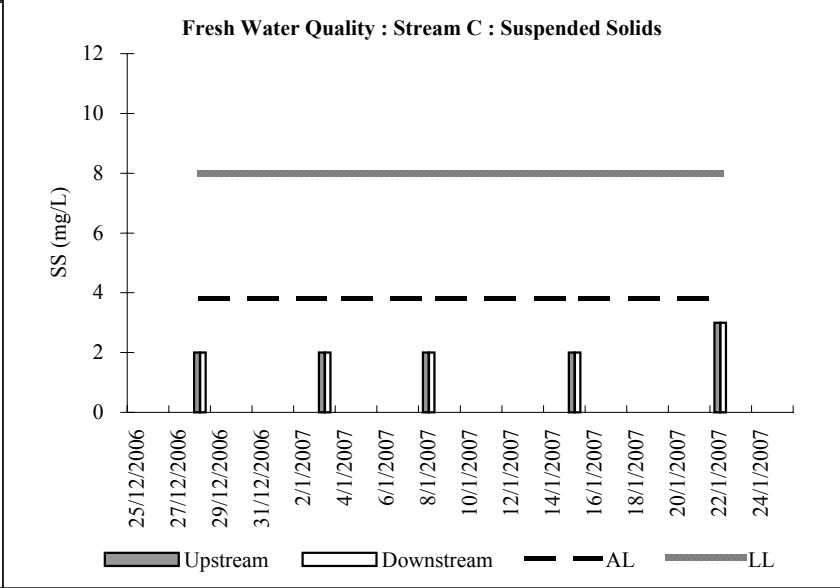
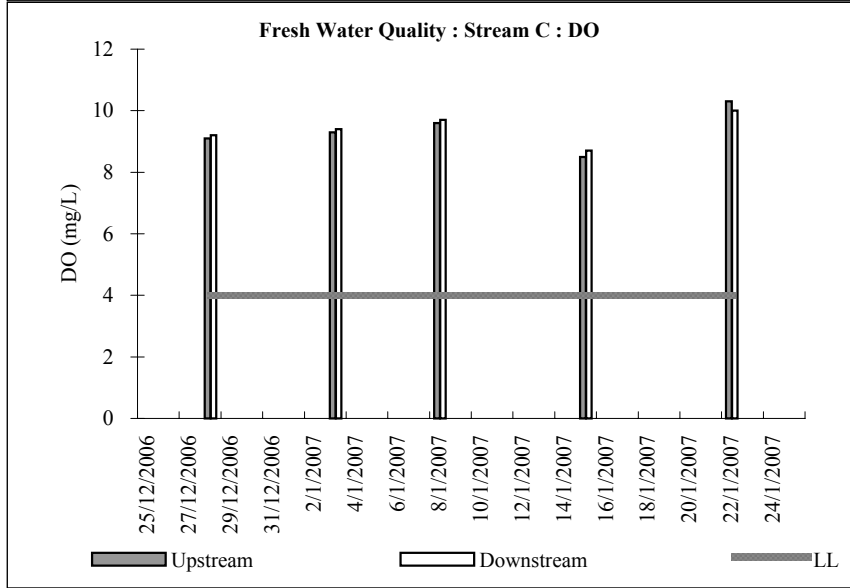
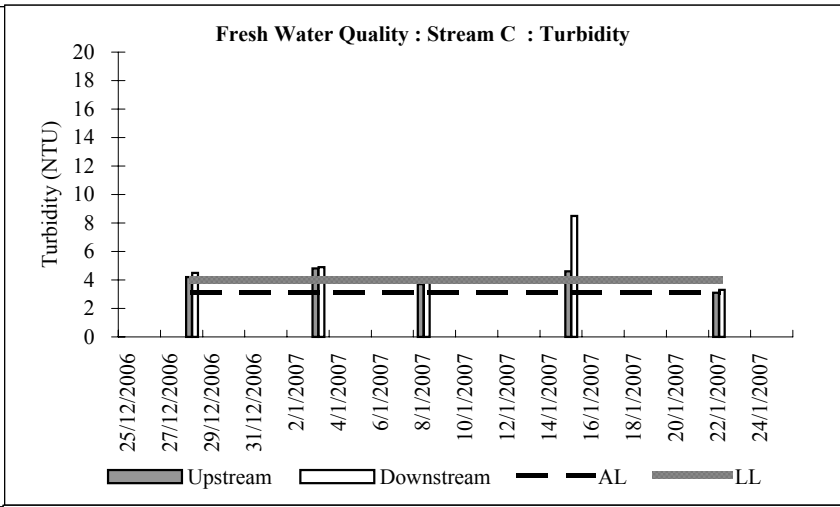
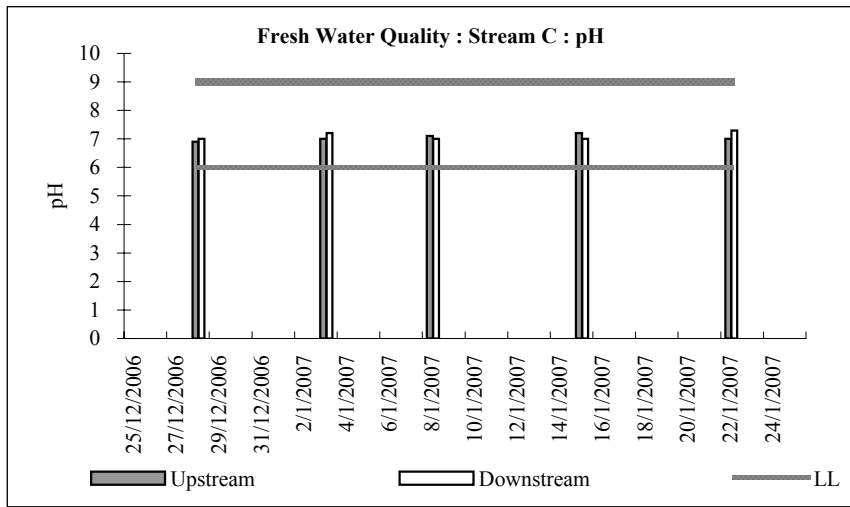


F UC	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	11:30	16.6	<0.1	9.1	6.9	4.2	2.0
03/01/2007	12:45	15.8	<0.1	9.3	7.0	4.8	2.0
08/01/2007	16:15	14.1	<0.1	9.6	7.1	3.7	2.0
15/01/2007	10:45	18.9	<0.1	8.5	7.2	4.6	2.0
22/01/2007	10:45	15.2	<0.1	10.3	7.0	3.1	3.0

F DC	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	11:40	16.9	<0.1	9.2	7.0	<b>4.5</b>	2.0
03/01/2007	12:55	15.9	<0.1	9.4	7.2	<b>4.9</b>	2.0
08/01/2007	16:25	14.2	<0.1	9.7	7.0	<b>3.9</b>	2.0
15/01/2007	10:55	19.0	<0.1	8.7	7.0	<b>8.5</b>	2.0
22/01/2007	10:55	15.6	<0.1	10.0	7.3	<b>3.3</b>	3.0

Remarks:

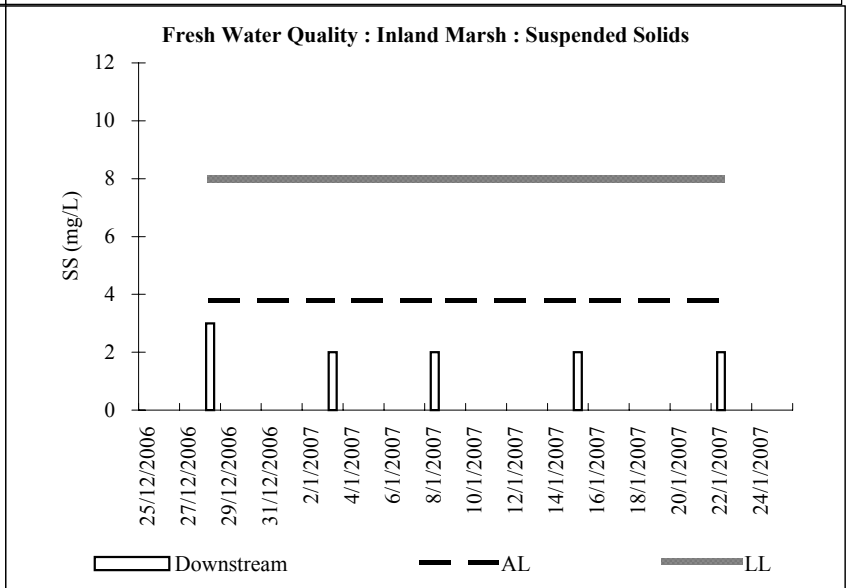
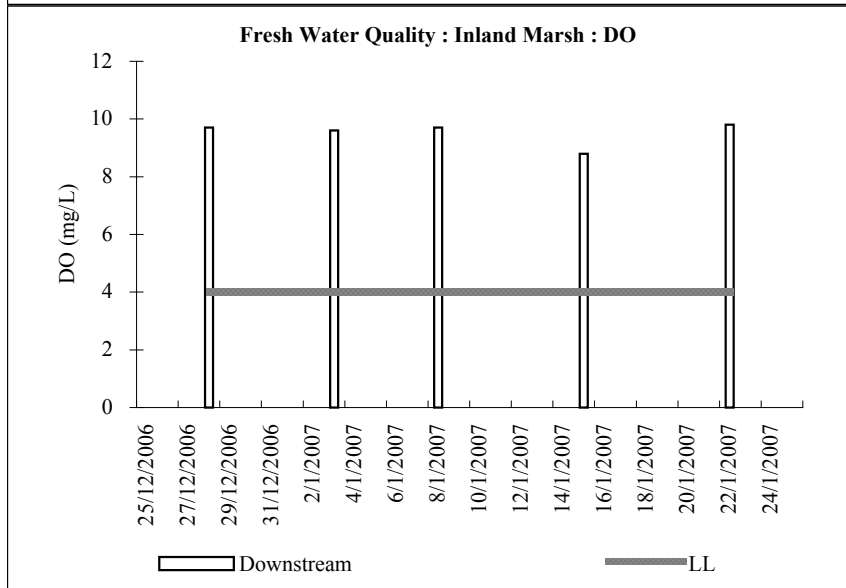
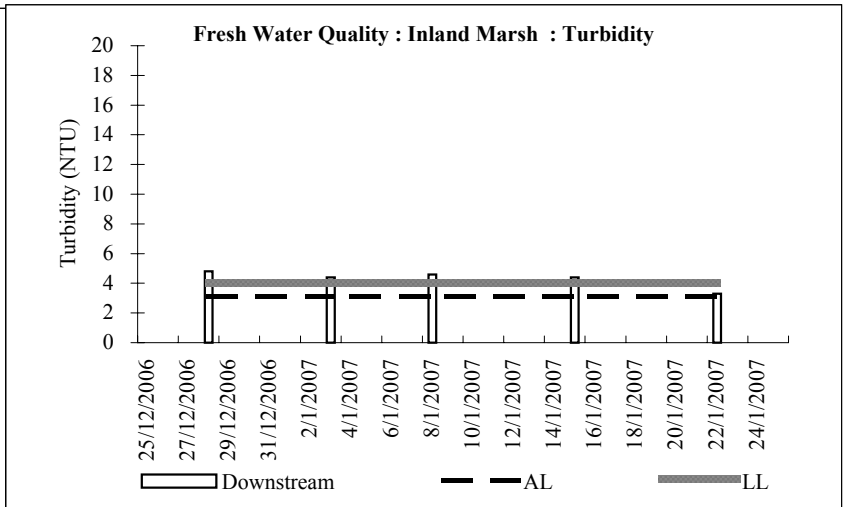
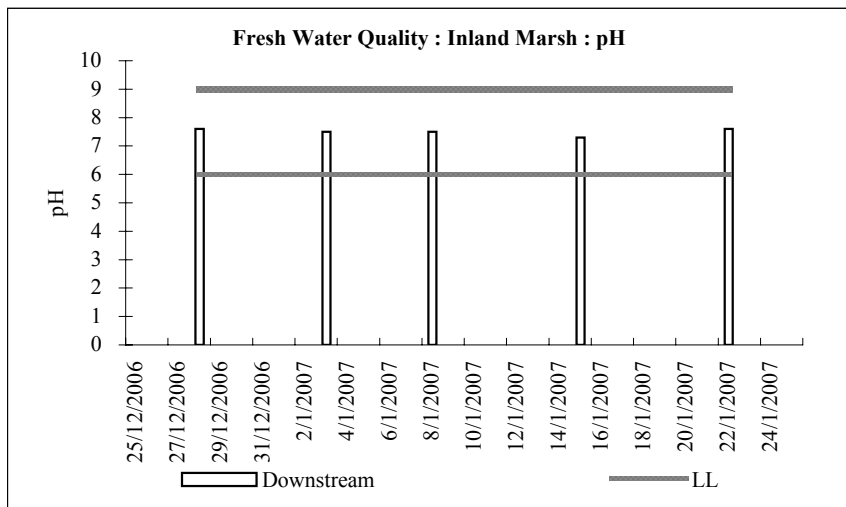
Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



<b>F_Inland M</b>	Mid depth						
Date	time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
28/12/2006	09:55	15.0	<0.1	9.7	7.6	<b>4.8</b>	3.0
03/01/2007	10:55	15.2	<0.1	9.6	7.5	<b>4.4</b>	2.0
08/01/2007	14:25	15.1	<0.1	9.7	7.5	<b>4.6</b>	2.0
15/01/2007	08:55	17.3	<0.1	8.8	7.3	<b>4.4</b>	2.0
22/01/2007	08:55	15.7	<0.1	9.8	7.6	<b>3.3</b>	2.0

Remarks:

Action level	<b><i>Bold &amp; Italic</i></b>
Limit level	<b>Bold</b>
< detection limit	Grey



# Ecology

# Plate 5.3-1 Photos of Stream Habitat



Stream A and Buffer Zone



Stream Flow in upper Stream A



Buuffer zone for Stream B Main Stream



Stream B close-up



Stream C buffer zone



Temporary bridge and permanent bridge at Stream C



Shrimps in Stream C



Stream flow in Stream C



Shrimps in Stream D



Close-up of Stream D

# **Annex F**

## **Calibration Certificates**



**Maunsell Environmental Management Consultants Ltd.**  
**TSP High Volume Sampler**  
**Field Calibration Report**

Station KSC Public Golf Course Bungalow A (GCA B1) Operator: Porky  
 Cal. Date: 30-Dec-06 Next Due Date: 28-Feb-07  
 Equipment No.: A-001-47T Serial No. B/M200HX

Ambient Condition			
Temperature, Ta (K)	289	Pressure, Pa (mmHg)	769.6

Orifice Transfer Standard Information					
Serial No:	843	Slope, mc	2.0012	Intercept, bc	-0.01028
Last Calibration Date:	13-Oct-06	$mc \times Qstd + bc = [DH \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Oct-07	$Qstd = \{[DH \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m <sup>3</sup> /min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	12.8	3.66	1.83	54.0	55.18
13	10.5	3.31	1.66	47.0	48.03
10	7.5	2.80	1.40	39.0	39.85
7	5.5	2.40	1.20	35.0	35.76
5	3.5	1.91	0.96	26.0	26.57

**By Linear Regression of Y on X**

Slope, mw = 31.5480 Intercept, bw = -3.4566

Correlation Coefficient\* = 0.9915

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 1.30m<sup>3</sup>/min

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = IC \times [(Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]<sup>1/2</sup> = 36.75

Remarks: \_\_\_\_\_

QC Reviewer: Eddie Yang Signature: Eddie Yang Date: 3.1.2007



Environmental Division

## CERTIFICATE OF ANALYSIS

**CONTACT:** MR WONG SIU HO  
**CLIENT:** ENOVATIVE ENV TECHNOLOGY CO  
**ADDRESS:** RM 3704 SIK MAN HOUSE  
HOMANTIN ESTATE  
KOWLOON  
**ORDER No.:**  
**PROJECT:**

**Batch:** HK53248  
**Sub Batch:** 0  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 25/10/2006  
**DATE OF ISSUE:** 21/11/2006  
**SAMPLE TYPE:** EQUIPMENT  
**No. of SAMPLES:** 1

### COMMENTS

The calibration procedure used for the analysis has been applied for the calibration of the above instrument.

### NOTES


This is the Final Report and supersedes any preliminary report with this batch number.  
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

### ISSUING LABORATORY: HONG KONG

#### Address

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Kwai Chung  
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**Phone:** 852-2610 1044  
**Fax:** 852-2610 2021  
**Email:** hongkong@alsenviro.com

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong

#### Other ALS Environmental Laboratories

AUSTRALIA		AMERICAS
Brisbane	Hong Kong	Vancouver
Melbourne	Singapore	Santiago
Sydney	Kuala Lumpur	Amtofagasta
Newcastle	Bogor	Lima

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ALS Technichem (HK) Pty Ltd  
Part of the ALS Laboratory Group

11/F, Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, N.T., H.K.

Phone: 852-2610 1044 Fax: 852-2610 2021 www.alsenviro.com

A Campbell Brothers Limited Company

# CERTIFICATE OF ANALYSIS



Batch: HK53248  
Sub Batch : 0  
Date of Issue: 21/11/2006  
Client: ENOVATIVE ENV TECHNOLOGY CO  
Client Reference:

## Calibration of Turbidimeter

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6920  
Serial No. : 000109DF  
Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B  
Date of Calibration : 25 October, 2006

### Testing Results :

Expected Reading	Recording Reading
0.00 NTU	0.2 NTU
4.00 NTU	3.90 NTU
16.0 NTU	16.1 NTU
80.0 NTU	80.0 NTU
160 NTU	159 NTU
Allowing Deviation	±10%

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong

# CERTIFICATE OF ANALYSIS




Batch: HK53248  
Sub Batch : 0  
Date of Issue: 21/11/2006  
Client: ENOVATIVE ENV TECHNOLOGY CO  
Client Reference:

## Calibration of Conductivity System

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6920  
Serial No. : 000109DF  
Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2510B  
Date of Calibration : 25 October, 2006

### Testing Results :

Expected Reading	Recording Reading
1412 uS/cm 6667 uS/cm 58670 uS/cm	1405 uS/cm 6732 uS/cm 57920 uS/cm
Allowing Deviation	±10%

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong



# CERTIFICATE OF ANALYSIS




Batch: HK53248  
Sub Batch : 0  
Date of Issue: 21/11/2006  
Client: ENOVATIVE ENV TECHNOLOGY CO  
Client Reference:

## Calibration of Thermometer

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6920  
Serial No. : 000109DF  
Calibration Method : In-house Method  
Date of Calibration : 25 October, 2006

Testing Results :

Reference Temperature (°C)	Recorded Temperature (°C)
3.5 °C	3.5 °C
20.1 °C	20.0 °C
Allowing Deviation	±2.0°C

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong

# CERTIFICATE OF ANALYSIS



Batch:  
Sub Batch:  
Date of Issue:  
Client:  
Client Reference:

Batch: HK53248  
Sub Batch : 0  
Date of Issue: 21/11/2006  
Client: ENOVATIVE ENV TECHNOLOGY CO  
Client Reference:


**Calibration**

**Calibration of DO System**

Item :  
Model No :  
Serial No :  
Calibration Method :  
Date of Calibration :  
Testing Results :

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6920  
Serial No. : 000109DF  
Calibration Method : This meter was calibrated in accordance with standard method APHA (18th Ed.) 4500-OC & G  
Date of Calibration : 25 October, 2006  
Testing Results :

Expected Reading	Recording Reading
0.00 mg/L	0.10 mg/L
3.50 mg/L	3.60 mg/L
5.10 mg/L	5.00 mg/L
7.90 mg/L	7.90 mg/L
Allowing Deviation	±0.2 mg/L

  
 \_\_\_\_\_  
 Ms Wong Wai Man, Alice  
 Laboratory Manager - Hong Kong

**AL**

# CERTIFICATE OF ANALYSIS




Batch: HK53248  
Sub Batch : 0  
Date of Issue: 21/11/2006  
Client: ENOVATIVE ENV TECHNOLOGY CO  
Client Reference:

## Calibration of pH System

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6920  
Serial No. : 000109DF  
Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 4500 H:B  
Date of Calibration : 25 October, 2006

### Testing Results :

Expected Reading	Recording Reading
4.00	4.01
7.00	7.01
10.0	9.93
Allowing Deviation	±0.2 unit

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong





**Annex G**  
**Monitoring Programme**  
**for the next three months**

<b>February 2007</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
				1	2 AQ	3
4	5 WQ	6	7 LV	8 AQ	9	10
11	12 WQ	13	14 AQ	15	16	17
18	19	20	21 LV AQ	22 WQ	23	24
25	26 WQ AQ	27	28 TE			

<b>March 2007</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
				1	2	3
4	5 AQ WQ	6	7 LV	8	9	10 AQ
11	12 WQ	13	14	15	16 AQ	17
18	19 WQ	20	21 LV	22 AQ	23 TE	24 ME
25 ME	26 WQ	27	28 AQ	29	30	31

<b>April 2007</b>						
<b>Sun</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>	<b>Sat</b>
1	2 WQ	3 AQ	4 LV	5	6	7
8	9 WQ AQ	10	11	12	13	14 AQ
15	16 WQ	17	18 LV	19	20 AQ	21
22	23 WQ	24	25	26 AQ	27	28 TE
29	30 WQ					

Remarks: AQ = TSP, WQ = Freshwater and Marine water quality, TE = Terrestrial Ecology, ME = Marine Ecology, LV = Landscape & Visual.

No exceedance was found during the three months of coral monitoring (Apr – Jun 06) at the temporary barging point after the coral incident (23<sup>rd</sup> Mar 06), the monitoring frequency will be changed on quarterly basis (start from Sept 2006) till the end of the construction phase (Dec 06, Mar 07 and Jun 07). According to the latest construction programme submitted by the Contractor, it will extend from July 07 to Nov 07. The monitoring will require to be extended to Sept 07 subject to the actual site progress.

No dredging was carried out for the desalination plant pipeline construction. However, corals at Site D2 will be transplanted in the Dec 2006. Transplanted coral monitoring on quarterly basis for one year was commenced after the completion of coral transplanted in Dec 2006. The monitoring of the transplanted coral will be in Mar 07, Jun 07 and Sept 07.

Planting turf is likely to be in mid-February 2007. Water quality monitoring and frequency will increase to three times a week for the first three months (mid-February to mid-May 2007), then decrease to weekly basis if no exceedance was recorded. The monitoring parameter will include nutrients and pesticides (only measured when actual application on site).

# **Annex H**

## **Construction Programme for the next three months**

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007															
								2006			JAN			FEB			MAR			APR			
								DEC			1	8	15	22	29	5	12	19	26	5	12	19	26
<b>General &amp; Preliminaries</b>																							
<b>Project Key Dates</b>																							
<b>Possession of Site</b>																							
KSC00090	Letter of Acceptance	0	0	100	28-12-05A																		
KSC00095	Project Commencement	0	0	100	03-01-06A																		
KSC00100	Possession of Portion 1	0	0	100	03-01-06A																		
KSC00110	Possession of Portion 2	0	0	100	03-01-06A																		
KSC00120	Possession of Portion 3	0	0	100	03-01-06A																		
KSC00130	Possession of Portion 4	0	0	100	03-01-06A																		
KSC00140	Possession of Portion 5	0	0	100	03-01-06A																		
<b>Completion of Works</b>																							
KSC00145	Completion of Section 1	0	0	100		03-10-06A																	
KSC00152	Completion of Section 1 (Forecast) Alternative	0	0	0		16-02-07	-136																
KSC00155	Completion of Section 2	0	0	100		03-10-06A																	
KSC00160	Completion of Section 2 (Forecast)	0	0	0		22-08-07	-323																
KSC00162	Completion of Section 2 (Forecast) Desalination	0	0	0		24-01-07	-113																
KSC00164	Completion of Section 2 (Forecast) Lake No.1	0	0	0		03-03-07	-151																
KSC00165	Completion of Section 3	0	0	100		06-12-06A																	
KSC00170	Completion of Section 3 (Forecast)	0	0	0		15-02-07	-71																
KSC00175	Completion of Section 4	0	0	0		06-03-07*	0																
KSC00180	Completion of Section 4 (Forecast)	0	0	0		01-06-07	-87																
KSC00185	Completion of Section 9	0	0	0		01-08-07*	0																
KSC00190	Completion of Section 9 (Forecast)	0	0	0		23-11-07	-114																
<b>Design and Submission</b>																							
<b>Submission: Temporary Works</b>																							
KSC00659	Design reinforced fill slope approval by GEO	42	12	95	23-08-06A	01-02-07	-66																
<b>General Works</b>																							
<b>Survey and Site Clearance</b>																							
KSC00570	Condition survey	180	0	100	10-01-06A	31-12-06A																	
<b>Construction Lake No.1</b>																							
S200735	Water supply form Desalination Plant	0	0	0	05-03-07		-81																
S200832	CLP Construction	24	21	30	19-01-07A	14-02-07	-115																
S200835	CLP Energize for Irrigation Pump House	0	0	0	15-02-07		-115																

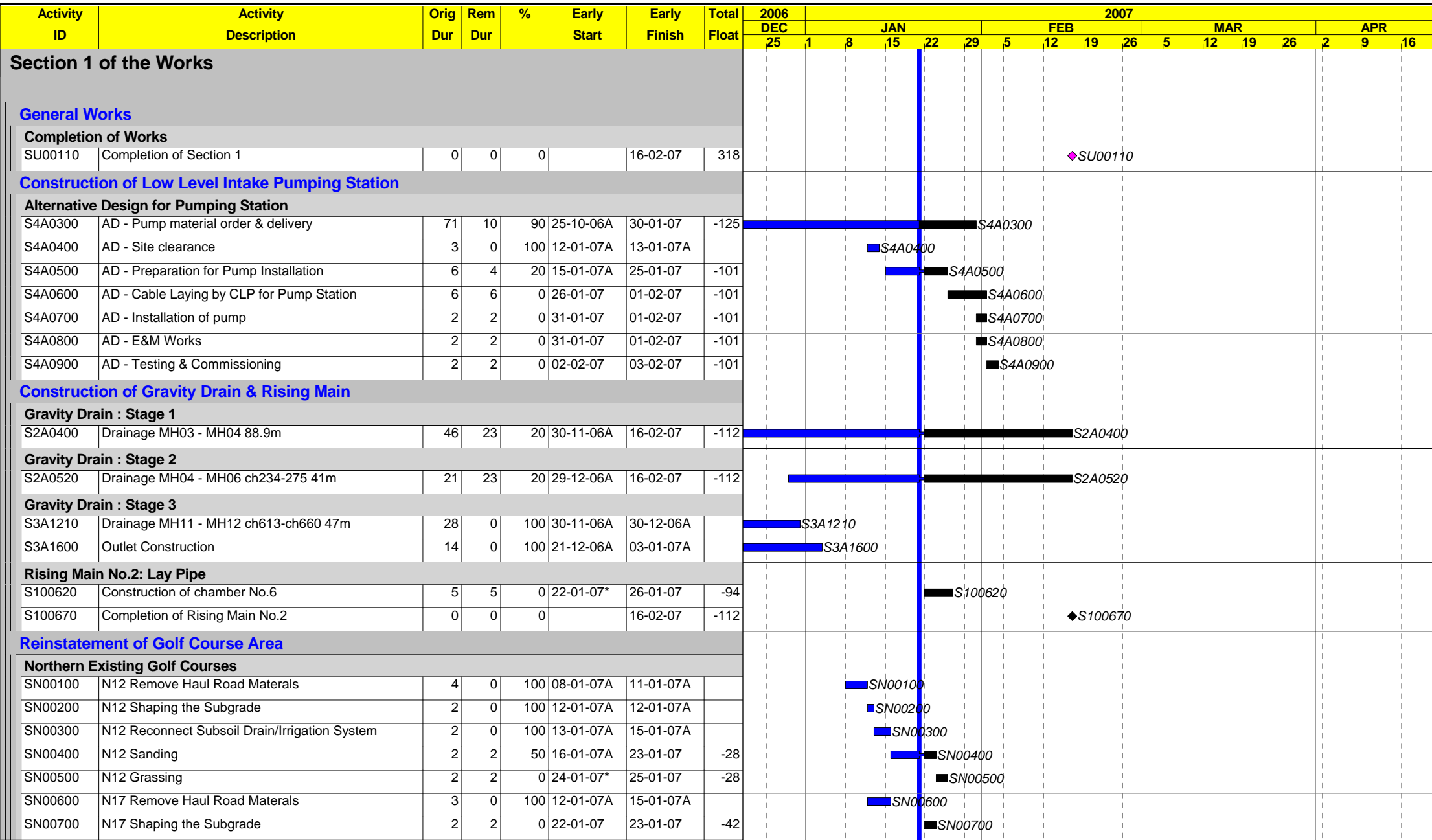
Start Date 28-12-05  
 Finish Date 15-02-08  
 Data Date 21-01-07  
 Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity

KS13 Sheet 1 of 23

**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	



Start Date	28-12-05
Finish Date	15-02-08
Data Date	21-01-07
Run Date	02-02-07 11:28

Early Bar
Progress Bar
Critical Activity

KS13 Sheet 2 of 23

**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007														
								2006			JAN			FEB			MAR			APR		
								DEC			1	8	15	22	29	5	12	19	26	5	12	19
SN00800	N17 Reconnect Subsoil Drain/Irrigation System	2	2	0	24-01-07	25-01-07	-42						■	SN00800								
SN00900	N17 Sanding	2	2	0	26-01-07	27-01-07	-32						■	SN00900								
SN01000	N17 Grassing	2	2	0	29-01-07	30-01-07	-32						■	SN01000								
SN01100	N17-N16 Remove Haul Road Materials	2	2	0	22-01-07*	23-01-07	-42						■	SN01100								
SN01200	N17-N16 Reinstate Maintenance Cart Track	2	2	0	24-01-07	25-01-07	-42						■	SN01200								
SN01300	N17-N16 Reconnect Subsoil Drains/Drainage	3	3	0	26-01-07	29-01-07	-42						■	SN01300								
SN01400	N17-N16 Shaping	2	2	0	30-01-07	31-01-07	-35						■	SN01400								
SN01500	N17-N16 Rock Picking & Hydroseeding	2	2	0	01-02-07	02-02-07	-35						■	SN01500								
SN01600	N16 Remove Haul Road Materials	2	2	0	24-01-07*	25-01-07	-41						■	SN01600								
SN01700	N16 Shaping the Subgrade	2	2	0	26-01-07	27-01-07	-41						■	SN01700								
SN01800	N16 Reconnect Subsoil Drain/Irrigation System	3	3	0	30-01-07	01-02-07	-42						■	SN01800								
SN01900	N16 Sanding	1	1	0	02-02-07	02-02-07	-35						■	SN01900								
SN02000	N16 Grassing	2	2	0	03-02-07	05-02-07	262						■	SN02000								
SN02100	N15 Remove Haul Road Materials	2	2	0	26-01-07	27-01-07	-41						■	SN02100								
SN02200	N15 Shaping the Subgrade	3	3	0	29-01-07	31-01-07	-41						■	SN02200								
SN02300	N15 Reconnect Subsoil Drain/Irrigation System	5	5	0	02-02-07	07-02-07	-42						■	SN02300								
SN02400	N15 Sanding	1	1	0	08-02-07	08-02-07	-42						■	SN02400								
SN02500	N15 Grassing	2	2	0	09-02-07	10-02-07	-42						■	SN02500								
SN02600	Completion of N12 & N15 - N17	0	0	0		10-02-07	-42						◆	SN02600								

**Southern Existing Golf Courses**

SS00200	N15/S2 Remove Haul Road Materials	2	2	0	16-02-07*	26-02-07	245							■	SS00200							
SS00300	N15/S2 Reinstate Maintenance Cart Track	2	2	0	27-02-07	28-02-07	245							■	SS00300							
SS00400	N15/S2 Shaping	2	2	0	01-03-07	02-03-07	245							■	SS00400							
SS00500	N15/S2 Rock Picking & Hydroseeding	2	2	0	03-03-07	05-03-07	245							■	SS00500							
SS00700	S2 Remove Haul Road Materials	2	2	0	15-02-07	16-02-07	199							■	SS00700							
SS00800	S2 Shaping the Subgrade	1	1	0	26-02-07	26-02-07	247							■	SS00800							
SS00900	S2 Reconnect Subsoil Drain/Irrigation System	2	2	0	27-02-07	28-02-07	247							■	SS00900							
SS01000	S2 Sanding	1	1	0	01-03-07	01-03-07	247							■	SS01000							
SS01100	S2 Grassing	1	1	0	02-03-07	02-03-07	247							■	SS01100							
SS01300	S9 Remove Haul Road Materials	9	9	0	26-02-07	07-03-07	199							■	SS01300							
SS01400	S9 Shaping the Subgrade	6	6	0	08-03-07	14-03-07	231							■	SS01400							
SS01500	S9 Installation Irrigation System	3	3	0	15-03-07	17-03-07	231							■	SS01500							
SS01600	S9 Sanding	1	1	0	19-03-07	19-03-07	231							■	SS01600							
SS01700	S9 Grassing	2	2	0	20-03-07	21-03-07	231							■	SS01700							

Start Date	28-12-05
Finish Date	15-02-08
Data Date	21-01-07
Run Date	02-02-07 11:28

■	Early Bar
■	Progress Bar
■	Critical Activity

KS13 Sheet 3 of 23

**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**




Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	







Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007																
								2006			JAN			FEB			MAR			APR				
								DEC	JAN	FEB	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
<b>Section 3 of the Works</b>																								
<b>General</b>																								
<b>Existing Maintenance Building</b>																								
<b>Maintenance Building: Fitting Out Works</b>																								
S3016000	Vacant the Existing Building	60	22	80	01-11-06A	15-02-07	-58																	
S3017000	Renovate the Existing Building	60	22	80	01-11-06A	15-02-07	-58																	
<b>Maintenance Building: Testing &amp; Commissioning</b>																								
S3021000	Test and commissioning	10	10	0	05-02-07	15-02-07	-58																	
S3030070	Completion of Section 3	0	0	0		15-02-07	-71																	
<b>S3 Area</b>																								
<b>Existing Maintenance Building</b>																								
<b>Maintenance Building: Fitting Out Works</b>																								
S3015200	S3 Finishing Works	20	22	85	18-10-06A	15-02-07	-58																	
<b>Maintenance Building: E&amp;M Works</b>																								
S3104200	S3 E&M Works	20	22	85	18-10-06A	15-02-07	-58																	
<b>Sewage Treatment Plant</b>																								
<b>Existing Maintenance Building</b>																								
<b>Construction Retaining Wall No.2</b>																								
S3030024	Access road from GH18 to RW2	6	0	100	21-12-06A	10-01-07A																		
S3030026	Retaining Walls RW2 wall Backfill	6	9	50	11-01-07A	31-01-07	-45																	
<b>STW Extension: Civil Works</b>																								
S3030040	E&M Works	12	0	100	16-11-06A	15-01-07A																		
S3030050	Plant Installation	12	0	100	16-11-06A	15-01-07A																		
S3030060	STW Plant Trial Operating	12	10	10	16-01-07A	01-02-07	-46																	
<b>General Works</b>																								
<b>Completion of Works</b>																								
SU00130	Completion of Section 3	0	0	0		15-02-07	0																	
<b>Section 4 of the Works</b>																								
<b>Area 4</b>																								
<b>Existing Admin. Building</b>																								
<b>Admin. Building: Structure Works</b>																								
S4040800	Area 4 - Roof	50	9	90	03-10-06A	31-01-07	10																	

Start Date	28-12-05		Early Bar
Finish Date	15-02-08		Progress Bar
Data Date	21-01-07		Critical Activity
Run Date	02-02-07 11:28		

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007															
								2006 DEC	JAN			FEB			MAR			APR					
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9
<b>Admin. Building: Fitting Out Works</b>																							
S4041000	Area 4 - Finishing Works	40	65	50	09-11-06A	19-04-07	-34																
<b>Admin. Building: E&amp;M Works</b>																							
S4040900	Area 4 - E&M Works	40	65	50	09-11-06A	19-04-07	-34																
<b>Area 3</b>																							
<b>Existing Admin. Building</b>																							
<b>Admin. Building: Structure Works</b>																							
S4030400	Area 3 - G/F Slab to Roof	20	0	100	20-09-06A	29-12-06A																	
<b>Admin. Building: Fitting Out Works</b>																							
S4030600	Area 3 - Finishing Works	30	39	10	26-12-06A	15-03-07	-14																
<b>Admin. Building: E&amp;M Works</b>																							
S4030500	Area 3 - E&M Works	30	39	10	26-12-06A	15-03-07	-54																
<b>Area 2</b>																							
<b>Existing Admin. Building</b>																							
<b>Admin. Building: Structure Works</b>																							
S4020300	Area 2 - Foundation to G/F Slab	9	9	0	22-01-07	31-01-07	-64																
S4020400	Area 2 - G/F Slab to Roof	40	40	0	01-02-07	27-03-07	-64																
<b>Admin. Building: Fitting Out Works</b>																							
S4020600	Area 2 - Finishing Works	40	40	0	28-03-07	19-05-07	-64																
<b>Admin. Building: E&amp;M Works</b>																							
S4020500	Area 2 - E&M Works	40	40	0	28-03-07	19-05-07	-64																
<b>Area 1</b>																							
<b>Existing Admin. Building</b>																							
<b>Admin. Building: Structure Works</b>																							
S4010400	Area 1 - Site Formation Works	18	14	60	10-11-06A	06-02-07	-53																
S4010600	Area 1 - Foundation to G/F Slab	24	29	20	07-12-06A	03-03-07	-68																
S4010700	Area 1 - G/F Slab to 1/F Slab	24	24	0	05-03-07	31-03-07	-68																
S4010900	Area 1 - 1/F Slab to Roof (Phase 2)	26	26	0	02-04-07	08-05-07	-68																
<b>Admin. Building: Fitting Out Works</b>																							
S4011300	Area 1 - Finishing Works (Other Areas)	46	46	0	02-04-07	01-06-07	-68																
<b>Admin. Building: E&amp;M Works</b>																							
S4011100	Area 1 - E&M Works (Other Areas)	40	40	0	02-04-07	24-05-07	-68																

Start Date 28-12-05  
Finish Date 15-02-08  
Data Date 21-01-07  
Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity



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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2006	2007																
								DEC	JAN			FEB			MAR			APR							
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	
<b>Existing Building</b>																									
<b>Existing Admin. Building</b>																									
<b>Admin. Building: Structure Works</b>																									
S4060110	Hoarding	12	6	80	11-12-06A	27-01-07	-51																		
S4060200	Vacant the Existing Building	5	5	0	29-01-07	02-02-07	-51																		
S4060300	Building Alternation Works	36	36	0	03-02-07	24-03-07	-51																		
<b>Admin. Building: Fitting Out Works</b>																									
S4060500	Finishing Works	45	45	0	07-03-07	03-05-07	-51																		
<b>Admin. Building: E&amp;M Works</b>																									
S4060400	E&M Works	36	36	0	07-03-07	21-04-07	-51																		
<b>Pedestrian Pavement Area</b>																									
<b>Existing Admin. Building</b>																									
<b>Admin. Building: Structure Works</b>																									
S4070100	Utility Diversion	12	12	0	22-01-07	03-02-07	-23																		
S4070200	Carriageway Modification	36	36	0	21-03-07	08-05-07	-54																		
S4070300	Pavement Paving Works	6	6	0	27-03-07	02-04-07	-29																		
<b>Transformer Room</b>																									
<b>Existing Admin. Building</b>																									
<b>Admin. Building: E&amp;M Works</b>																									
S4101200	CLP final inspection (awaited CLP)	0	0	100	22-12-06A																				
S4101300	Allow CLP Cable laying (by CLP)	60	45	25	03-01-07A	06-03-07	0																		
S4101400	Installation of transformer (by CLP)	60	45	25	03-01-07A	06-03-07	0																		
S4101600	Energize transformer	0	0	0		06-03-07	0																		
<b>Section 9 of the Works</b>																									
<b>General</b>																									
<b>Existing Maintenance Building</b>																									
<b>SI16 - Gasoline &amp; Diesel Oil Tank</b>																									
S3018052	Submission of the design for approval 2nd	0	0	100	16-01-07A																				
S3018054	Await the design approval/comments 2nd	0	0	0		29-01-07	14																		
S3018060	Submission of the design to FSD	0	0	100	16-01-07A																				
S3018070	Await the approval from FSD	1	1	0	15-02-07	15-02-07	-19																		
S3018080	Procurement after approval of FSD	6	6	0	16-02-07	21-02-07	-19																		
S3018090	Material Manufacture & delivery	60	60	0	22-02-07	22-04-07	-19																		

Start Date 28-12-05  
 Finish Date 15-02-08  
 Data Date 21-01-07  
 Run Date 02-02-07 11:28

 Early Bar  
 Progress Bar  
 Critical Activity

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	



Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007																			
								2006 DEC	JAN			FEB			MAR			APR									
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16			
G0470800	Lake No.4 cast insitu cellular reinforced paving	6	6	0	29-01-07	03-02-07	-42																				
G0470900	Lake No.4 Place grasscrete block & hydroseeding	6	6	0	05-02-07	10-02-07	-42																				
<b>PH 4: E&amp;M Works</b>																											
G0480600	PH4 E&M installation and commissioning	12	12	0	22-01-07	03-02-07	-39																				
G0480700	PH4 Energizing low flow pump house to GH04	6	6	0	14-03-07	20-03-07	-61																				
G0480800	PH04 Commencement of operation	0	0	0	21-03-07		-61																				
<b>Construction of Golf Course Hole No.5</b>																											
<b>GH 05: Drainage &amp; Duct</b>																											
G0550100	Irrigation pipe between GH05 & GH06	20	0	100	07-12-06A	04-01-07A																					
<b>GH 05: Construction of Golf Course</b>																											
G0560400	GH05 Irrigation Mainline system	10	0	100	03-01-07A	12-01-07A																					
G0560500	GH05 Shaping after Irrigation Mainline	1	0	100	13-01-07A	13-01-07A																					
G0560600	GH05 Sub-soil Installment 300mm	3	0	100	14-01-07A	17-01-07A																					
G0560700	GH05 Landscaping & hydroseeding	8	8	0	22-01-07	30-01-07	-68																				
G0560800	GH05 Feature Shaping (Green, Tee & Bunkers)	10	10	0	22-01-07	01-02-07	-84																				
G0560900	GH05 Construction of Green, Tee & Bunkers	14	14	0	02-02-07	26-02-07	-84																				
G0561000	GH05 Irrigation Laterals	8	1	60	16-01-07A	22-01-07	274																				
G0561100	GH05 Shaping after Irrigation Laterals	1	0	100	14-01-07A	15-01-07A																					
G0561200	GH05 Bunkers Sand Installation	3	3	0	15-02-07	26-02-07	-84																				
G0561300	GH05 Sub-soil Drain & Sand capping	8	8	0	27-02-07	07-03-07	-84																				
G0561400	GH05 Cart path subbase & concrete	6	4	30	02-01-07A	14-03-07	-72																				
G0561500	GH05 Fine Grading & Seedbed Preparation	8	8	0	15-03-07	23-03-07	-72																				
G0561600	GH05 Ready for Grassing	0	0	0	24-03-07		-72																				
G0561700	GH05 Grassing Fairway & Tee	8	8	0	24-03-07	02-04-07	-72																				
G0561800	GH05 Grass Establishment	28	28	0	03-04-07	30-04-07	0																				
<b>Cart Track</b>																											
G0540120	Cart path T0501 subbase & concrete 552m	14	9	30	20-12-06A	31-01-07	-57																				
G0540220	Cart path T0502 subbase & concrete 146m	8	0	100	27-12-06A	10-01-07A																					
G0540320	Cart path T0503 subbase & concrete 27m	3	3	0	22-01-07	24-01-07	272																				
<b>Construction of Bridge 5</b>																											
<b>Bridge No.5: Bridge Deck</b>																											
G0571300	Cast insitu slab and bridge furniture	18	18	0	22-01-07*	10-02-07	-52																				

Start Date 28-12-05  
Finish Date 15-02-08  
Data Date 21-01-07  
Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity

**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	





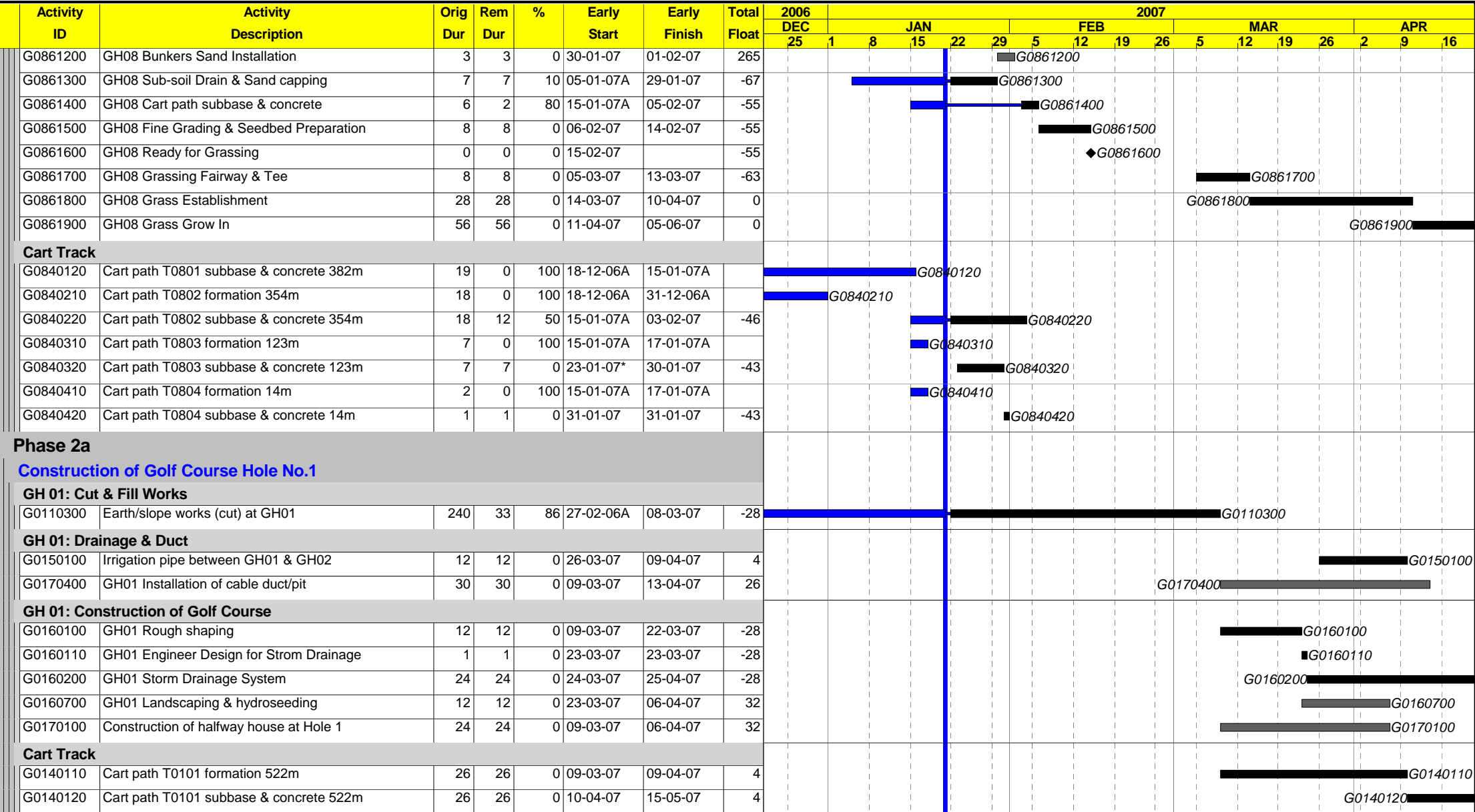
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2006	2007																	
								DEC	JAN			FEB			MAR			APR								
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16		
G0661100	GH06 Shaping after Irrigation Laterals	1	1	0	05-02-07	05-02-07	-53							■ G0661100												
G0661200	GH06 Bunkers Sand Installation	3	3	0	15-02-07	26-02-07	-64								■ G0661200											
G0661300	GH06 Sub-soil Drain & Sand capping	14	14	0	22-03-07	07-04-07	-84																■ G0661300			
G0661400	GH06 Cart path subbase & concrete	14	14	0	29-03-07	18-04-07	-84																■ G0661400			
G0661500	GH06 Fine Grading & Seedbed Preparation	12	12	0	19-04-07	03-05-07	-84																■ G0661500			
<b>Cart Track</b>																										
G0640100	Cart path T0601 formation 535m	28	0	100	01-12-06A	16-01-07A		■ G0640100																		
G0640120	Cart path T0601 subbase & concrete 535m	28	28	0	01-02-07	13-03-07	-57																■ G0640120			
<b>Construction of Golf Course Hole No.7</b>																										
<b>GH 07: Drainage &amp; Duct</b>																										
G0670400	GH07 Installation of cable duct/pit	14	14	0	22-01-07	06-02-07	-32																■ G0670400			
G0750200	Irrigation pipe between GH06 & GH07	10	0	100	27-11-06A	30-12-06A		■ G0750200																		
<b>GH 07: Construction of Golf Course</b>																										
G0760700	GH07 Landscaping & hydroseeding	10	10	0	05-03-07	15-03-07	-62																■ G0760700			
G0760800	GH07 Feature Shaping (Green, Tee & Bunkers)	10	5	70	05-01-07A	26-01-07	-42		■ G0760800																	
G0760900	GH07 Construction of Green, Tee & Bunkers	14	14	0	27-01-07	12-02-07	-42																■ G0760900			
G0761000	GH07 Irrigation Laterals	10	0	100	11-12-06A	30-12-06A		■ G0761000																		
G0761100	GH07 Shaping after Irrigation Laterals	1	1	0	22-01-07	22-01-07	-24																■ G0761100			
G0761200	GH07 Bunkers Sand Installation	3	3	0	09-02-07	12-02-07	-42																■ G0761200			
G0761300	GH07 Sub-soil Drain & Sand capping	8	8	0	09-04-07	20-04-07	-81																■ G0761300			
G0761400	GH07 Cart path subbase & concrete	10	10	0	13-04-07	27-04-07	-80																■ G0761400			
<b>Cart Track</b>																										
G0740110	Cart path T0701 formation 516m	26	0	100	01-12-06A	30-12-06A		■ G0740110																		
G0740120	Cart path T0701 subbase & concrete 516m	26	26	0	15-03-07*	18-04-07	-72																■ G0740120			
G0740210	Cart path T0702 formation 546m	28	0	100	01-12-06A	30-12-06A		■ G0740210																		
G0740220	Cart path T0702 subbase & concrete 546m	28	28	0	22-01-07	02-03-07	-36																■ G0740220			
<b>Construction of Golf Course Hole No.8</b>																										
<b>GH 08: Drainage &amp; Duct</b>																										
G0870400	GH08 Installation of cable duct/pit	14	14	0	22-01-07*	06-02-07	-32																■ G0870400			
<b>GH 08: Construction of Golf Course</b>																										
G0860700	GH08 Landscaping & hydroseeding	8	0	100	02-01-07A	13-01-07A		■ G0860700																		
G0860800	GH08 Feature Shaping (Green, Tee & Bunkers)	10	0	100	22-12-06A	30-12-06A		■ G0860800																		
G0860900	GH08 Construction of Green, Tee & Bunkers	14	10	50	18-12-06A	01-02-07	265																■ G0860900			
G0861100	GH08 Shaping after Irrigation Laterals	1	0	100	20-12-06A	21-12-06A		■ G0861100																		

Start Date	28-12-05	■	Early Bar
Finish Date	15-02-08	■	Progress Bar
Data Date	21-01-07	■	Critical Activity
Run Date	02-02-07 11:28		

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	



Start Date 28-12-05  
 Finish Date 15-02-08  
 Data Date 21-01-07  
 Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2006	2007																
								DEC	JAN					FEB					MAR				APR		
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	
<b>Construction of Golf Course Hole No.10</b>																									
<b>GH 10: Cut &amp; Fill Works</b>																									
G1010300	Earth/slope works (cut) at GH10	165	20	83	07-08-06A	13-02-07	-64																		
<b>GH 10: Drainage &amp; Duct</b>																									
G1050100	Irrigation pipe between GH10 & GH11	10	10	0	14-02-07	05-03-07	29																		
G1070400	GH10 Installation of cable duct/pit	24	24	0	08-03-07	04-04-07	-40																		
G1070500	Low Flow Drainage Rising Main for GH10 at GH10	24	24	0	08-03-07	04-04-07	-46																		
<b>GH 10: Construction of Golf Course</b>																									
G1060100	GH10 Rough shaping	12	12	0	14-02-07	07-03-07	-64																		
G1060110	GH10 Engineer Design for Strom Drainage	1	1	0	08-03-07	08-03-07	-64																		
G1060200	GH10 Storm Drainage System	24	24	0	09-03-07	06-04-07	-64																		
G1060300	GH10 Shaping after storm drainage	3	3	0	07-04-07	10-04-07	-64																		
G1060400	GH10 Irrigation Mainline system	14	14	0	11-04-07	30-04-07	-64																		
G1060700	GH10 Landscaping & hydroseeding	12	12	0	08-03-07	21-03-07	13																		
G1070100	GH10 Construction of rain shelter	24	24	0	14-02-07	21-03-07	13																		
<b>Cart Track</b>																									
G1040110	Cart path T1001 formation 509m	26	26	0	10-04-07	15-05-07	-27																		
G1040220	Cart path T1002 subbase & concrete 500m	25	25	0	06-03-07	03-04-07	29																		
<b>Nail Cut Slope</b>																									
S502925	Reinforced Fill Slope FS10-6 195m	65	65	0	14-02-07	15-05-07	-27																		
S502927	Reinforced Fill Slope FS10-5	65	65	0	14-02-07	15-05-07	-27																		
<b>Construction of Bridge 10</b>																									
<b>Bridge No.10: Foundation &amp; Sub-struction</b>																									
G1080200	Construct abutment pile cap 10-1	8	0	100	29-12-06A	10-01-07A																			
G1080300	Construct abutment wall 10-1	15	5	67	11-01-07A	26-01-07	-48																		
G1080400	Backfill to abut 10-1 & Excavation to abut 10-2	6	6	0	27-01-07	02-02-07	53																		
G1080500	Construct abutment pile cap 10-2	8	0	100	14-12-06A	02-01-07A																			
G1080600	Construct abutment wall 10-2	15	15	0	22-01-07	07-02-07	-58																		
G1080700	Backfill to abutment 10-2	6	6	0	08-02-07	14-02-07	49																		
<b>Bridge No.10: Bridge Deck</b>																									
G1080800	RC Slab - Insitu Concrete	21	21	0	08-02-07	12-03-07	-58																		
G1080900	RC Slab - ducting installation	3	3	0	27-03-07	29-03-07	-58																		
G1081300	RC Post	14	14	0	30-03-07	19-04-07	19																		

Start Date	28-12-05		Early Bar
Finish Date	15-02-08		Progress Bar
Data Date	21-01-07		Critical Activity
Run Date	02-02-07 11:28		

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007														
								2006 DEC	JAN			FEB			MAR			APR				
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2
<b>Lake No.10 and Pump House No.10</b>																						
<b>Lake No.10: Civil Works</b>																						
G1090300	Place 2 layers of concrete bedding & geotextile	6	6	0	22-01-07*	27-01-07	-24															
G1090400	Construct concrete toe block	6	6	0	29-01-07	03-02-07	-24															
G1090500	Lay granular material	4	4	0	05-02-07	08-02-07	-24															
G1090600	Construct cast insitu cellular reinforced paving	6	6	0	09-02-07	15-02-07	-24															
G1090700	Place grasscrete block and hydrauseeding	12	12	0	16-02-07	09-03-07	-24															
<b>PH 10: Structure Works</b>																						
G1091100	Rising Main from Lake 10 to BP chamber 1 603.5m	30	30	0	22-01-07	05-03-07	13															
<b>PH 10: E&amp;M Works</b>																						
G1091200	E&M installation and commissioning	14	14	0	14-02-07	09-03-07	8															
G1091300	Energizing low flow pump house to GH10	14	14	0	12-03-07	27-03-07	8															
G1091400	PH10 Commencement of operation	0	0	0	06-04-07		1															
<b>Construction of Golf Course Hole No.18</b>																						
<b>GH 18: Drainage &amp; Duct</b>																						
G1850100	Irrigation pipe from GH01 to GH18	15	15	0	31-03-07	21-04-07	-72															
<b>GH 18: Construction of Golf Course</b>																						
G1860130	GH18 Rough shaping stg2	10	3	70	01-02-07*	03-02-07	-84															
G1860140	GH18 Engineer Design for Strom Drainage stg2	1	1	0	05-02-07	05-02-07	-75															
G1860210	GH18 Storm Drainage System stg1	12	5	58	29-11-06A	26-01-07	268															
G1860220	GH18 Storm Drainage System stg2	12	12	0	06-02-07	27-02-07	-75															
G1860310	GH18 Shaping after storm drainage	2	2	0	27-01-07	29-01-07	268															
G1860320	GH18 Shaping after storm drainage stg2	2	2	0	28-02-07	01-03-07	-75															
G1860410	GH18 Irrigation Mainline system stg1	10	0	100	27-12-06A	18-01-07A																
G1860420	GH18 Irrigation Mainline system stg2	10	10	0	02-03-07	13-03-07	-75															
G1860510	GH18 Shaping after irrigation Mainline	1	1	0	22-01-07	22-01-07	-38															
G1860520	GH18 Shaping after irrigation Mainline stg2	1	1	0	14-03-07	14-03-07	-75															
G1860600	GH18 Sub-soil Installment 300mm	4	4	0	15-03-07	19-03-07	-75															
G1860700	GH18 Landscaping & hydroseeding	10	10	0	05-03-07	15-03-07	-48															
G1860800	GH18 Feature Shaping (Green, Tee & Bunkers)	10	10	0	20-03-07	30-03-07	-75															
G1860900	GH18 Construction of Green, Tee & Bunkers	14	14	0	31-03-07	20-04-07	-75															
G1861000	GH18 Irrigation Laterals	10	10	0	20-03-07	30-03-07	-62															
G1861100	GH18 Shaping after Irrigation Laterals	1	1	0	31-03-07	31-03-07	-62															
G1861200	GH18 Bunkers Sand Installation	3	3	0	18-04-07	20-04-07	-75															

Start Date	28-12-05	■	Early Bar
Finish Date	15-02-08	■	Progress Bar
Data Date	21-01-07	■	Critical Activity
Run Date	02-02-07 11:28	■	

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007																	
								2006 DEC	JAN			FEB			MAR			APR							
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	
<b>Cart Track</b>																									
G1840110	Cart path T1801 formation 561m	28	28	0	22-01-07	02-03-07	-72																		
G1840210	Cart path T1802 formation 538m	27	27	0	03-03-07	03-04-07	-72																		
<b>Nail Cut Slope</b>																									
S503552	Reinforced Fill Slope FS18-3 49m (Deleted)	17	17	0	22-01-07	09-02-07	-61																		
<b>Phase 2b</b>																									
<b>Construction of Golf Course Hole No.9</b>																									
<b>GH 09: Drainage &amp; Duct</b>																									
G0950100	Irrigation pipe from GH09 to GH10	15	15	0	22-03-07	09-04-07	-49																		
G0970400	GH09 Installation of cable duct/pit	30	30	0	08-02-07	22-03-07	-35																		
G1070600	Low Flow Drainage Rising Main for GH10 at GH09	30	29	10	15-12-06A	03-03-07	-19																		
<b>GH 09: Construction of Golf Course</b>																									
G0960100	GH09 Rough shaping	6	6	0	01-02-07*	07-02-07	-39																		
G0960110	GH09 Engineer Design for Strom Drainage	1	1	0	08-02-07	08-02-07	-39																		
G0960200	GH09 Storm Drainage system	18	18	0	09-02-07	09-03-07	-39																		
G0960300	GH09 Shaping after storm drainage	3	3	0	10-03-07	13-03-07	-39																		
G0960400	GH09 Irrigation Mainline system	12	12	0	14-03-07	27-03-07	-39																		
G0960500	GH09 Shaping after irrigation Mainline	1	1	0	28-03-07	28-03-07	-8																		
G0960600	GH09 Sub-soil Installment 300mm	4	4	0	29-03-07	02-04-07	-8																		
G0960700	GH09 Landscaping & hydroseeding	10	10	0	05-03-07	15-03-07	31																		
G0960800	GH09 Feature Shaping (Green, Tee & Bunkers)	10	10	0	03-04-07	18-04-07	-8																		
G0960900	GH09 Construction of Green, Tee & Bunkers	14	14	0	19-04-07	07-05-07	-8																		
G0961000	GH09 Irrigation Laterals	10	10	0	03-04-07	18-04-07	5																		
G0961100	GH09 Shaping after Irrigation Laterals	1	1	0	19-04-07	19-04-07	5																		
G0970100	Construction of halfway house between GH09 & 02	24	24	0	26-02-07*	24-03-07	-26																		
<b>Construction of Bridge 9</b>																									
<b>Bridge No.9: Foundation &amp; Sub-struction</b>																									
G0980100	Excavate to abutment 9-1	12	0	100	20-11-06A	27-12-06A																			
G0980300	Construct abutment footing 9-1	8	0	100	28-12-06A	12-01-07A																			
G0980400	Construct abutment wall 9-1	15	15	0	22-01-07	07-02-07	-31																		
G0980600	Construct abutment footing 9-2	8	0	100	28-12-06A	17-01-07A																			
G0980700	Construct abutment wall 9-2	15	15	0	22-01-07	07-02-07	-31																		
G0980800	Backfill to abutment 9-1	6	6	0	08-02-07	14-02-07	-31																		

Start Date 28-12-05  
 Finish Date 15-02-08  
 Data Date 21-01-07  
 Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2006	2007																	
								DEC	JAN			FEB			MAR			APR								
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16		
<b>Bridge No.9: Bridge Deck</b>																										
G0980900	RC Beam - Precast Concrete	12	12	0	22-01-07*	03-02-07	-46																			
G0981000	RC Beam - Installation	6	6	0	13-03-07	19-03-07	-46																			
G0981100	Cast insitu slab and bridge furniture	14	14	0	20-03-07	04-04-07	-46																			
<b>Construction of Golf Course Hole No.17</b>																										
<b>GH 17: Cut &amp; Fill Works</b>																										
G1710300	Earth/slope works (cut) at GH17	250	14	90	06-03-06A	06-02-07	-86																			
<b>GH 17: Drainage &amp; Duct</b>																										
G1770400	GH17 Installation of cable duct/pit	30	30	0	07-02-07	21-03-07	-12																			
<b>GH 17: Construction of Golf Course</b>																										
G1760100	GH17 Rough shaping	10	10	0	07-02-07	26-02-07	-86																			
G1760110	GH17 Engineer Design for Strom Drainage	1	1	0	27-02-07	27-02-07	-86																			
G1760200	GH17 Storm Drainage System	18	18	0	28-02-07	20-03-07	-86																			
G1760300	GH17 Shaping after storm drainage	3	3	0	21-03-07	23-03-07	-86																			
G1760400	GH17 Irrigation Mainline system	12	12	0	24-03-07	07-04-07	-86																			
G1760500	GH17 Shaping after irrigation Mainline	1	1	0	09-04-07	09-04-07	-86																			
G1760700	GH17 Landscaping & hydroseeding	10	10	0	05-03-07	15-03-07	-42																			
G1760800	GH17 Feature Shaping (Green, Tee & Bunkers)	10	10	0	10-04-07	24-04-07	-86																			
G1761000	GH17 Irrigation Laterals	10	10	0	10-04-07	24-04-07	-73																			
<b>Cart Track</b>																										
G1740110	Cart path T1701 formation 461m	23	23	0	07-02-07	13-03-07	-49																			
G1740120	Cart path T1701 subbase & concrete 461m	23	23	0	14-03-07*	10-04-07	-38																			
G1740210	Cart path T1702 formation 464m	23	23	0	07-02-07	13-03-07	-49																			
G1740220	Cart path T1702 subbase & concrete 464m	23	23	0	14-03-07*	10-04-07	-38																			
G1740310	Cart path T1703 formation 62m	7	7	0	14-03-07	21-03-07	-49																			
G1740320	Cart path T1703 subbase & concrete 62m	7	7	0	22-03-07*	29-03-07	-29																			
<b>Phase 3a</b>																										
<b>Construction of Golf Course Hole No.14</b>																										
<b>GH 14: Cut &amp; Fill Works</b>																										
G1410300	Earth/slope works (cut) at GH14	118	12	92	05-10-06A	03-02-07	-36																			
G1440110	Cart path T1401 formation 586m	29	0	100	01-12-06A	03-01-07A																				
G1440120	Cart path T1401 subbase & concrete 586m	29	29	0	30-01-07	12-03-07	26																			
<b>GH 14: Drainage &amp; Duct</b>																										
G1450100	Irrigation pipe from GH16 to GH14	10	10	0	14-02-07	05-03-07	-20																			

Start Date 28-12-05  
 Finish Date 15-02-08  
 Data Date 21-01-07  
 Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	



Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2007																		
								2006 DEC	JAN			FEB			MAR			APR								
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16		
<b>Tank No.15 and Pump House No.15</b>																										
<b>T &amp; PH 15: Structure Works</b>																										
G1590300	Cast pour wall/slab of PH 15 & Tank 15	20	0	100	11-12-06A	30-12-06A																				
G1590500	Backfill to design profile	6	0	100	05-01-07A	11-01-07A																				
G1590600	Rising Main from Tank 15 to BP Chamber 4	6	6	0	14-02-07	28-02-07	-30																			
<b>T &amp; PH 15: E&amp;M Works</b>																										
G1590700	E&M installation and commissioning	14	14	0	22-01-07	06-02-07	-19																			
G1590800	Energizing low flow pump house to GH15	14	14	0	01-03-07	16-03-07	-30																			
G1590900	PH15 Commencement of Operation	0	0	0	06-04-07		-46																	◆G1590900		
<b>Construction of Bridge 15</b>																										
<b>Bridge No.15: Foundation &amp; Sub-struction</b>																										
G1580400	Construct abutment wall 15-1	15	0	100	21-12-06A	29-12-06A																				
G1580700	Construct abutment wall 15-2	15	0	100	06-12-06A	29-12-06A																				
G1580800	Backfill to abutment 15-2	6	0	100	05-01-07A	11-01-07A																				
<b>Bridge No.15: Bridge Deck</b>																										
G1580900	RC Beam - Precast Concrete	12	5	70	02-01-07A	26-01-07	-29																			
G1581000	RC Beam - Installation	2	2	0	26-02-07	27-02-07	-29																			
G1581100	Cast insitu slab and bridge furniture	14	14	0	28-02-07	15-03-07	-29																			
<b>Construction of Golf Course Hole No.16</b>																										
<b>GH 16: Cut &amp; Fill Works</b>																										
G1610300	Earth/slope works (cut) at GH16	50	0	100	04-10-06A	17-01-07A																				
<b>GH 16: Drainage &amp; Duct</b>																										
G1650100	Irrigation pipe from GH10 to GH16	15	15	0	13-03-07	29-03-07	-41																			
G1670400	GH16 Installation of cable duct/pit	30	30	0	05-02-07	19-03-07	-32																			
<b>GH 16: Construction of Golf Course</b>																										
G1660100	GH16 Rough shaping	12	12	0	22-01-07	03-02-07	-58																			
G1660110	GH16 Engineer Design for Strom Drainage	1	1	0	05-02-07	05-02-07	-44																			
G1660200	GH16 Storm Drainage System	24	24	0	06-02-07	13-03-07	-44																			
G1660300	GH16 Shaping after storm drainage	3	3	0	14-03-07	16-03-07	-44																			
G1660400	GH16 Irrigation Mainline system	14	14	0	17-03-07	02-04-07	-44																			
G1660500	GH16 Shaping after irrigation Mainline	1	1	0	03-04-07	03-04-07	-37																			
G1660600	GH16 Sub-soil Installment 300mm	5	5	0	04-04-07	10-04-07	-37																			
G1660700	GH16 Landscaping & hydroseeding	12	12	0	05-03-07	17-03-07	6																			
G1660800	GH16 Feature Shaping (Green, Tee & Bunkers)	10	10	0	11-04-07	25-04-07	-37																			

Start Date	28-12-05
Finish Date	15-02-08
Data Date	21-01-07
Run Date	02-02-07 11:28

	Early Bar
	Progress Bar
	Critical Activity

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**China Harbour Engineering Company (Group)**  
**The Jockey Club Kau Sai Chau Public Golf Course**  
**3 month rolling programme programme**

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	







Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2006	2007															
								DEC	JAN			FEB			MAR			APR						
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16
<b>Construction of Golf Course Hole No.11</b>																								
<b>GH 11: Cut &amp; Fill Works</b>																								
G1110300	Earth/slope works (cut) at GH11	100	0	100	20-09-06A	30-12-06A																		
<b>GH 11: Drainage &amp; Duct</b>																								
G1150100	Irrigation pipe from GH10 to GH11	10	10	0	19-03-07	29-03-07	-58																	
G1170400	GH11 Installation of cable duct/pit	30	30	0	02-02-07	16-03-07	-18																	
G1170500	Low Flow Drainage Rising Main for GH11	30	30	0	02-02-07	16-03-07	-18																	
<b>GH 11: Construction of Golf Course</b>																								
G1160100	GH11 Rough shaping	10	10	0	02-01-07A	01-02-07	-44																	
G1160110	GH11 Engineer Design for Strom Drainage	1	1	0	02-02-07	02-02-07	-44																	
G1160200	GH11 Storm Drainage System	18	18	0	03-02-07	03-03-07	-44																	
G1160300	GH11 Shaping after storm drainage	3	3	0	05-03-07	07-03-07	-44																	
G1160400	GH11 Irrigation Mainline system	12	12	0	08-03-07	21-03-07	-44																	
G1160500	GH11 Shaping after irrigation Mainline	1	1	0	22-03-07	22-03-07	-44																	
G1160600	GH11 Sub-soil Installment 300mm	4	4	0	23-03-07	27-03-07	-44																	
G1160700	GH11 Landscaping & hydroseeding	10	10	0	05-03-07	15-03-07	-10																	
G1160800	GH11 Feature Shaping (Green, Tee & Bunkers)	10	10	0	28-03-07	09-04-07	-44																	
G1160900	GH11 Construction of Green, Tee & Bunkers	14	14	0	10-04-07	28-04-07	-44																	
G1161000	GH11 Irrigation Laterals	10	10	0	28-03-07	09-04-07	-31																	
G1161100	GH11 Shaping after Irrigation Laterals	1	1	0	10-04-07	10-04-07	-31																	
G1161200	GH11 Bunkers Sand Installation	3	3	0	10-04-07	12-04-07	-33																	
<b>Cart Track</b>																								
G1140110	Cart path T1101 formation 577m	28	19	64	01-12-06A	12-02-07	-38																	
G1140210	Cart path T1102 formation 149m	8	8	0	22-01-07	30-01-07	-35																	
G1140220	Cart path T1102 subbase & concrete 149m	8	8	0	30-03-07	09-04-07	-39																	
G1140310	Cart path T1103 formation 40m	4	4	0	31-01-07	03-02-07	-35																	
G1140320	Cart path T1103 subbase & concrete 40m	4	4	0	10-04-07	13-04-07	-39																	
G1140410	Cart path T1104 formation 61m	6	6	0	05-02-07	10-02-07	-35																	
G1140420	Cart path T1104 subbase & concrete 61m	6	6	0	18-04-07	24-04-07	-39																	
<b>Tank No.11 and Pump House No.11</b>																								
<b>T &amp; PH 11: Structure Works</b>																								
G1190300	Cast pour wall/slab of PH 11 & Tank 11	30	0	100	06-12-06A	10-01-07A																		
G1190500	Backfill to design profile	6	9	50	15-01-07A	31-01-07	-9																	
G1190600	Rising Main From Tank 11 to BP Chamber 3 324.5m	32	24	70	01-12-06A	26-02-07	-9																	

Start Date	28-12-05	Early Bar
Finish Date	15-02-08	Progress Bar
Data Date	21-01-07	Critical Activity
Run Date	02-02-07 11:28	

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<b>China Harbour Engineering Company (Group)</b> <b>The Jockey Club Kau Sai Chau Public Golf Course</b> <b>3 month rolling programme programme</b>	

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	2006	2007																	
								DEC	JAN				FEB				MAR				APR					
								25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16		
<b>T &amp; PH 11: E&amp;M Works</b>																										
G1190700	E&M installation and commissioning	14	14	0	01-03-07*	16-03-07	-26																			
G1190800	Energizing low flow pump house to GH11	14	14	0	19-03-07	03-04-07	-26																			
G1190900	PH11 Commencement of operation	0	0	0	04-04-07		-26																			
<b>S10 Golf Course Area</b>																										
<b>Existing Admin. Building</b>																										
<b>S10 Golf Course Area</b>																										
S1010100	S10 & GPA Site Clearance	3	3	0	12-02-07*	14-02-07	-42																			
S1010200	S10 & Golf Practice Area Earthwork	24	24	0	15-02-07	22-03-07	-42																			
S1010300	S10 & GPA Utilities Diversion	24	24	0	15-02-07	22-03-07	-2																			
S1010400	S10 & GPA Drainage Diversion	24	24	0	15-02-07	22-03-07	-2																			
S1020100	S10 & GPA Construction of halfway house	24	24	0	23-03-07	24-04-07	-42																			
S1060100	S10 & GPA Rough shaping	6	6	0	23-03-07	29-03-07	-2																			
S1060110	S10 & GPA Engineer Design for Strom Drainage	1	1	0	30-03-07	30-03-07	-2																			
S1060200	S10 & GPA Storm Drainage System	6	6	0	31-03-07	07-04-07	-2																			
S1060300	S10 & GPA Shaping after storm drainage	1	1	0	09-04-07	09-04-07	-2																			
S1060400	S10 & GPA Irrigation Mainline system	6	6	0	10-04-07	19-04-07	-2																			
S1060500	S10 & GPA Shaping after irrigation Mainline	1	1	0	20-04-07	20-04-07	-2																			
S1060600	S10 & GPA Sub-soil Installment 300mm	2	2	0	21-04-07	23-04-07	-2																			
S1060700	S10 & GPA Landscaping & hydroseeding	8	8	0	30-03-07	09-04-07	19																			
<b>Slope Restoration/Bioengineering Works</b>																										
<b>Slope Restoration/Bioengineering Works</b>																										
S503460	Awaiting for Detail	0	0	100	22-12-06A																					
S503471	Slope restoration works (no works in wet season)	100	52	40	02-01-07A	30-03-07	1																			
S503481	Hydroseeding and planting	90	90	0	31-03-07	23-07-07	8																			

Start Date 28-12-05  
 Finish Date 15-02-08  
 Data Date 21-01-07  
 Run Date 02-02-07 11:28

Early Bar  
 Progress Bar  
 Critical Activity

?Primavera Systems, Inc.

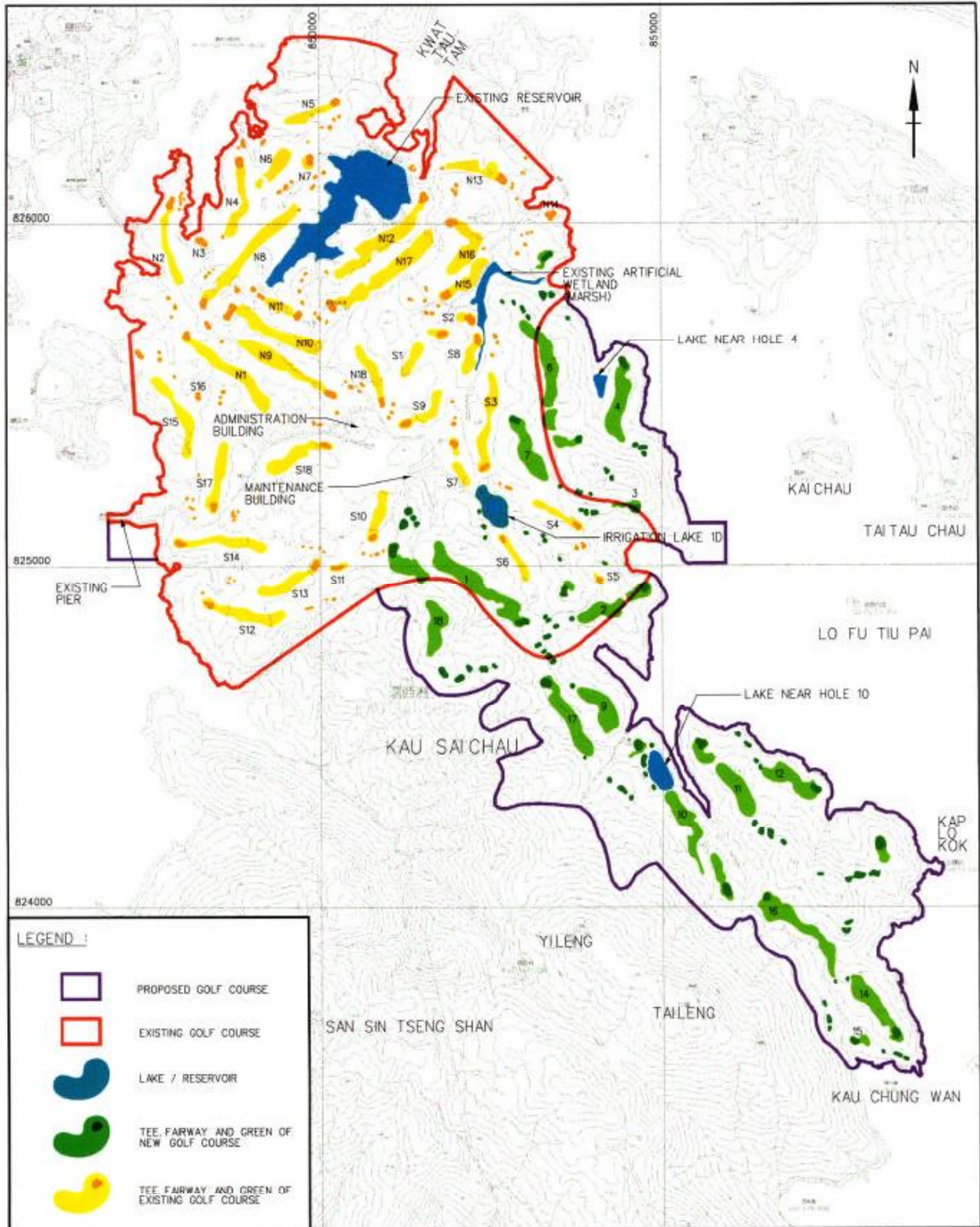
KS13

China Harbour Engineering Company (Group)  
 The Jockey Club Kau Sai Chau Public Golf Course  
 3 month rolling programme programme

Sheet 23 of 23

Date	Revision	Checked	Approved
28-12-05	1st rolling	Tim	

# FIGURES



The Hong Kong Jockey Club

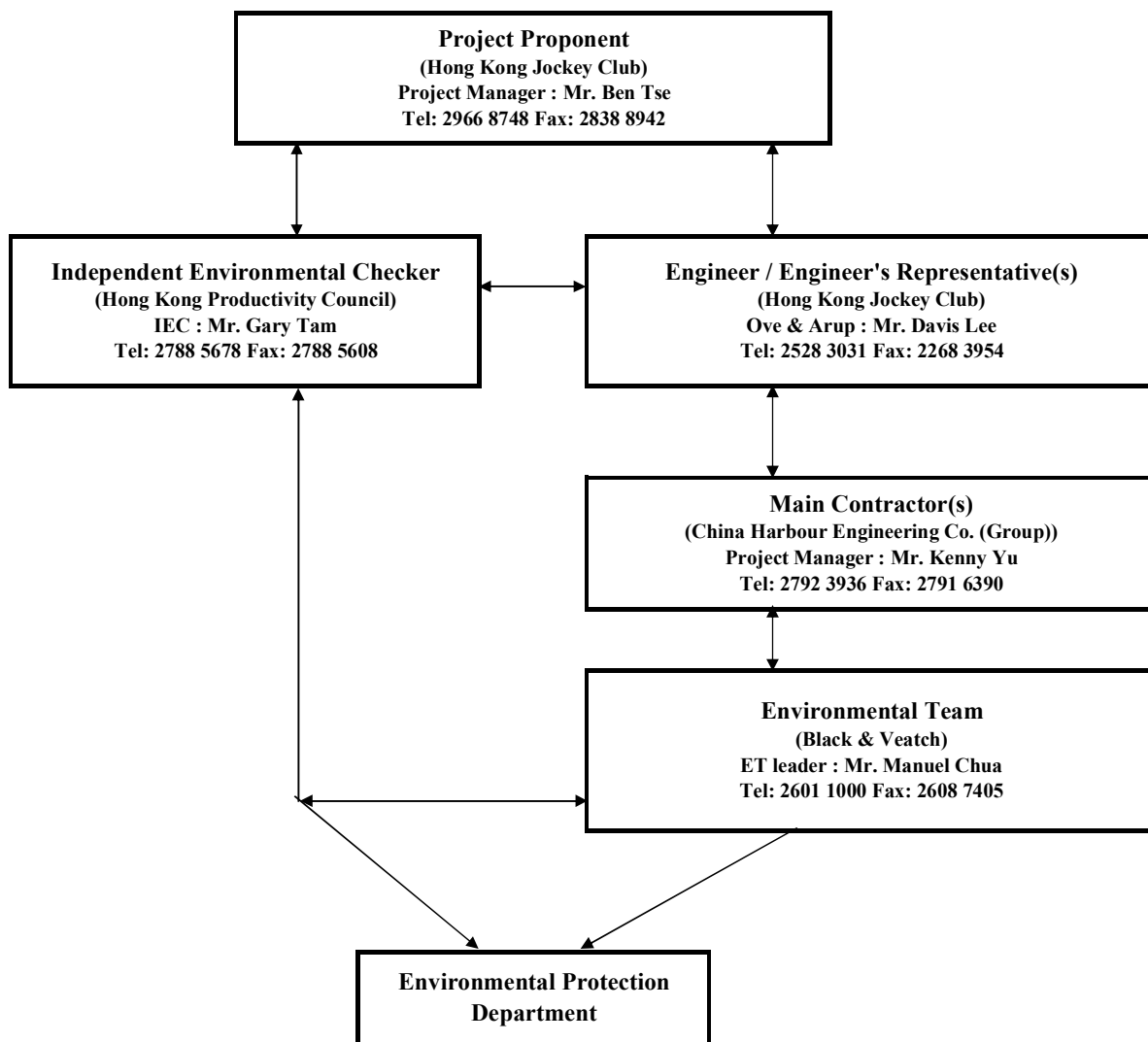
**BLACK & VEATCH HONG KONG LIMITED**  
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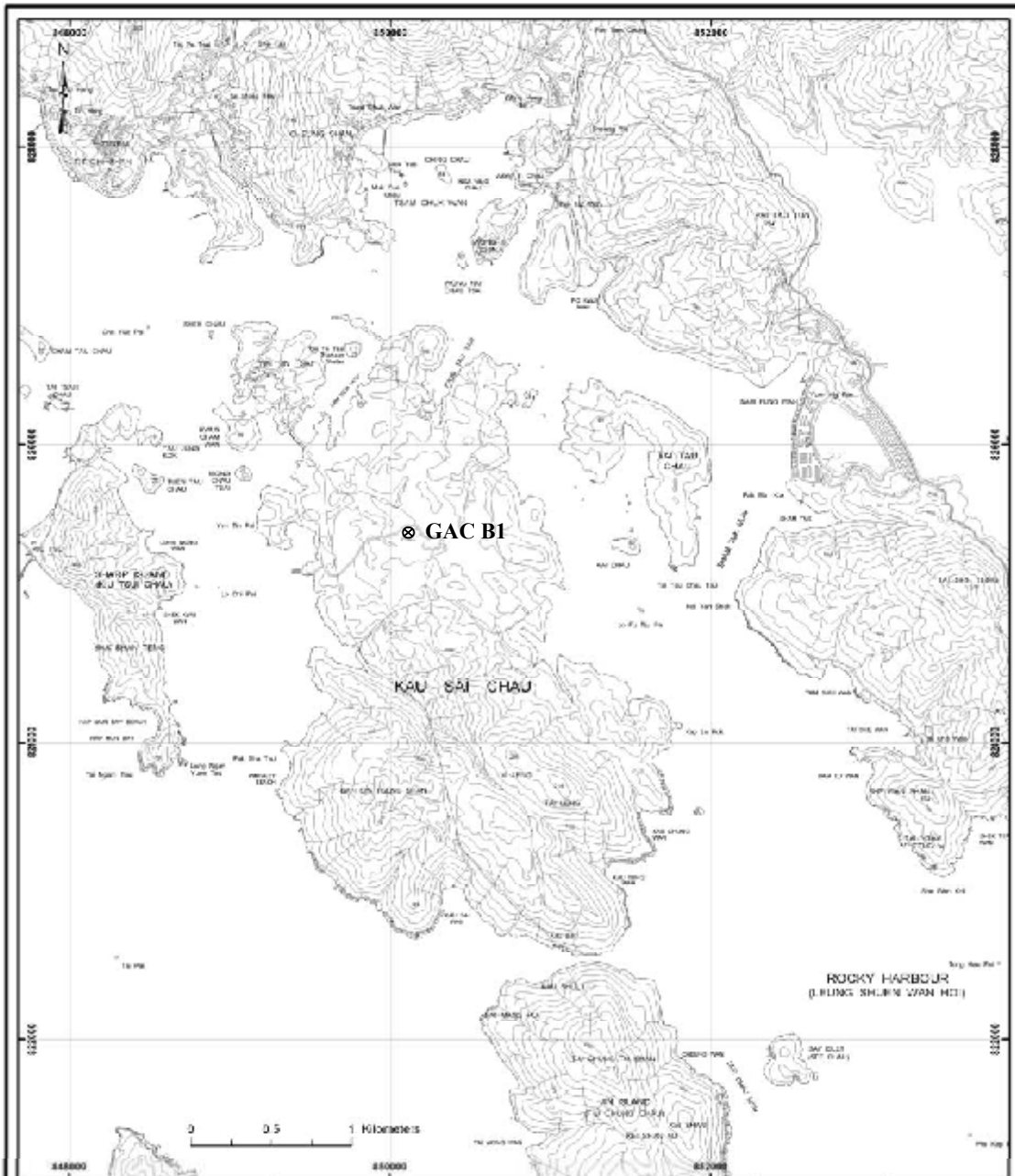
PROPOSED EXTENSION OF PUBLIC GOLF COURSE AT KAU SAI CHAU, SAI KUNG

PROPOSED 18-HOLE THIRD GOLF COURSE (MASTER LAYOUT PLAN)

Figure No.	Revision
2.1	-
Reference	File Name
-	3822100201-2.1.DGN
Prepared	Checked
ET	JW
Date	Scale
MAY 2005	1:15000 (A4)

**Figure 1.2**  
**Project Organisation and Lines of Communication**





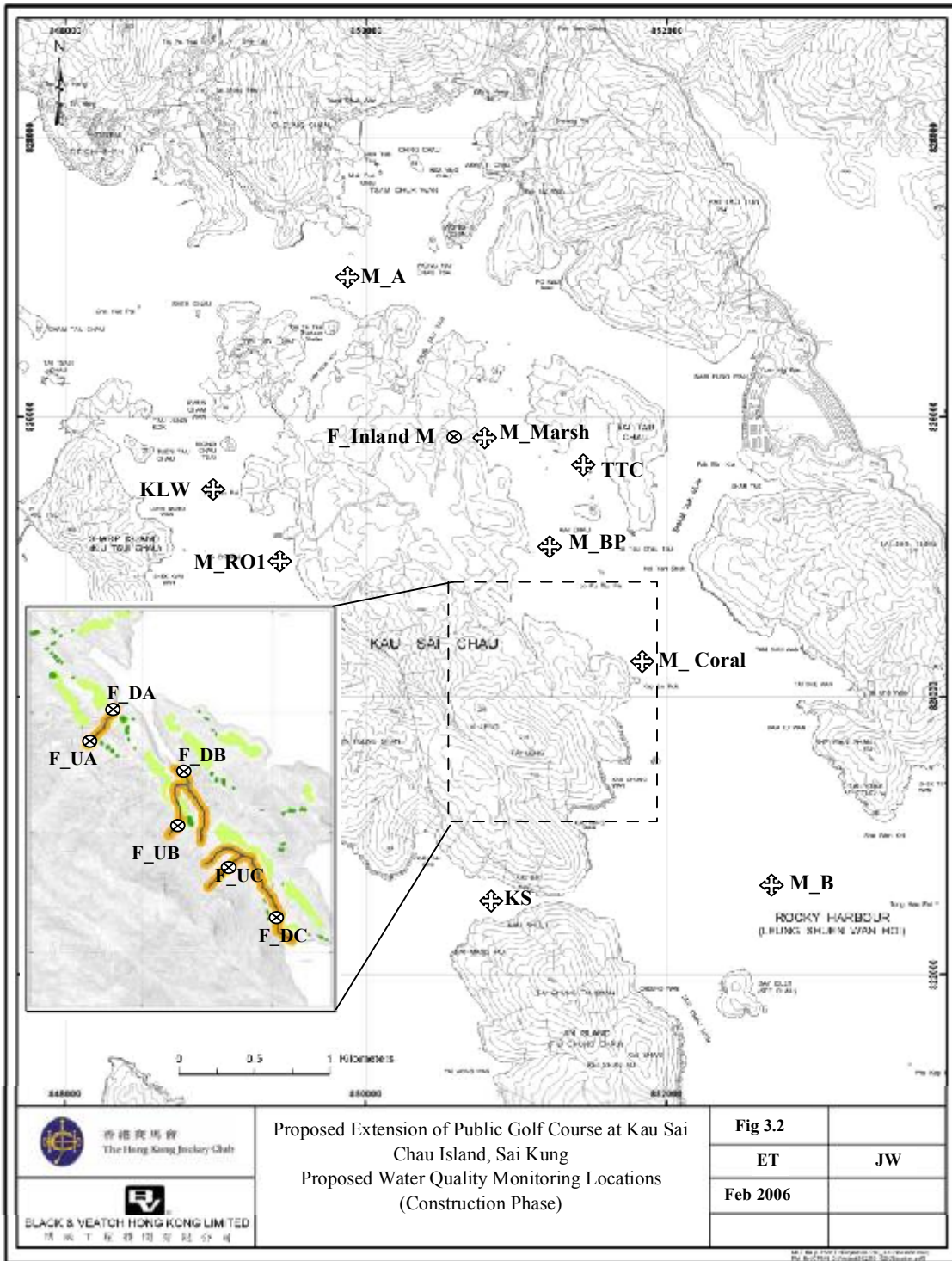

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Proposed Extension of Public Golf Course at Kau Sai  
 Chau Island, Sai Kung  
  
 Proposed Air Quality Monitoring Location

<b>Fig 3.1</b>	
<b>ET</b>	<b>JW</b>
<b>Feb 2006</b>	

此圖乃根據最新之地形圖編製而成  
 This map is compiled from the latest topographic map



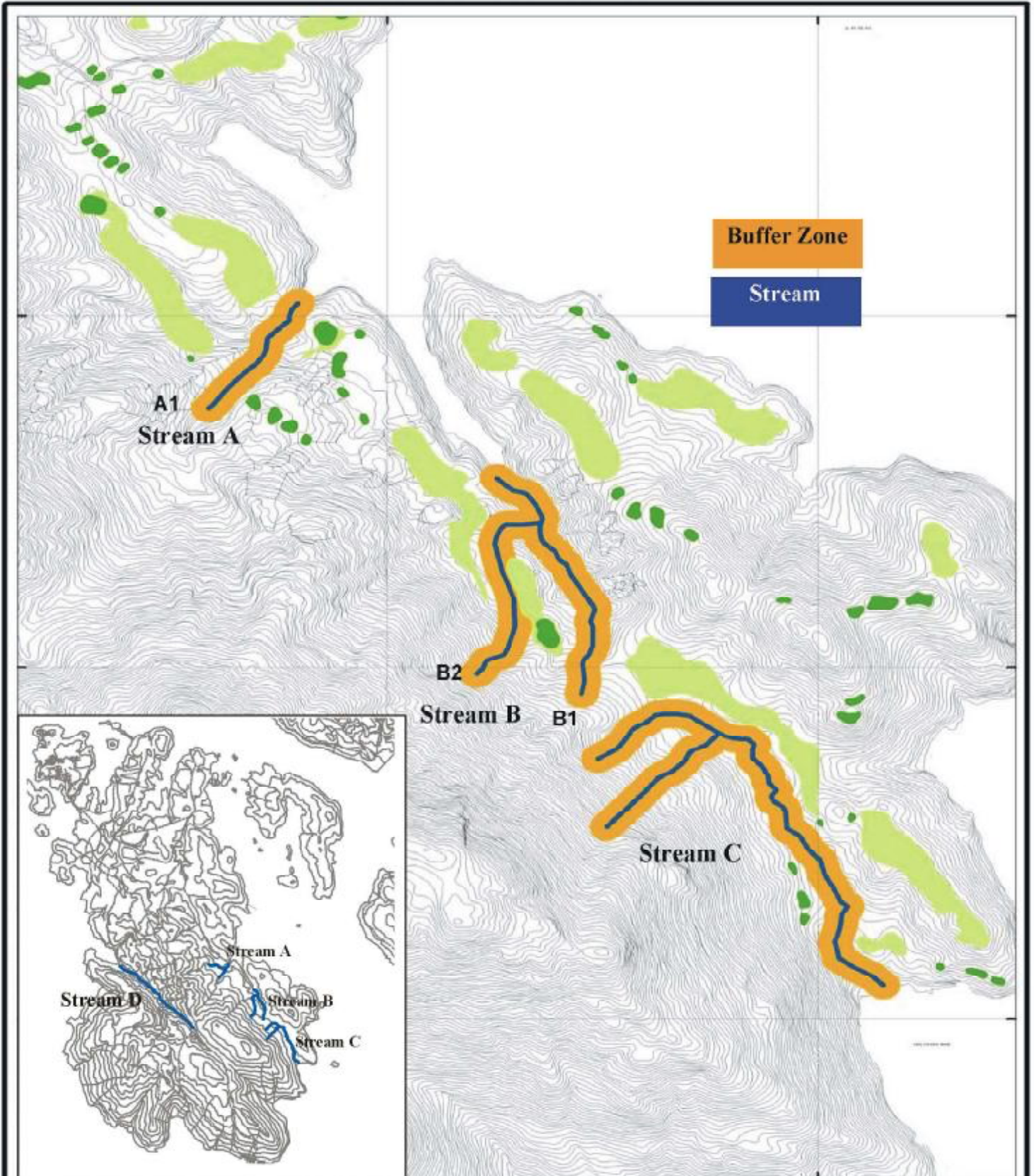



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Proposed Extension of Public Golf Course at Kau Sai  
 Chau Island, Sai Kung  
 Proposed Water Quality Monitoring Locations  
 (Construction Phase)

Fig 3.2	
ET	JW
Feb 2006	

1:50,000  
 1:50,000  
 1:50,000



**Buffer Zone**

**Stream**

**A1**  
**Stream A**

**B2**  
**Stream B**   **B1**

**Stream C**

**Stream A**

**Stream B**

**Stream C**

**Stream D**



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Proposed Extension of Public Golf Course at Kau Sai  
Chau Island, Sai Kung  
Proposed Ecological Monitoring Location  
(Streams Buffer Zone)

<b>Fig 3.3</b>	
<b>ET</b>	<b>JW</b>
<b>July 2005</b>	

Map No. J/27/05 (2) Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
Map No. J/27/05 (2) Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung

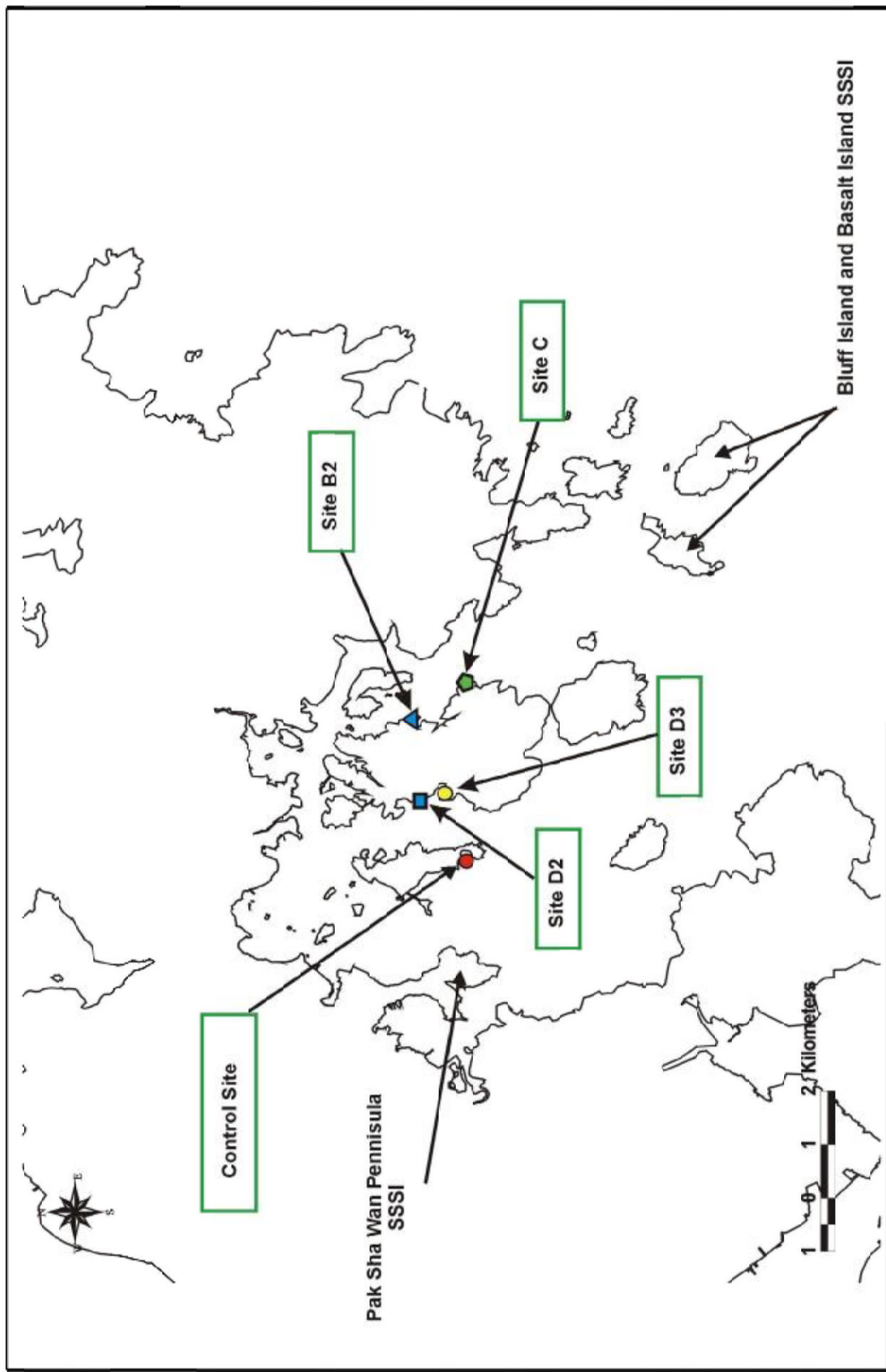


Figure 3.4 Site C, Site B2, Site D2 and a Control Site near the AFCD's Coral Buoy at Sharp Island

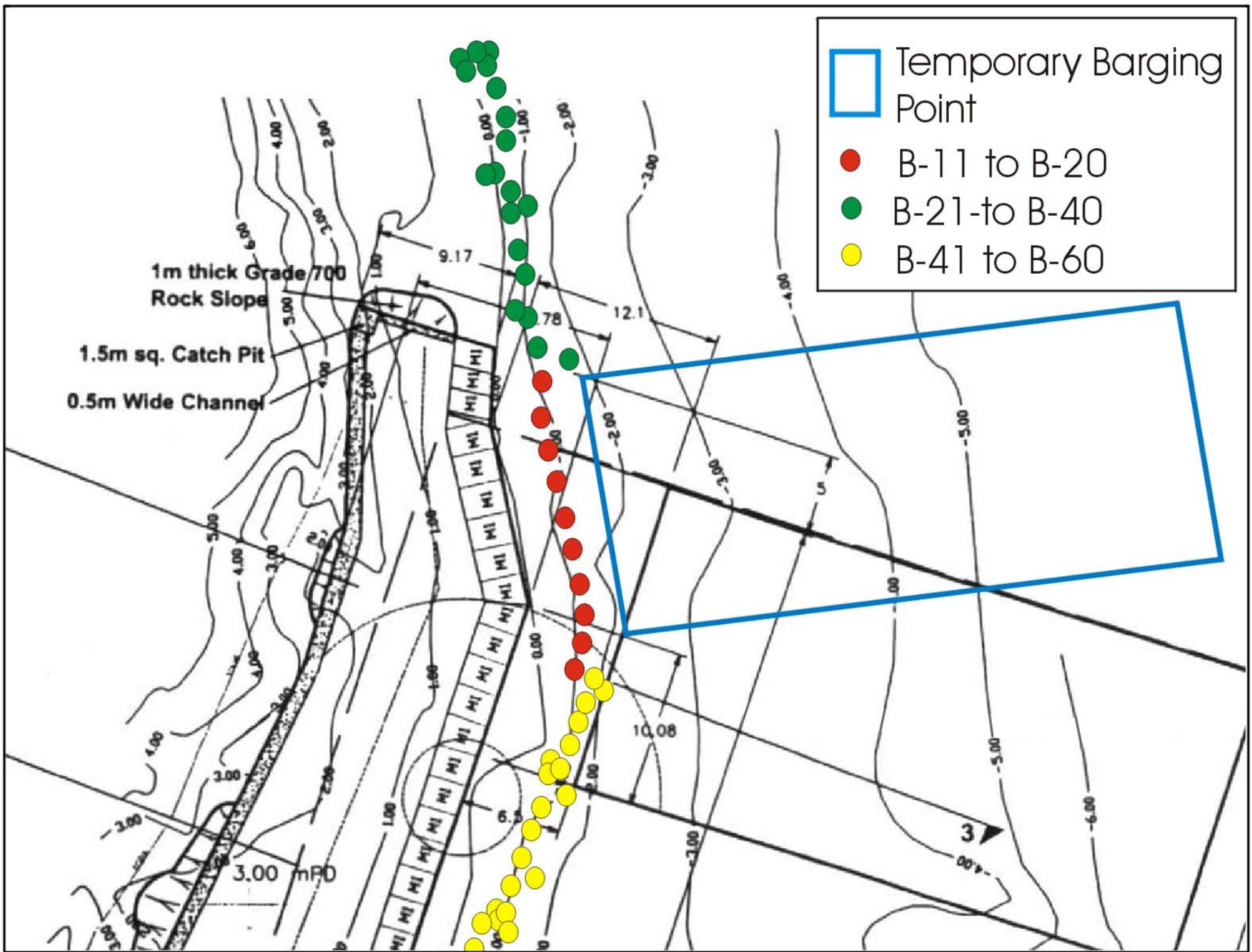


Figure 3.4b  
Indicative map of additional tagged corals at Site B2

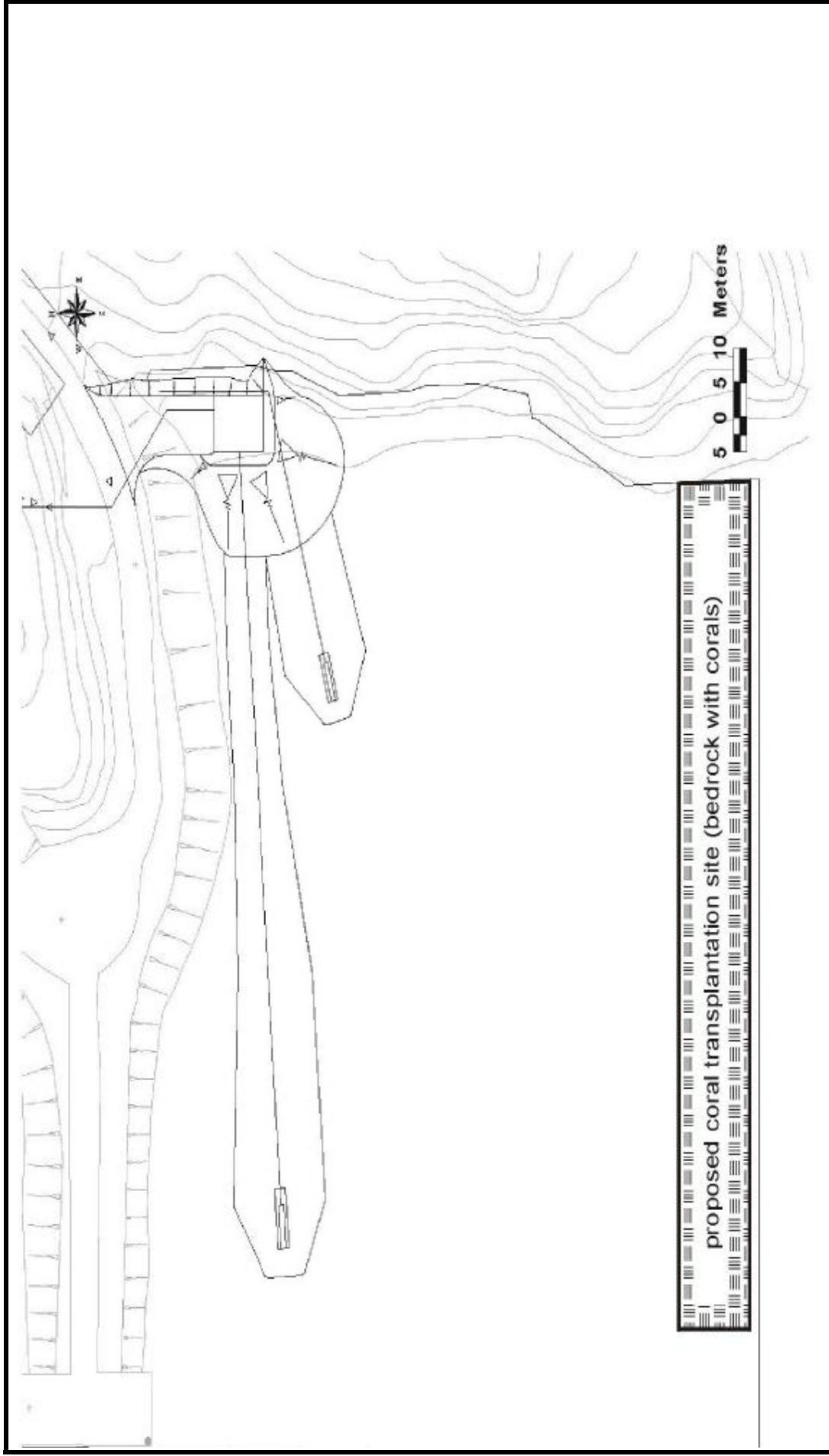


Fig 3.5

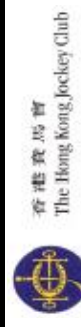
Proposed Extension of Public Golf Course at Kan Sai Chau Island, Sai Kung

Prepared  
FT

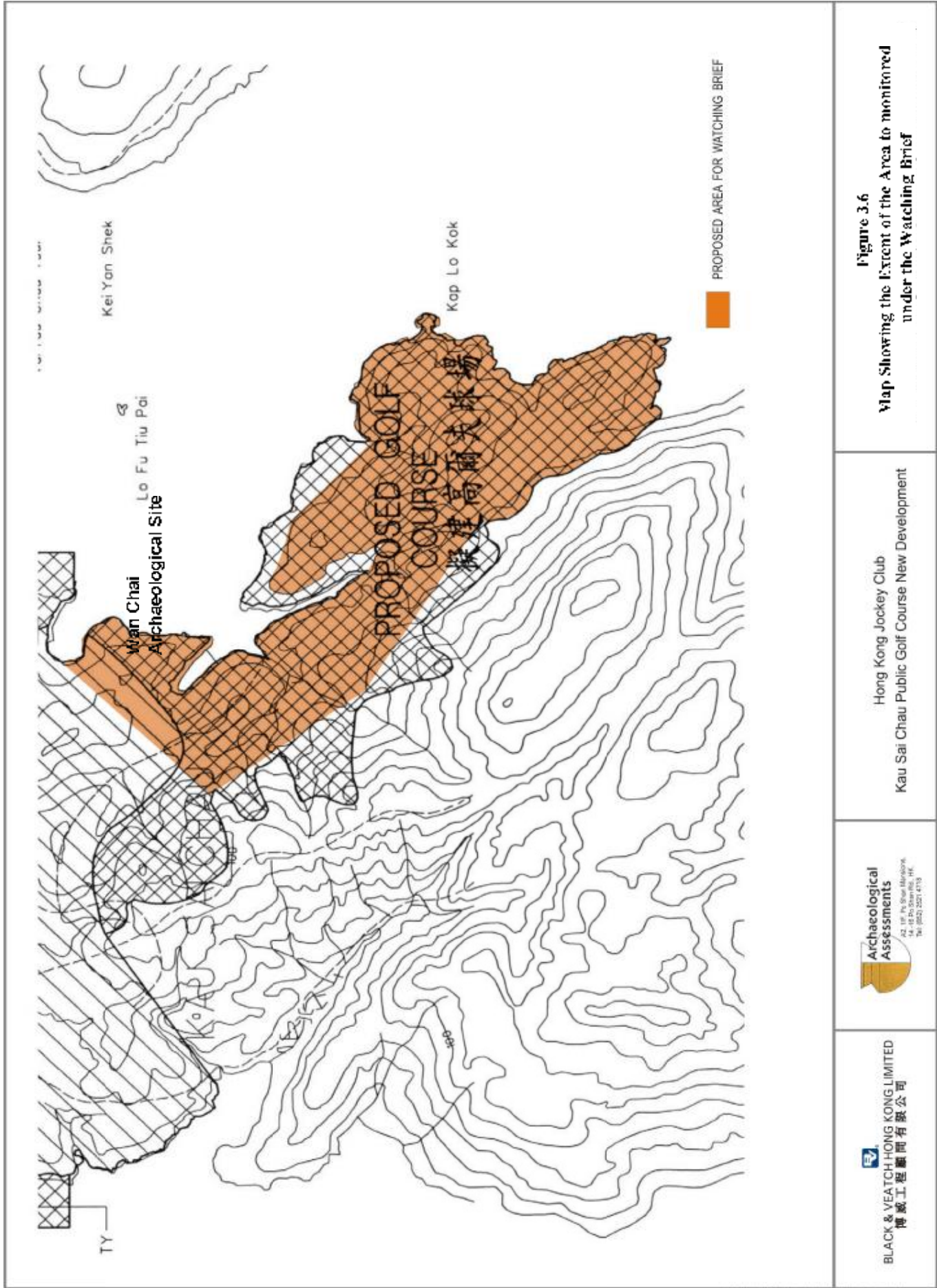
Checked  
JW

Date  
Jun-05

Location of proposed coral transplantation site (bedrock with corals)



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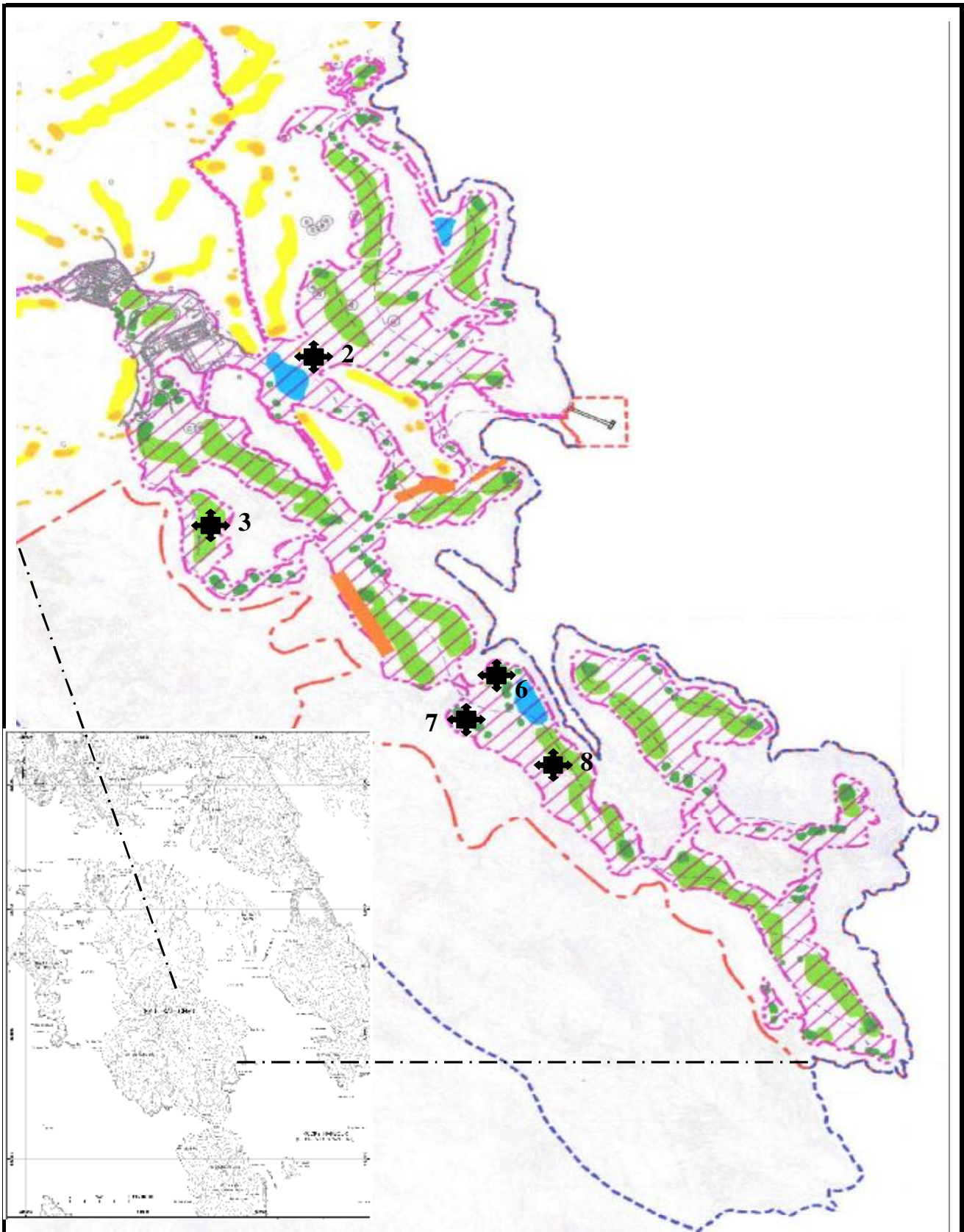




**Figure 3.6**  
**Map Showing the Extent of the Area to be monitored**  
**under the Watching Brief**

Hong Kong Jockey Club  
 Kau Sai Chau Public Golf Course New Development



**BLACK & VEATCH HONG KONG LIMITED**  
 博威工程顧問有限公司



 <p>香港賽馬會 The Hong Kong Jockey Club</p>	<p>Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung</p>	<p><b>Fig 3.7</b></p>	
 <p>BLACK &amp; VEATCH HONG KONG LIMITED 博威工程顧問有限公司</p>		<p>Sampling location for land contamination</p>	<p>Prepared ET</p>
			<p>Date</p>