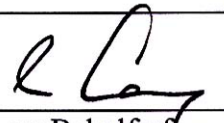


**Proposed Extension of Public Golf Course  
at Kau Sai Chau Island, Sai Kung**

**Quarterly Environmental Monitoring & Audit (EM&A) Report  
for October to December 2006**

**(Report No. 382210/Q\_004)**

Report Authorized For  
Issue By:



For and on Behalf of  
Black & Veatch Hong Kong Limited

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**January 2007**

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	Name	Signature	Date
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Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
 Quarterly EM&A Report (Oct - Dec 06)

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Your ref : 40040032/CERT/15\_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 checking of the Environmental Team's (ET) **Quarterly Environmental Monitoring & Audit (EM&A) Report for October to December 2006** 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 **Quarterly Environmental Monitoring & Audit (EM&A) Report for October to December 2006** 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

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Date 9 January 2007

## Executive Summary

This is the fourth quarterly 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 fourth quarter of 2006 from October to December 2006.

In the reporting quarter, the following activities took place for the Project:

Major construction works carried out at the construction site were as follows:

1. Site formation - **Completed**: Holes 4-8 and 18; **In progress**: Holes 1-3 and 10-17
2. Drainage system installation – **Completed**: Holes 5,7; **In progress**: Holes 1,4,6 10-12,15-16,18
3. Irrigation installation – **Completed**: none; **In progress**: 4,6,7,8,9
4. Landscape & Hydroseeding – **Completed**: none; **In progress**: 7,8,11,18
5. Turf establishment: Not yet commenced
6. Low level intake and gravity drain: 65% (expected finish in mid-Jan 07)
7. Construction of Lake 1D, other pumping stations, underground water tanks and lakes: **In progress**

Construction of permanent bridges:

- (i) Excavation of the abutment area at Stream A - In progress
- (ii) Pipe culvert construction at Stream B2 – Completed
- (iii) In-site culvert bridge at Stream B1 – In progress
- (iv) Abutment foundation at Stream C – Construction of base slab of abutment
- (v) Construction of permanent bridge at the fresh water inland marsh – Removal of temporary hanger.

Other construction activities:

- Construction of desalination plant: **Completed**
- Installation of temporary pipelines: **Completed**
- No dredging works for intake and discharge pipelines
- Coral transplantation for the dredging works area near KSC pier: **Completed**
- Operation of concrete batching plant (located at Hole 2)
- Operation of sewage treatment work (site office)
- Operation of wastewater treatment plant at Hole 10
- Operation of temporary barging point at EP location
- Operation of temporary bridges at Streams A (no. 9), B (no. 10) & C (no. 15) and fresh water inland marsh (no. 5).
- Construction of permanent close low flow drainage implementation including lakes, gravity drains, rising mains, pumping stations

A coral transplantation methodology was submitted to EPD and AFCD on early November 2006 and approved on mid-November 2006. The coral transplantation (Site D2) near the existing KSC pier was commenced on late November 2006. The donor site survey, coral mapping survey and coral transplantation reports were submitted to EPD and AFCD for comment. No comment was received from EPD and AFCD. No dredging work for the desalination plant's intake and discharge pipelines was carried out. Only temporary arrangement of intake and discharge pipelines were installed and mounted on the existing KSC amour rocks without touching the seabed. No direct impact to the corals was, therefore, expected. Although no dredging works has been carried out, 89 corals (additional 10 corals were found within the dredging area) were transplanted before testing of the desalination plant commenced in January 2007. This is a proactive measure to avoid any indirect impacts due to the operation of the desalination plant.

The expected turf establishment period will be started on February 2007. The operation of the desalination plant in the dry season will depend on the availability (completion of Lake 1D construction and associated work), water quality of the water source from desalination plant (application of the discharge licence), existing reservoir water storage and water storage from rain water on site (if water quality is acceptable for planting). Golf holes located at Northern portion (in particular Holes 3, 4, 5 & 8) of the KSC third golf course will be the target golf holes for earliest turfing and expected to be completed in dry season.

Construction of the closed low flow permanent drainage system includes lake formation, gravity drains, rising main, underground water tanks and pumping stations are in progress.

According to the EM&A manual, two graves (G5 and G20) are required to be preserved by record. Record for preservation of Grave 20 located at Hole 2 was completed on October 2006. As the grave G5 can be kept in-situ with provision of buffer zone according to the latest golf course design, no preservation by record was, therefore, required.

Archaeology watching brief was started since early September 2006 and in progress at Holes 11, 12, 14, 15 and 16. No archaeological material or deposits was identified in the reporting month.

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

Regarding the vegetation clearance of Stream B2 buffer zone dated 17 November 2006, the Contractor prepared the incident report with proposed mitigation work and the report was submitted by IEC to EPD. A letter was issued by EPD to Hong Kong Jockey Club (HKJC) on 12 December 2006 and advised the HKJC to pay particular attention to the EP condition 3.4 and take all necessary actions so as not to contravene the statutory requirements under the EIAO. Should any require work to be carried out within the buffer zone of Stream B2, a variation of EP may be required. ET requested the Contractor to prepare a detail mitigation work programme for ET and the Engineer to review and HKJC approval before carrying out the actual mitigation work within the buffer zone.

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 was submitted to EPD for comment. The Contractor was reminded to submit the Temporary Drainage Management Plan in particular for the coming wet season for ER approval.

### **Environmental Monitoring Works**

A summary of the monitoring activities in this quarter is listed below:

24-hour Total Suspended Particulates (TSP) monitoring at GCA B1	13 times
Water quality monitoring (marine + freshwater)	13 times
Terrestrial Ecology	3 times
Marine Ecology	1 time
Landscaping & Visual	6 times

### ***Air Quality***

Two measured 24-hour TSP concentrations in the reporting quarter were exceeded the Action Level (AL) at GCA B1.

### *Water Quality*

During the fourth quarterly period (Oct to Dec 2006), exceedances were recorded, mainly suspended solids and turbidity. For marine water quality, only exceedances recorded at M\_Marsh and M\_BP were considered project-related. The other exceedances were considered not attributed to the works and due to the natural variation only. Therefore, no further action was required.

For freshwater monitoring stations, exceedances were recorded, mainly suspended solids and turbidity, at all monitoring locations (Streams A, B, C and downstream of freshwater inland marsh). There is long term exceedances trend of suspended solids and turbidity at freshwater inland marsh since late April 2006 after the first rainstorm occurred on 24<sup>th</sup> April 2006. Exceedances were mainly contributed due to the heavy rainstorm events and insufficient temporary drainage system implemented on site. There is also sharp increase of suspended solids and turbidity at Stream C once commencement of work at Holes 14 and 16 and silty runoff incident was recorded on 22<sup>nd</sup> November 2006 after the amber rainstorm signal event occurred on 21<sup>st</sup> November 2006. All exceedances were mainly attributed to insufficient temporary drainage system implemented on site.

### *Ecology*

#### Terrestrial

A non-compliance was recorded on 7<sup>th</sup> November 2006 during the reporting quarter, a backhoe was observed and working (vegetation clearance) within the buffer zone of Stream B2. Environmental Team (ET) notified the Engineer and Main Contractor once the incidence happened, the work was stopped by the Main Contractor immediately. According to the site investigation on 10<sup>th</sup> November 2006, the area of the vegetation clearance area was about 45m<sup>2</sup> (3m x 15m) within the buffer zone of Stream B2. A meeting was arranged with the representatives of Jockey Club, ET, Main Contractor (CHEC), Engineer and Independent Environmental Checker (IEC) on 14<sup>th</sup> November 2006.

The main stream course of Stream A was found to be filled up with rubbles to the level of the weir at its downstream end after several rainstorm events occurred in June 2006 during the second reporting quarter (Apr to June 2006). Remedial work was implemented by the Contractor to clear the rubbles and restore the channel by hand during the reporting quarter. However, the stream was filled up with the rubbles again after the amber rainstorm occurred on November 2006. The Contractor was carried out the reinstatement work after the rainstorm.

It was observed that the water in Stream C was not clear but with a certain degree of turbulence since September 2006. This observation coincided with the suspended solids and turbidity exceedances of water quality record during the previous and present reporting quarter.

Amber rainstorm signal was hoisted on 21<sup>st</sup> Nov 2006, silt deposit was settled at the streambed of Streams A, B & C in particular Stream C due to the insufficient temporary drainage system provided on site. During the time of site audit, the main stream course of Stream A was very turbid and attributed to the earthworks. For Stream B, minor turbidity was also observed. In addition, an area of vegetation at Stream B2 buffer zone has been cleared and affected the function of buffer zone for the stream protection. For Stream C, majority of the main stream course of Stream C was covered by a thin layer of fine sediment. The sediments covered the bottoms of rock pools and reduce the habitat sizes available for the aquatic fauna. This might limit the aquatic communities in Stream C. Measures should be taken to prevent any further sedimentation incident in the future.

#### Marine

According to the additional three month coral monitoring at Site B2, Site C and Control Site (Apr to June 06) due to the coral damage incident happened on 26<sup>th</sup> Mar 06, no exceedance was recorded on corals.

The quarterly coral monitoring has been resumed in September 2006. Second quarterly coral monitoring at Site B2, Site C and Control Site was carried out in December 2006 during this quarterly report. In the present survey, most of these tagged corals at Site B2 were in similar conditions as in last quarterly monitoring result (September 2006), but the skeleton of one (B-59) of the two tagged corals missing in September monitoring (i.e. B-59 & B-60) was rediscovered. This colony was apparently covered or buried by sediment before and was exposed after wave action. Mortality on B-13 and B-19 and damages (mortality and anchor damages) on two tagged corals at Site C (C-04 and C-10) had been found in previous quarterly monitoring and remain the same for the present survey. The Control Site still remained similar conditions as during the Baseline Survey (no mortality, sedimentation or bleaching was found). The next quarterly coral monitoring at Site B2, Site C and Control Site and transplanted corals will be conducted in March 2007.

#### Coral Transplantation

All 89 transplanted corals (addition 10 corals than the EIA record when the dive survey was carried out around 1.5 years ago) were recovered and their conditions were similar with the baseline conditions (during the transplantation process between Nov and Dec 2006). The next (second) quarterly coral monitoring for the transplanted corals will be conducted in March 2007 for a year.

### **Environmental, Landscape and Visual Audit, Watching Brief, Land Contamination**

#### ***Environmental Audit***

Site audit was carried out on a weekly basis to monitor environmental issues on the construction sites. The Contractor generally implemented the mitigation measures recommended in the EIA report to minimise the environmental impacts due to the construction works. Weekly site inspection and *ad hoc* site inspection were carried out to identify the potential source of dust, silt and waste management. However, the monitoring results revealed that the temporary drainage system implemented and dust suppression measures were insufficient during reporting quarter. Waste management was unsatisfactory during the reporting quarter.

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 the 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 of 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

- 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 of 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 tree T925;

### ***Watching Brief***

Watching Brief was carried out at Hole 2 in February 2006. The major activity carried out at part of the Hole 2 (60%) was rock breaking activity. Other Hole 2 areas were remained the same as after vegetation clearance. Vegetation clearance and excavation were carried out at Holes 11, 12, 14 and 16 during the reporting quarter. Archaeology watching brief was resumed since September 2006. No archaeological material was identified in the second quarterly report (April to September 2006). Archaeological watching brief monitoring was in progress during the reporting quarter.

### ***Land Contamination***

Contamination Assessment Report (CAR) and Remediation Action Plan (RAP) were approved on 18 August 2006. A pilot scale for the remedial work of the contaminated soil at Hole 18 was carried out on September 2006. 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 October 2006. A Final Site Remediation Report (FSRR) prepared by the Contractor and was submitted to EPD on December 2006 for comments.

### **Environmental Complaints and Prosecution**

One environmental complaint was received from Tai Tau Chau and Kai Lung Wan fish farmers about the silty runoff from the construction site and fish death at second reporting quarter. Investigation report on the cause of the fish death had been completed and negotiation on the fish compensation was completed. Compensation to the affected fisherman was settled.

No environmental summon was received in this reporting period.

### **Environmental Licensing and Permitting**

License/Permits granted to the Project include the Environmental Permit (EP), construction noise permit (CNP) and chemical waste producer. The water discharge licence for the construction site was available during this reporting quarter.

### **Future Key Issues**

Key issues to be considered in the coming reporting quarter include:

- Potential dust generation from activities on-site : bulk earthworks at Holes 10 to 16, concrete batching plant operation and soil/sand/aggregates stockpiles;
- Archaeology watching brief at Holes 11, 12, 14, 15 & 16;
- 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;
- Carry out testing for the desalination plant using the temporary arrangement of intake and outfall pipelines near to the existing KSC pier;
- 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 ER 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; and
- Implement filter systems (nutrients and pesticides removal) at Holes 5 and 6.

## **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 is the fourth quarterly EM&A report which summarises the environmental monitoring and audit works for the Project in the fourth quarter of 2006 from October to December 2006.

## **2. Project Information**

### **2.1 Background**

2.1.1 The Project comprises the following major components:

- Construction of a 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 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<sup>th</sup> November 2005 under the EIAO. An Environmental Permit (EP-224/2005) was granted on 28<sup>th</sup> November 2005. A Variation of Environmental Permit (EP-224/2005/A) was issued on 17 August 2006.

### **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<sup>th</sup> January 2006 and are scheduled to be completed by end of July 2007.

### **2.5 Summary of EM&A Requirements**

2.5.1 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.

### ***Monitoring Parameters and Locations***

- 2.5.2 24-hour TSP was the monitoring parameter for dust monitoring. One location for monitoring air quality was identified.
- 2.5.3 The water quality parameters which need to be monitored are as follows:
- Marine water quality (9 monitoring locations) - dissolved oxygen (DO), temperature, turbidity, suspended solids (SS), pH and salinity
  - Freshwater water quality (7 monitoring locations) - dissolved oxygen (DO), temperature, turbidity, suspended solids (SS), pH and salinity
- 2.5.4 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.
- 2.5.5 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.
- 2.5.6 Aquatic fauna and integrity of stream buffer zone at Streams A, B and C were identified to monitor the potential land formation impact on terrestrial ecology especially stream courses. For coral monitoring, there were one control and three impact monitoring locations were identified to monitor the marine construction activities.
- 2.5.7 Watching Brief (archaeology) monitoring locations are identified at the cut areas of Holes 2, 11, 12, 14, 15 & 16.
- 2.5.8 The monitoring locations for air, water, ecology and watching brief (archaeology) are depicted in **Annex B**.

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

- 2.5.9 All monitoring works were conducted and monitoring equipment was regularly calibrated in accordance with the EM&A Manual. Calibration records were shown in the monthly EM&A reports for October to December 2006.

### ***Environmental Quality Performance Limits (Action and Limit Levels)***

- 2.5.10 The environmental quality performance limits, i.e. Action and Limit Levels (AL Levels) were derived from the baseline monitoring results and make reference to EIA report and latest EPD monitoring data. If the measured environmental quality parameters exceed the AL Levels, the respective action plan would be implemented. The AL Levels for each environmental parameter are given in **Annex C**.

### **3. Monitoring Result & Site Audit**

#### **3.1 Air Quality**

3.1.1 Graphical presentation of the trend of the monitoring results of 24-hour TSP is provided in **Annex D**.

#### **3.2 Water Quality**

3.2.1 Graphical presentations of the trends of the monitoring results of marine water and freshwater quality are provided in **Annex D**.

#### **3.3 Ecology**

3.3.1 Monitoring results of the Terrestrial and marine ecology are provided in **Annex D**.

#### **3.4 Landscape and Visual**

3.4.1 Damaged trees next to the administration building were still unprotected after being damaged by the adjacent construction activities.

3.4.2 Mal-pruning of transplanted trees had not been rectified since July 2006. Construction material was still stockpiled within tree protection zones since July 2006.

3.4.3 A statement on the cause of death of tree T925 recorded in the last report was still outstanding.

3.4.4 All transplanted trees were in fair condition except Tree T848 transplanted in last reporting month.

3.4.5 Soil around the transplanted trees was dry and more frequent watering is required in particular in dry season. It is recommended that watering to each tree with approximate 20L/day.

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

3.5.1 Watching brief at Holes 11-12, 14-16 was resumed during the previous reporting quarter. No further excavation was carried out at Hole 2. The second quarterly summary report will be available during the next reporting quarter.

#### **3.6 Land Contamination**

3.6.1 The Contaminated soil was transferred from the cut area of Hole 18 (hotspot L3) to major fill area of Hole 17 for soil remediation. The full scale remediation work was carried out at Hole 17 in October 2006 and Final Site Remediation Report (FSRR) prepared by the Contractor was submitted to EPD for comment during the reporting quarter.

#### **4. Environmental Audit**

##### **4.1 Implementation Status of Environmental Mitigation Measures**

- 4.1.1 Major construction work of the third golf course were (i) site formation at Holes 11-16, (ii) permanent drainage system installation including gravity drain from Lake 1D to existing reservoir, (iii) irrigation system installation, (iv) sub-soil drains installation and (v) hydroseeding at the permanent slope/bare grounds.
- 4.1.2 The Contractor concentrates more on the dust suppression mitigation measures than the silty runoff impact to water sensitive receivers in the dry season. However, Temporary Drainage Management Plan (TDMP) submission prepared by the Contractor for ER's approval is still required for the dry season and coming next wet season. In particular, TDMP for the turf establishment area is very critical because the expected earliest turf establishment will be in January 2006 but no formal submission of TDMP 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. There is no TDMP submission by the Contractor for the dry season and coming wet season up to this reporting month.
- 4.1.3 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 in particular in northern portion 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.
- 4.1.4 The wheel washing facility provided on site was greatly improved with desilting tank during this reporting month. 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.
- 4.1.5 No dust suppression measure was provided for all rock breaking areas. Dust suppression measures for loading/unloading activities, rough shaping and haul road (truck traffic) were insufficient. According to the site observation, it demonstrated that the provided mitigation measures on site were insufficient for dust suppression. Two to three water trucks were mainly watering at those haul roads near to the existing golf course. The water source was mainly pumped from the downstream of the fresh water inland marsh and downstream of Stream A which could dry up during the dry season. Alternative water source for dust suppression should be considered during the dry season. Water source from WSD has already successfully applied by the Contractor few months ago. The Contractor can also consider alternative water source such as underground water source or other dust mitigation measures.
- 4.1.6 Soil stockpiles are mainly located at Holes 1, 9, 16 and 18. The dust suppression mitigation measures provided were considered insufficient. More sand/aggregates stockpiles were located at Hole 1 for sand capping or drainage sub-base material.
- 4.1.7 Vegetation stockpiles, general refuse and construction waste stockpiles were temporary stored on site since the start of the project. Part of the vegetation stockpiles located at Hole 1 was disposed during the reporting month. 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.
- 4.1.10 Summary of implementation status is provided in **Annex E**.

#### **4.2 Status of Environmental Licensing and Permitting**

- 4.2.1 Valid environmental licenses and permits for the project during the reporting quarter are summarised in **Annex F**. The construction noise permit (GW-RE0157-06) was expired. The Contractor was reminded to renew the permit.

#### **4.3 Advice on Solid and Liquid Waste Management Status**

- 4.3.1 According to the site observation, vegetation stockpiles, construction wastes stockpiles and general refuse were removed regularly offsite with disposal records prepared by the Contractor.
- 4.3.2 No chemical waste storage area was available on site during the reporting month. Some oil tanks were required as the standby fuel. Drip trays were provided underneath the oil tanks to prevent leakage on the bare ground. The Contractor confirmed that the chemical waste generated was in small amount and 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.



**5. Non-compliance (Exceedances) of the Environmental Quality Performance Limits (Action and Limit Levels)**

**5.1 Air Quality**

5.1.1 Two non-compliance of 24-TSP were recorded at GCA B1 during the reporting quarter.

**5.2 Water Quality**

5.2.1 Rainstorm events occurred on 21<sup>st</sup> November 2006 during the reporting quarter. The marine water exceedances were summarised in **Table 5.2-2**.

**Table 5.2-1 Marine Water Exceedance Summary Oct - Dec 2006**

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
KLW	Action Level	25/Sep/2006	SS	No
TTC	Limit Level	25/Sep/2006	SS	No
KLW	Limit Level	9/Oct/2006	SS	No
TTC	Action Level	9/Oct/2006	SS	No
KLW	Action Level	19/Oct/2006	SS	No
M_Marsh	Action Level	19/Oct/2006	Turbidity, SS	No
M_BP	Action Level	23/Oct/2006	SS	No
M_Marsh	Action Level	23/Oct/2006	SS	No
TTC	Limit Level	23/Oct/2006	SS	No
KS	Limit Level	16/Nov/2006	SS	No
M_Marsh	Action Level	16/Nov/2006	SS	Yes
M_RO1	Action Level	16/Nov/2006	SS	No
M_Marsh	Limit Level	22/Nov/2006	Turbidity, SS	Yes
KS	Limit Level	30/Nov/2006	SS	No
M_RO1	Action Level	30/Nov/2006	SS	No
TTC	Action Level	30/Nov/2006	SS	No
M_Marsh	Action Level	4/Dec/2006	SS	No
KLW	Limit Level	11/Dec/2006	SS	No
KLW	Action Level	18/Dec/2006	Turbidity	No
KS	Action Level	18/Dec/2006	Turbidity	No
KS	Limit Level	18/Dec/2006	SS	No
M_RO1	Action Level	18/Dec/2006	Turbidity	No
TTC	Action Level	18/Dec/2006	SS	No

Freshwater

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

**Table 5.2-2 Freshwater Exceedance Summary Jul - Sept 2006**

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
F_DA	Action Level	25/Sep/2006	Turbidity	No
F_DB	Action Level	25/Sep/2006	SS	No
F_DC	Limit Level	25/Sep/2006	Turbidity	Yes
F_DC	Action Level	25/Sep/2006	SS	Yes
F_Inland Marsh	Limit Level	25/Sep/2006	Turbidity	Yes
F_UC	Limit Level	25/Sep/2006	Turbidity, SS	Yes
F_DA	Action Level	3/Oct/2006	Turbidity	No
F_DC	Limit Level	3/Oct/2006	Turbidity	Yes
F_Inland Marsh	Limit Level	3/Oct/2006	Turbidity	Yes
F_Inland Marsh	Action Level	3/Oct/2006	SS	Yes
F_UC	Limit Level	3/Oct/2006	Turbidity	Yes
F_DC	Limit Level	9/Oct/2006	Turbidity	Yes
F_DC	Action Level	9/Oct/2006	SS	Yes
F_Inland Marsh	Limit Level	9/Oct/2006	Turbidity	Yes
F_UC	Limit Level	9/Oct/2006	Turbidity	Yes
F_DC	Limit Level	19/Oct/2006	Turbidity	Yes
F_Inland Marsh	Limit Level	19/Oct/2006	Turbidity	Yes
F_Inland Marsh	Action Level	19/Oct/2006	SS	Yes
F_UC	Limit Level	19/Oct/2006	Turbidity	Yes
F_DB	Action Level	23/Oct/2006	SS	No
F_DC	Limit Level	23/Oct/2006	Turbidity	Yes
F_Inland Marsh	Limit Level	23/Oct/2006	Turbidity	Yes
F_UC	Limit Level	23/Oct/2006	Turbidity	Yes
F_DA	Limit Level	4/Nov/2006	SS	Yes
F_DB	Limit Level	4/Nov/2006	Turbidity, SS	Yes
F_DC	Action Level	4/Nov/2006	Turbidity, SS	Yes
F_Inland M	Limit Level	4/Nov/2006	Turbidity	Yes
F_UB	Limit Level	4/Nov/2006	Turbidity	Yes
F_UB	Action Level	4/Nov/2006	SS	Yes
F_UC	Limit Level	4/Nov/2006	Turbidity	Yes
F_DA	Action Level	11/Nov/2006	Turbidity	Yes
F_DA	Action Level	11/Nov/2006	Turbidity	Yes
F_DB	Action Level	11/Nov/2006	Turbidity	Yes
F_DB	Limit Level	11/Nov/2006	SS	Yes
F_DC	Limit Level	11/Nov/2006	Turbidity	Yes
F_DC	Action Level	11/Nov/2006	SS	Yes
F_Inland M	Limit Level	11/Nov/2006	Turbidity	Yes
F_UB	Action Level	11/Nov/2006	Turbidity	Yes
F_UC	Limit Level	11/Nov/2006	Turbidity	Yes
F_DA	Limit Level	16/Nov/2006	Turbidity, SS	Yes
F_DB	Limit Level	16/Nov/2006	Turbidity, SS	Yes

Monitoring Station	Exceedance Level	Date	Parameters	Project-related
F_DC	Limit Level	16/Nov/2006	Turbidity, SS	Yes
F_Inland M	Limit Level	16/Nov/2006	Turbidity, SS	Yes
F_UC	Limit Level	16/Nov/2006	Turbidity	Yes
F_UC	Action Level	16/Nov/2006	SS	Yes
F_DA	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_DB	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_DC	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_Inland M	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_UB	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_UB	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_UC	Limit Level	22/Nov/2006	Turbidity, SS	Yes
F_DA	Limit Level	30/Nov/2006	Turbidity, SS	Yes
F_DB	Limit Level	30/Nov/2006	Turbidity, SS	Yes
F_DC	Limit Level	30/Nov/2006	Turbidity	Yes
F_DC	Action Level	30/Nov/2006	SS	Yes
F_Inland M	Limit Level	30/Nov/2006	Turbidity	Yes
F_UB	Limit Level	30/Nov/2006	Turbidity, SS	Yes
F_UC	Limit Level	30/Nov/2006	Turbidity	Yes
F_DA	Limit Level	4/Dec/2006	Turbidity, SS	Yes
F_DB	Limit Level	4/Dec/2006	Turbidity, SS	Yes
F_DC	Limit Level	4/Dec/2006	Turbidity	Yes
F_DC	Action Level	4/Dec/2006	SS	Yes
F_Inland M	Limit Level	4/Dec/2006	Turbidity	Yes
F_UB	Limit Level	4/Dec/2006	Turbidity, SS	Yes
F_UC	Limit Level	4/Dec/2006	Turbidity	Yes
F_DA	Limit Level	11/Dec/2006	Turbidity, SS	Yes
F_DB	Limit Level	11/Dec/2006	Turbidity	Yes
F_DC	Limit Level	11/Dec/2006	Turbidity	Yes
F_Inland M	Limit Level	11/Dec/2006	Turbidity	Yes
F_UB	Limit Level	11/Dec/2006	Turbidity	Yes
F_UC	Limit Level	11/Dec/2006	Turbidity	Yes
F_DA	Limit Level	18/Dec/2006	Turbidity, SS	Yes
F_DB	Limit Level	18/Dec/2006	Turbidity	Yes
F_DB	Action Level	18/Dec/2006	SS	Yes
F_DC	Limit Level	18/Dec/2006	Turbidity	Yes
F_Inland M	Limit Level	18/Dec/2006	Turbidity	Yes
F_UB	Limit Level	18/Dec/2006	Turbidity	Yes
F_UB	Action Level	18/Dec/2006	SS	Yes
F_UC	Limit Level	18/Dec/2006	Turbidity	Yes

5.2.2 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 and considered project-related. The exceedances recorded at Streams A, B & C and freshwater inland marsh were mainly attributed to insufficient temporary drainage system during reporting quarter. The non-compliance was attributed to the works and therefore further action was required.

- 5.2.3 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.
- 5.2.4 The Contractor was reminded to improve and provide sufficient temporary drainage system and treatment facilities on site before water discharge to marine and stream water.

### **5.3 Ecology**

- 5.4.1 The Contractor was reminded to remove the boulders within the stream buffer zone area at the downstream end of Stream A by hand. No equipment was allowed entering to the stream buffer zone area to rectify the situation.

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

- 6.1.1 For the Stream B2 buffer zone incident (vegetation clearance at part of the buffer zone area), the Contractor proposed the remedial mitigation measures for EPD's comment. No comment was received from EPD. The Contractor agreed to submit the reinstatement works programme within the buffer zone area, species of shrub, density, planting methodology and maintenance of the reinstated plants within the buffer zone (watering and fertilizer dosage frequency and dosage).

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

- 6.1.2 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 outstanding in this reporting quarter.

#### **Marine Ecology**

- 5.4.2 No exceedance or incident during the additional monitoring period at Site B2, Site C and Control Site during the second quarterly coral monitoring (December 2006).

#### **Transplanted Coral**

- 5.4.3 No exceedance or incident during the additional monitoring period at the recipient site during the first quarterly coral monitoring (December 2006).

### **5.4 Summary of Environmental Complaint**

- 5.4.1 No environmental complaint was received from the construction site during the reporting quarter.

### **5.5 Summary of Environmental Summons**

- 5.5.1 There was no notification of summons with respect to environmental issues registered in this reporting quarter.

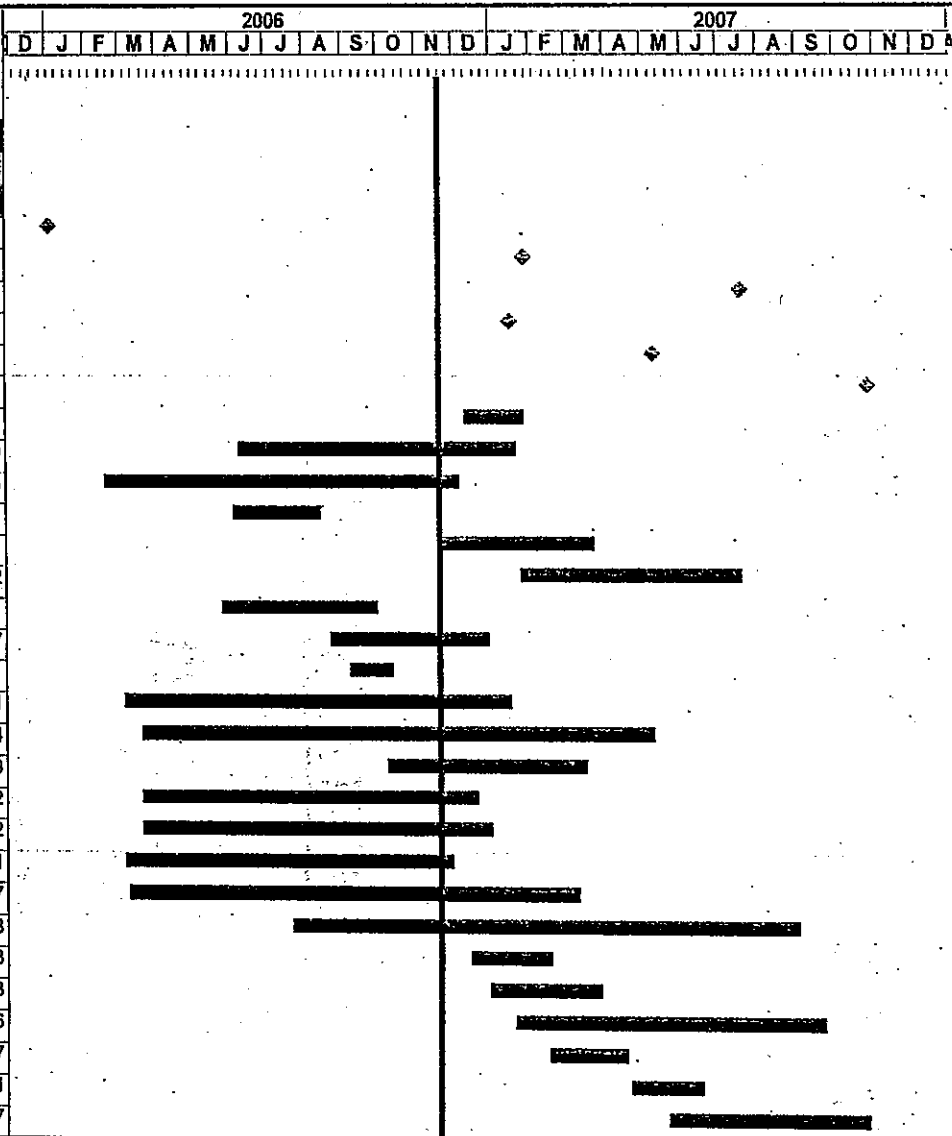
## **6. Recommendations and Conclusions**

- 6.1.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from October to December 2006 in accordance with EM&A Manual and the requirement under EP-224/2005.
- 6.1.2 Two exceedances of the Action Level were recorded for 24-hour TSP.
- 6.1.3 Water quality exceedances, suspended solids and turbidity, at marine and stream monitoring locations were mainly due to the rain, insufficient temporary drainage system implemented and treatment facilities provided on site.
- 6.1.4 The Contractor was reminded to rectify the Stream A (rock fill at downstream portion) as soon as possible without using any equipment/machinery within the buffer zone. For Stream B (except the part of Stream B2 vegetation clearance) & Stream C (silt of settled at the stream bed), the riparian vegetation was in natural conditions similar to the condition during the Baseline Survey.
- 6.1.5 No exceedance or incident was recorded at the Site B2 during the second quarterly coral monitoring in Dec 2006. For Site C and the Control Site, the tagged corals still remained similar conditions as during the Baseline Survey. No mortality, sedimentation or bleaching was found on the tagged corals in these two sites.
- 6.1.6 Tree protection is satisfactory. Stockpiles of cleared vegetation were found stored on site and required removal. The Contractor was reminded to proper dispose the vegetation stockpiles and construction waste. The Contractor was also reminded to rectify the mal-pruning practice of the transplanted trees and maintain all transplanted trees in good health condition in particular provision of tree buffer zone and sufficient watering.
- 6.1.7 No environmental complaint and no environmental summons/prosecutions were received during the reporting period since the commencement of the Project.
- 6.1.8 The ET will keep track of the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

# **Annex A**

## **Tentative Construction Programme**

Activity ID	Activity Description	PHAS	Orig Dur	Rem Dur	% Comp	Early Start	Early Finish	Total Float
SU00100	Possession of Site		0	0	100	03/01/06A		
SU00110	Completion of Section 1		0	0	0		26/01/07	187
SU00120	Completion of Section 2		0	0	0		19/07/07	13
SU00130	Completion of Section 3		0	0	0		15/01/07	-41
SU00140	Completion of Section 4		0	0	0		09/05/07	-64
SU00150	Completion of Section 9		0	0	0		27/10/07	-87
SU00160	S1: Low level intake pumping station		47*	47*	0	11/12/06	26/01/07	-115
SU00170	S1: Gravity drain & rising main		225*	62*	58	10/06/06A	20/01/07	-109
SU00190	S2: Desalination plant		291*	16*	84	18/02/06A	05/12/06	-63
SU00200	S2: Transformer/switch room		72*	0*	100	05/06/06A	15/08/06A	
SU00210	S2: Seawater pumping station		123*	123*	0	21/11/06	23/03/07	-181
SU00220	S2: Seawater intake & discharge pipe		177*	177*	0	24/01/07	19/07/07	-322
SU00230	S2: Retaining wall No.1		127*	0*	100	27/05/06A	30/09/06A	
SU00240	S2: Lake No. 1 and pump house No.1		128*	40*	56	24/08/06A	29/12/06	-87
SU00250	S2: Roundabout and access road		35*	0*	100	08/09/06A	12/10/06A	
SU00260	S3: Existing maintenace building		315*	57*	70	07/03/06A	15/01/07	-41
SU00270	S4: Existing admin. building area 1		415*	171*	51	21/03/06A	09/05/07	-64
SU00280	S4: Existing admin. building area 2		160*	117*	9	08/10/06A	16/03/07	-49
SU00290	S4: Existing admin. building area 3		274*	30*	75	21/03/06A	19/12/06	-12
SU00300	S4: Existing admin. building area 4		285*	41*	72	21/03/06A	30/12/06	-22
SU00310	S4: Existing admin. building area 5		268*	10*	92	07/03/06A	29/11/06	-41
SU00330	S9: Earth/slope construction works		366*	111*	45	10/03/06A	10/03/07	-37
SU00350	S9: Drainage & Irrigation		406*	286*	22	23/07/06A	01/09/07	-78
SU00360	S9: Sand Capping (GH3, 5, 8, 18)		65*	65*	0	14/12/06	16/02/07	-63
SU00370	S9: Sand Capping (GH4, 6, 7)		88*	88*	0	30/12/06	27/03/07	-53
SU00380	S9: Sand Capping (GH1, 2 & 9-17)		246*	246*	0	20/01/07	22/09/07	-86
SU00390	S9: Grassing (GH3, 5, 8, 18)		62*	62*	0	16/02/07	18/04/07	-67
SU00400	S9: Grassing (GH4, 6, 7)		57*	57*	0	21/04/07	16/06/07	-71
SU00410	S9: Grassing (GH1, 2 & 9-17)		159*	159*	0	22/05/07	27/10/07	-87



Start Date 28/12/05  
 Finish Date 27/10/07  
 Data Date 20/11/06  
 Run Date 04/12/06 16:25

Summary Bar  
 Progress Bar

KS11

Sheet 1 of 1

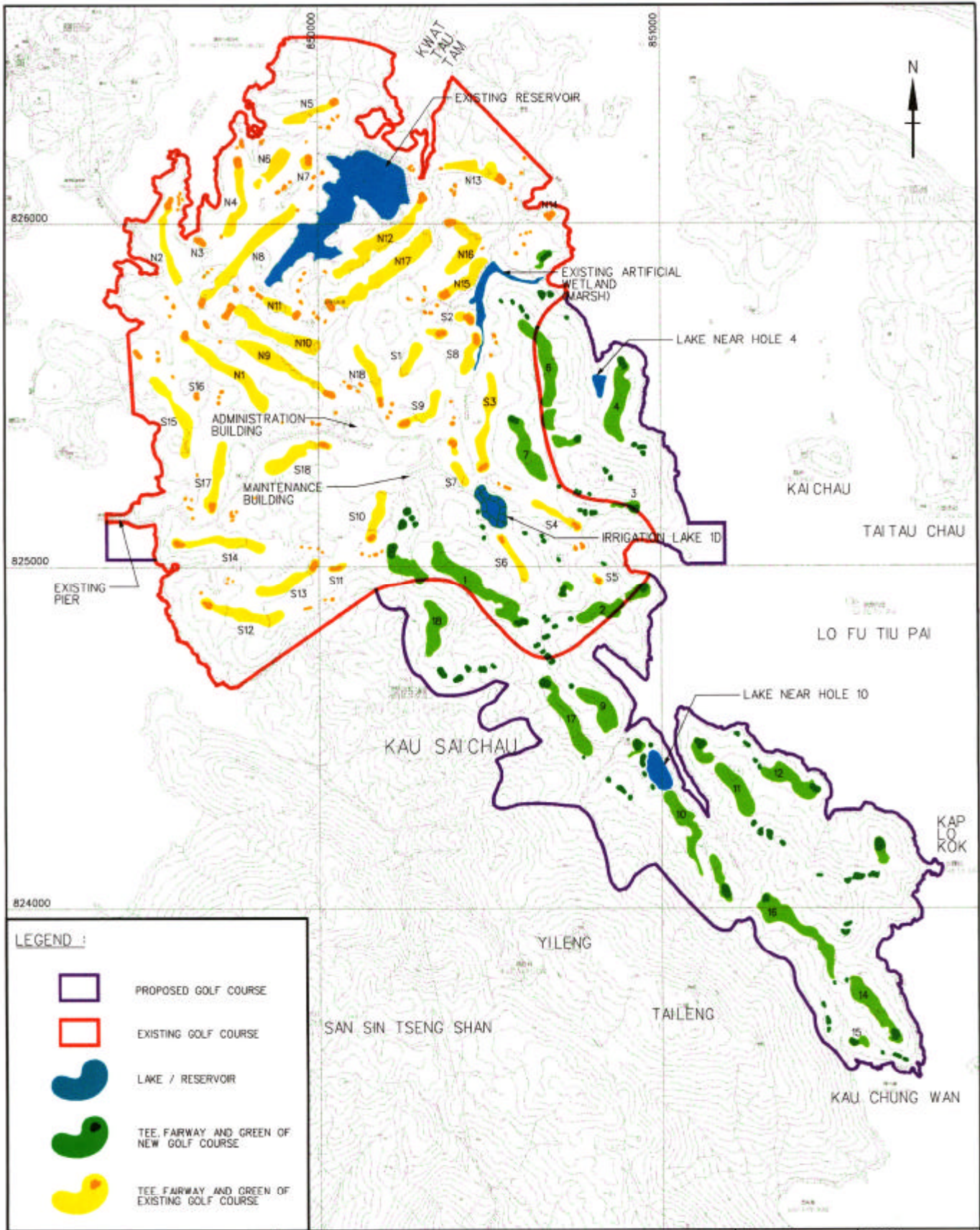
China Harbour Engineering Co.  
 Third Golf Course at Kau Sai Chau  
 Summary Programme

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

# **Annex B**

## **Monitoring Locations**





**LEGEND :**

	PROPOSED GOLF COURSE
	EXISTING GOLF COURSE
	LAKE / RESERVOIR
	TEE, FAIRWAY AND GREEN OF NEW GOLF COURSE
	TEE, FAIRWAY AND GREEN OF EXISTING GOLF COURSE

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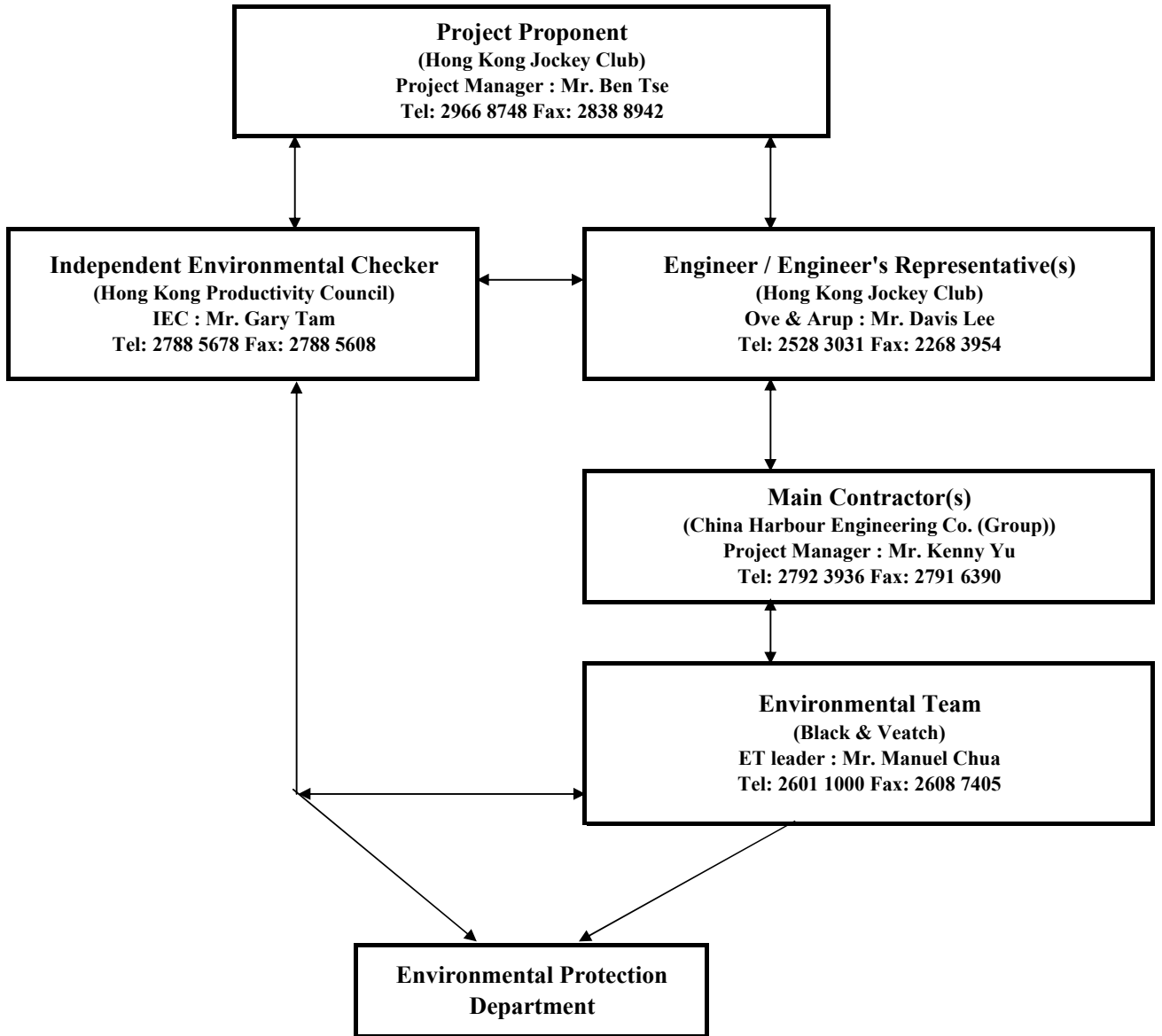
**BLACK & VEATCH HONG KONG LIMITED**  
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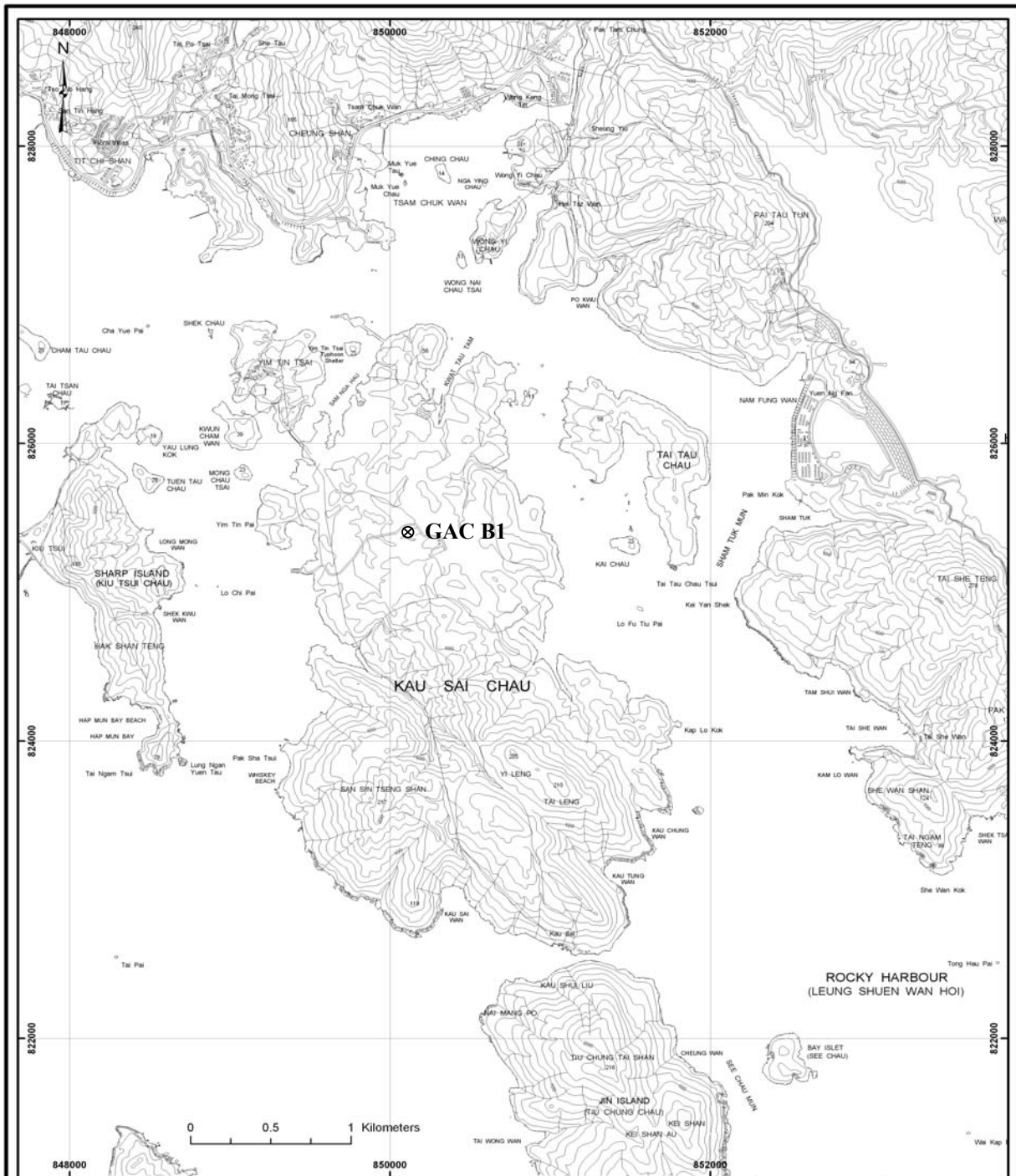
PROPOSED EXTENSION OF PUBLIC GOLF COURSE AT KAU SAI CHAU, SAI KUNG

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

Figure No.	2.1	Revision	-
Reference	-	File Name	3822100201-2.1.DGN
Prepared	ET	Checked	JW
Date	MAY 2005	Scale	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

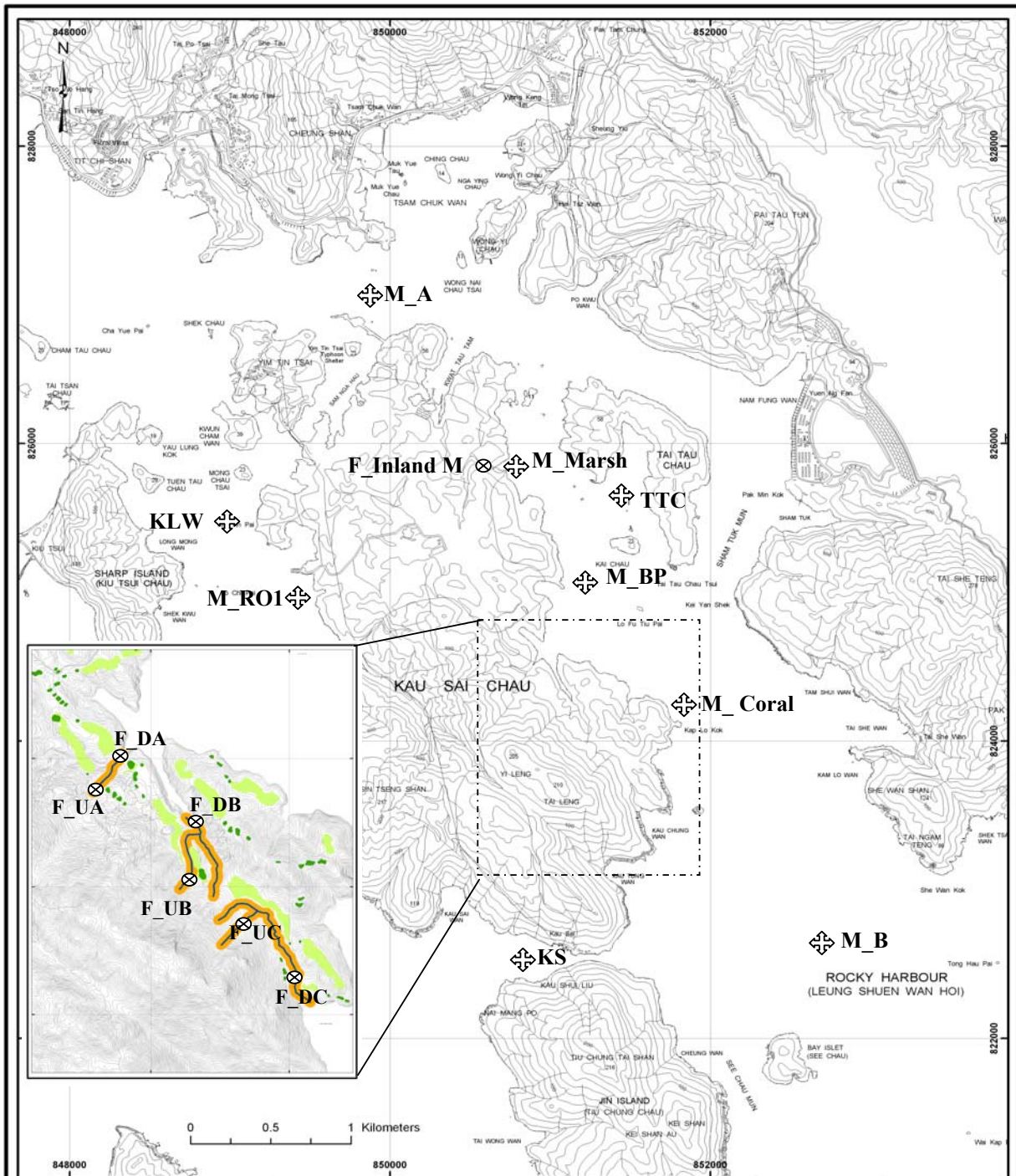
**Fig 3.1**

ET

JW

Feb 2006

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 Plot file: C:\PS95\_0\Project\032219\_0202\location.pdf



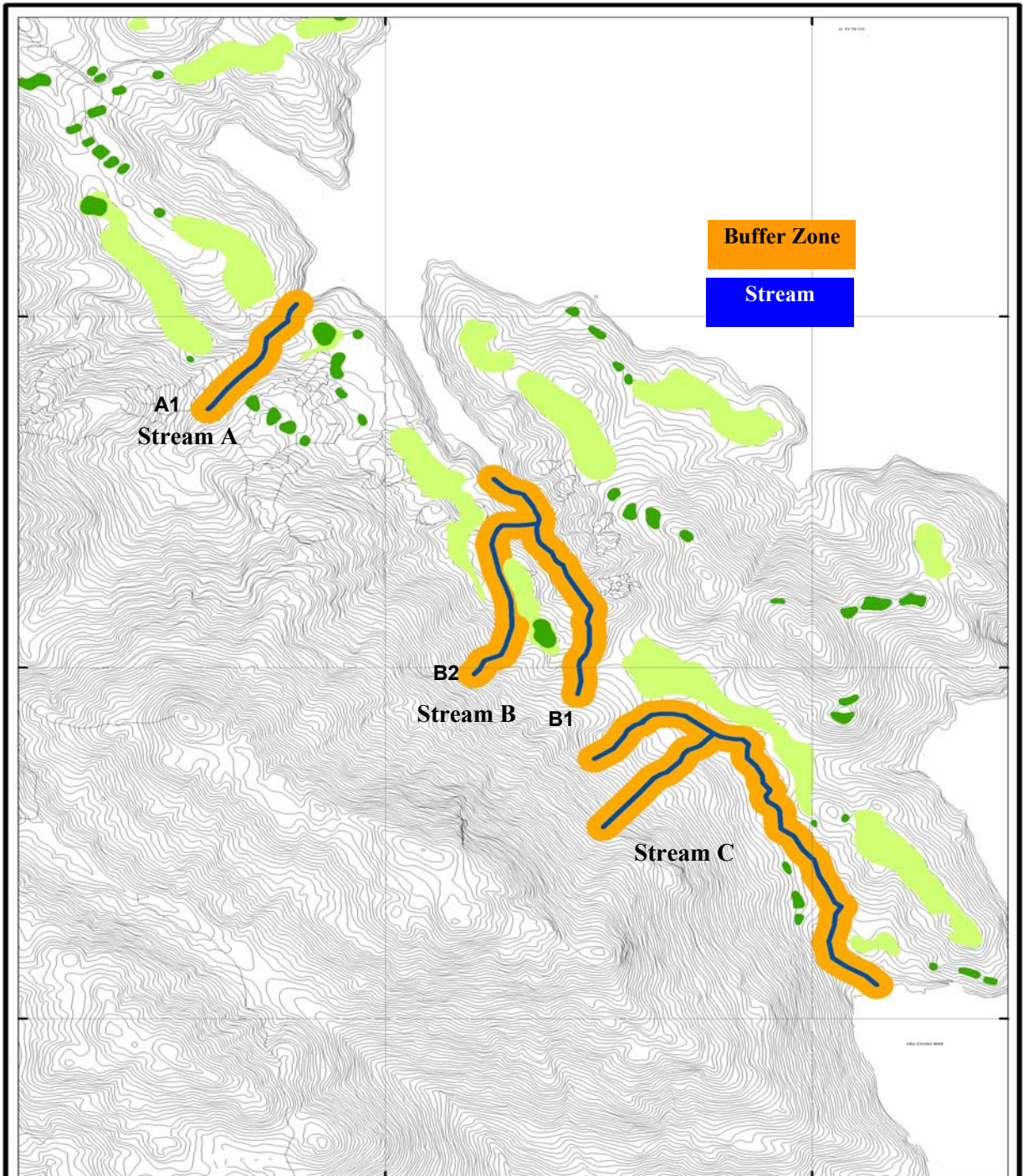

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Proposed Extension of Public Golf Course at Kau Sai  
 Chau Island, Sai Kung  
 Proposed Water Quality Monitoring Locations  
 (Construction Phase)

<b>Fig 3.2</b>	
<b>ET</b>	<b>JW</b>
<b>Feb 2006</b>	

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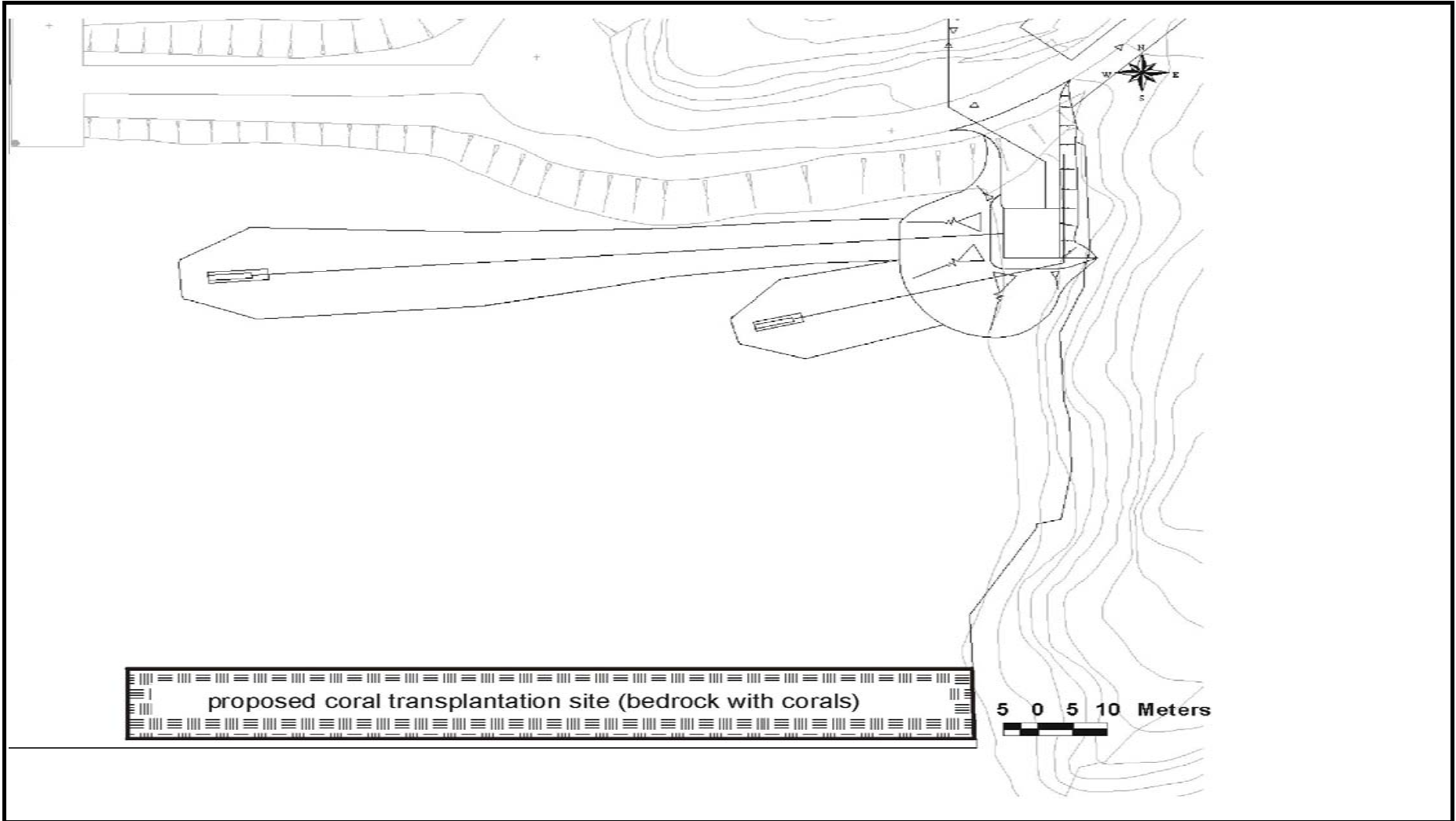

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Proposed Extension of Public Golf Course at Kau Sai  
 Chau Island, Sai Kung  
 Proposed Ecological Monitoring Location  
 (Streams Buffer Zone)

<b>Fig 3.3</b>	
<b>ET</b>	<b>JW</b>
<b>Feb 2006</b>	

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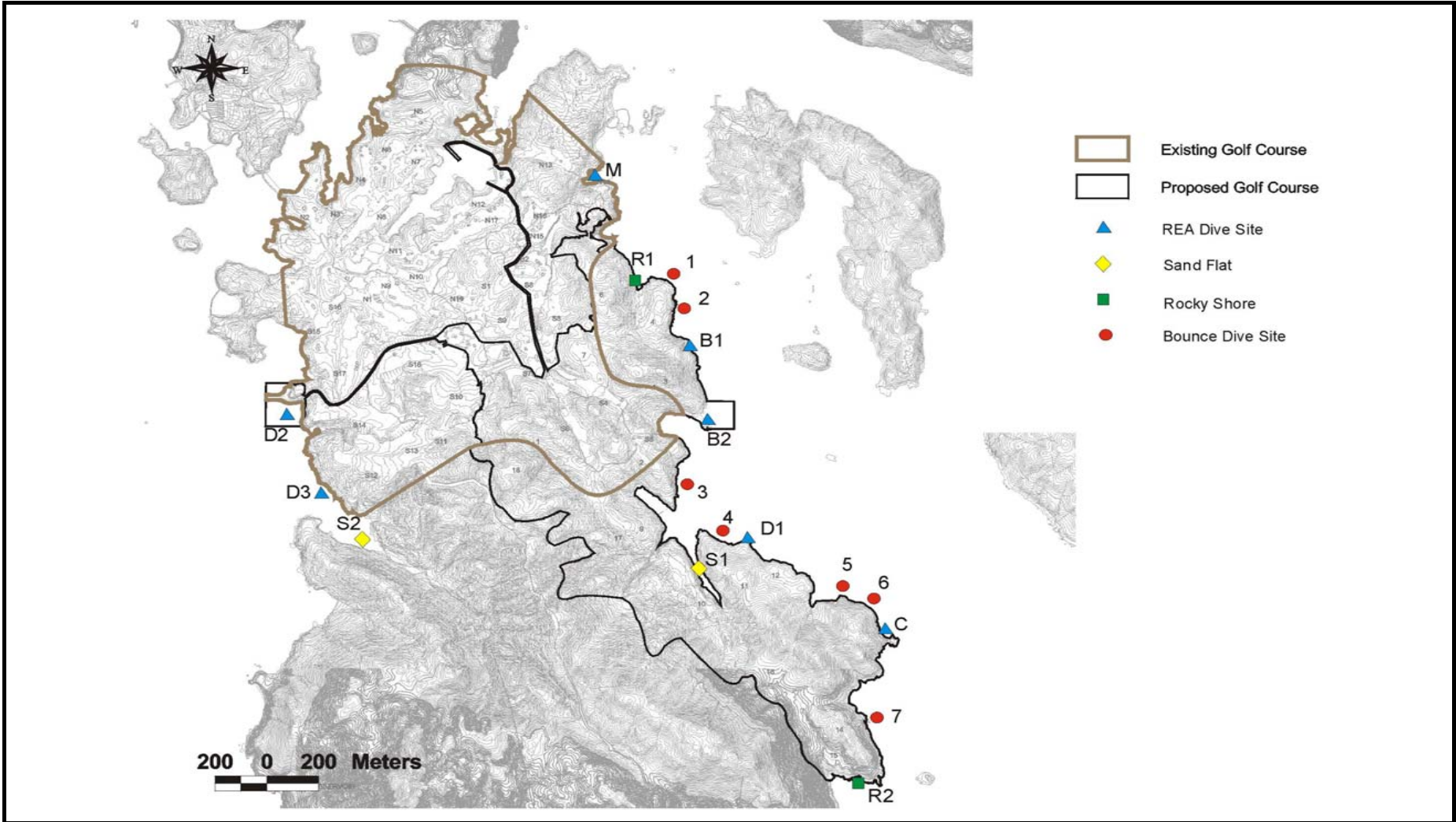
Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung

Location of proposed coral transplantation site (Bedrock with corals)

**Fig 3.4**

Prepared	Checked
ET	JW

Date	Feb-06
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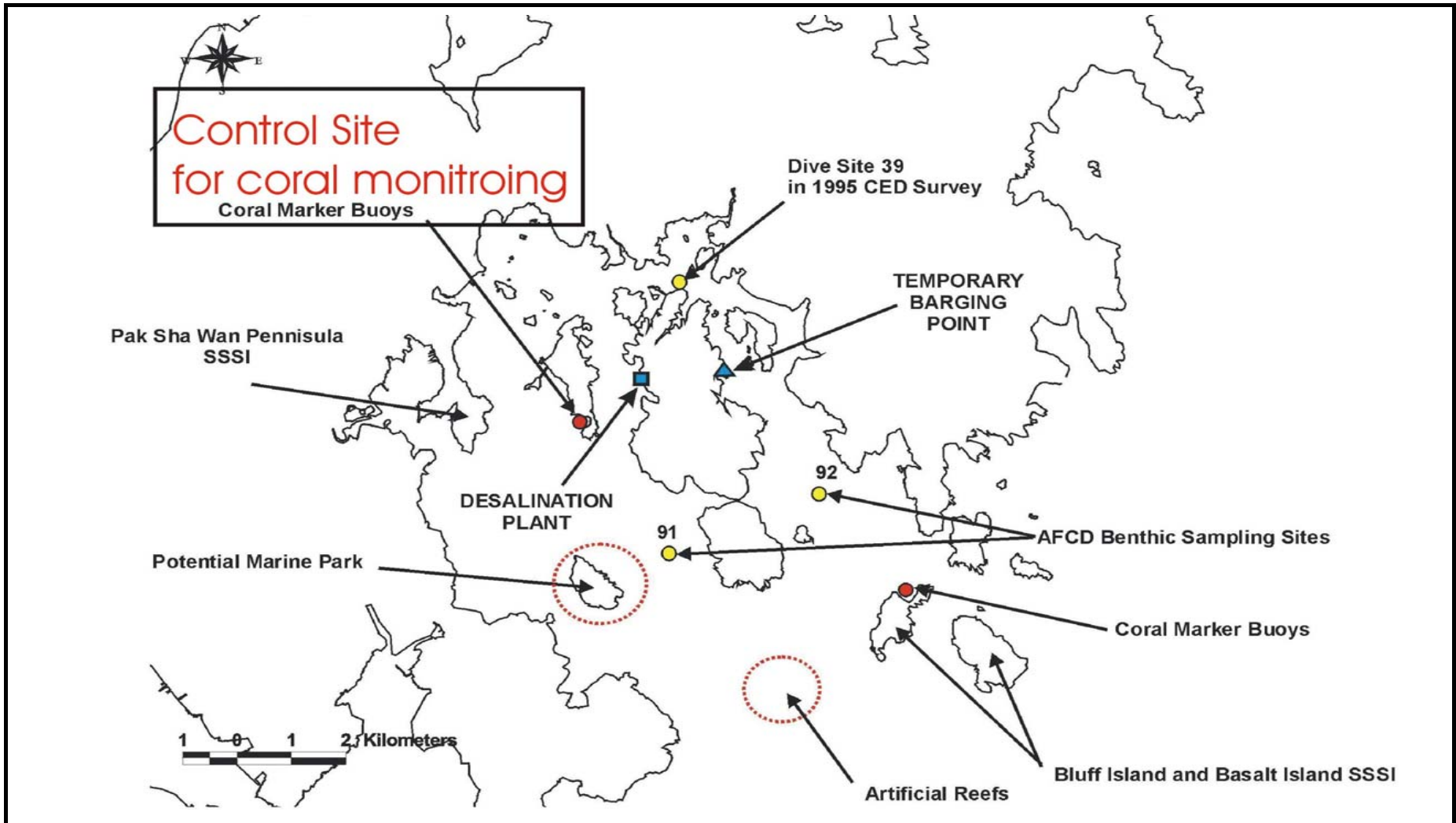



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Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
  
 Location of coral and seagrass monitoring (Sites D2, D3 and C)

<b>Fig 3.5</b>	
Prepared	Checked
ET	JW
Date	
Feb-06	



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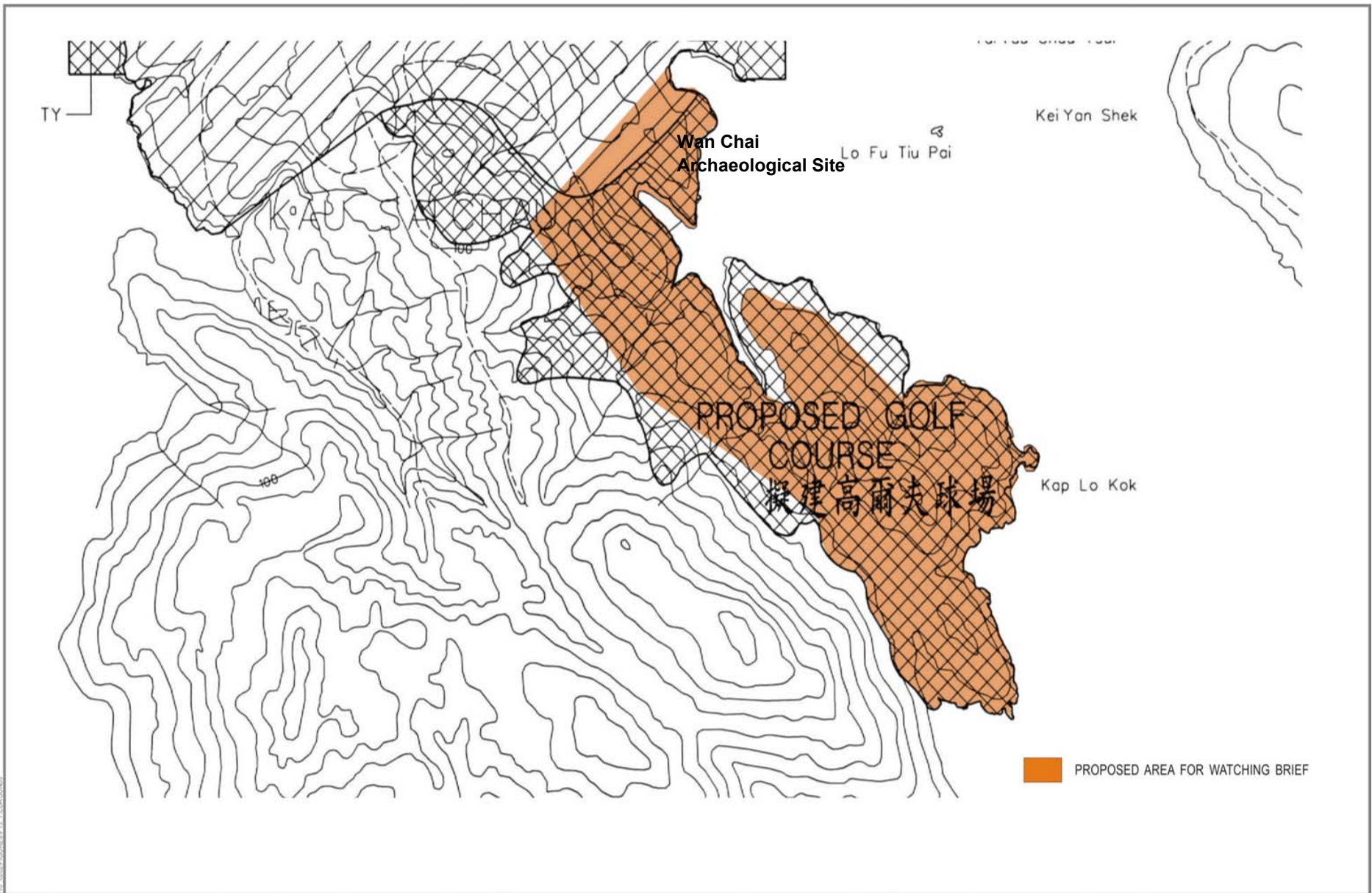
Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung

Control Site for Natural Coral Monitoring

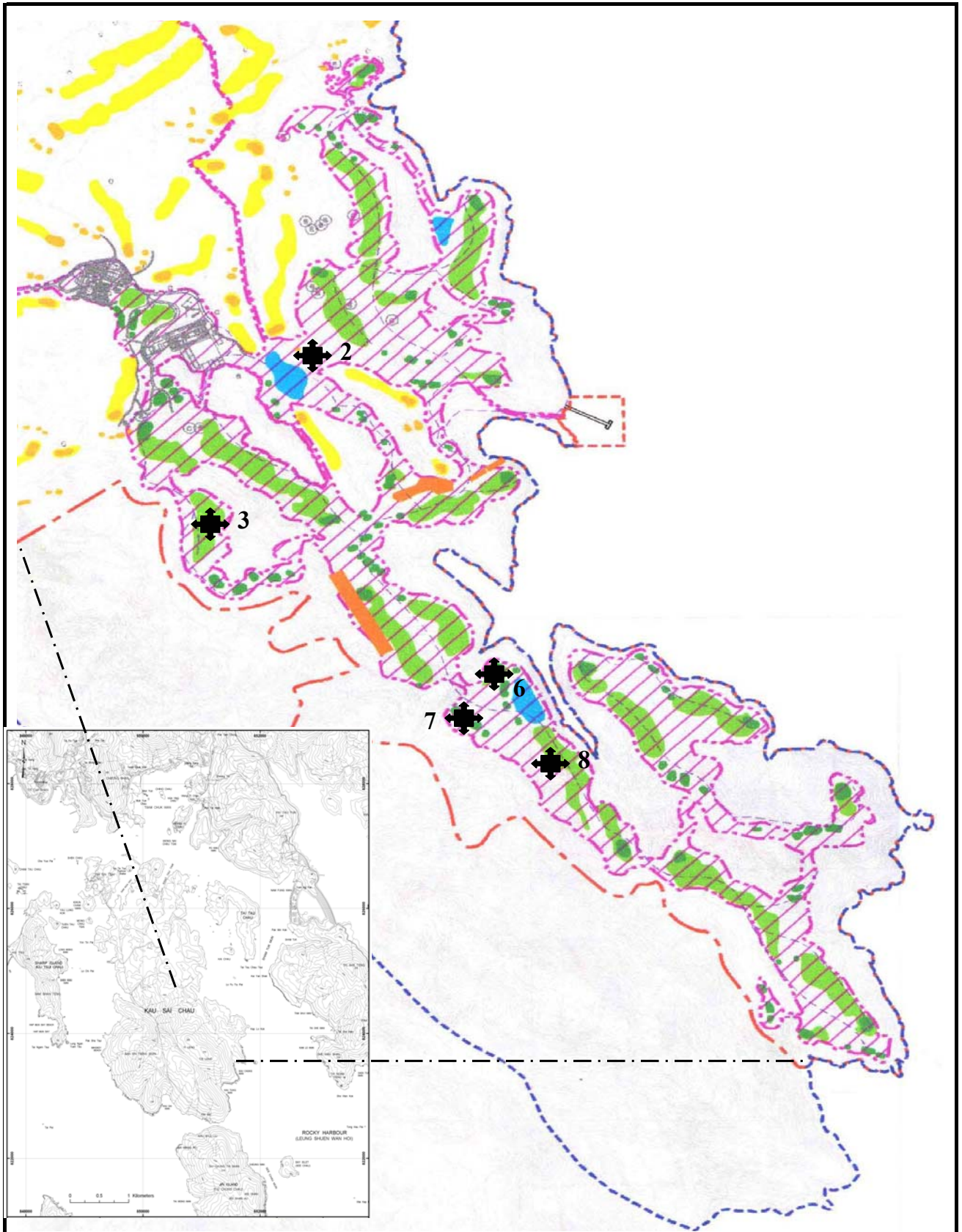
Fig 3.6

Prepared	Checked
ET	JW
Date	Feb-06





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

Sampling location for land contamination

<b>Fig 3.8</b>	
<b>Prepared</b> ET	<b>Checked</b> JW
<b>Date</b> Feb-06	

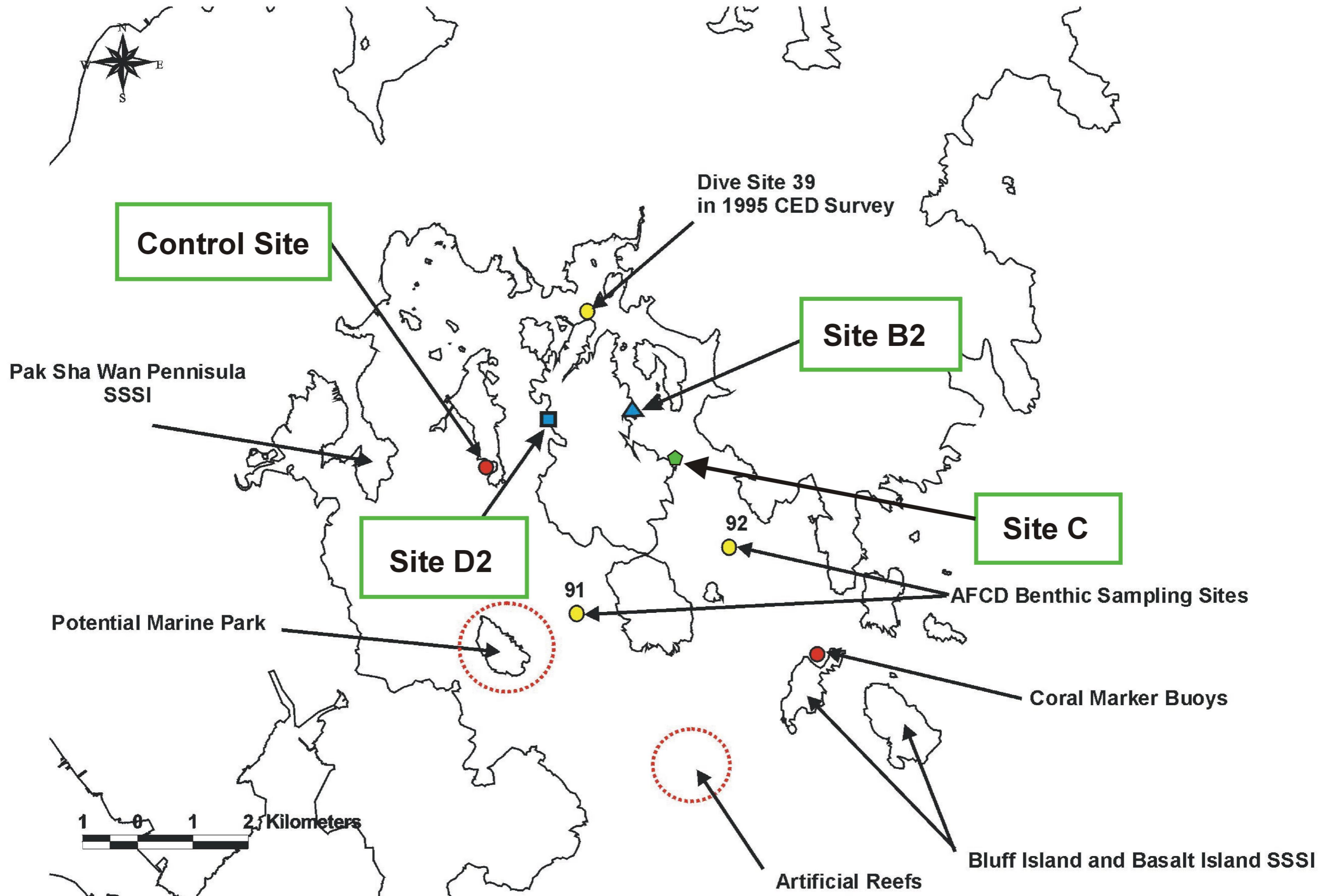
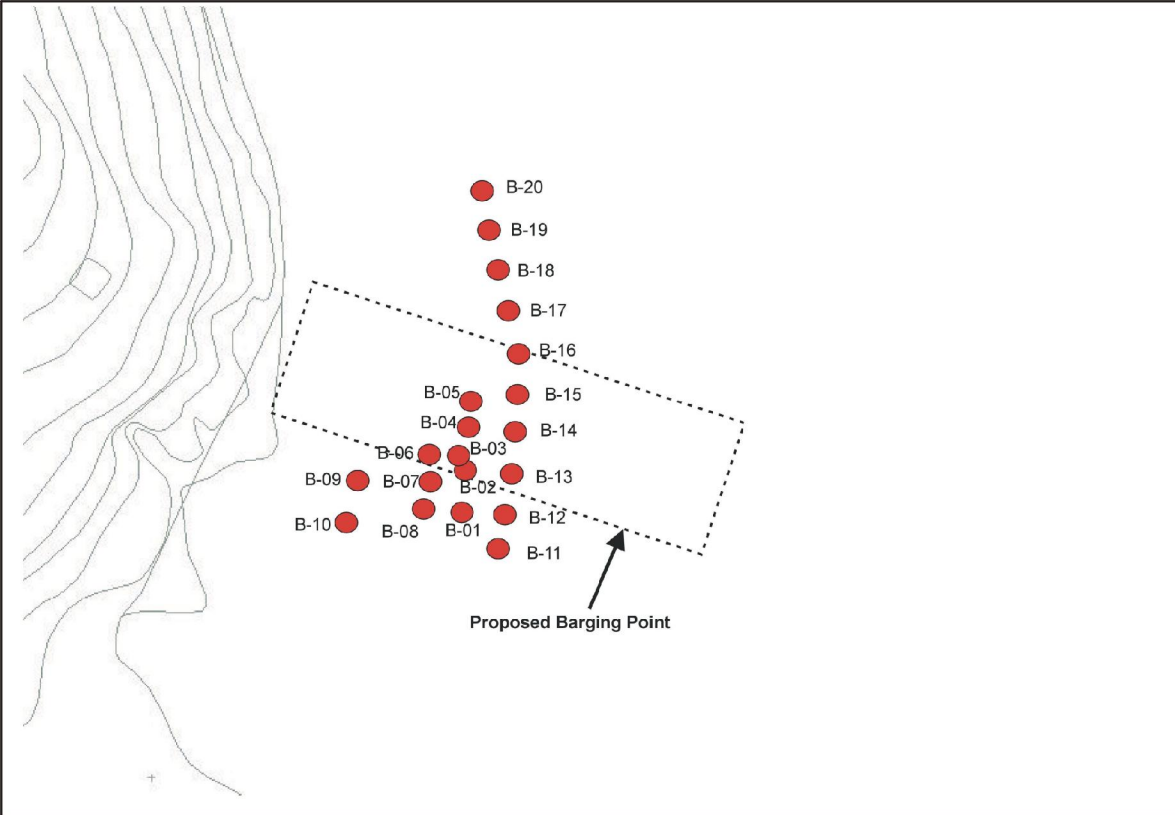
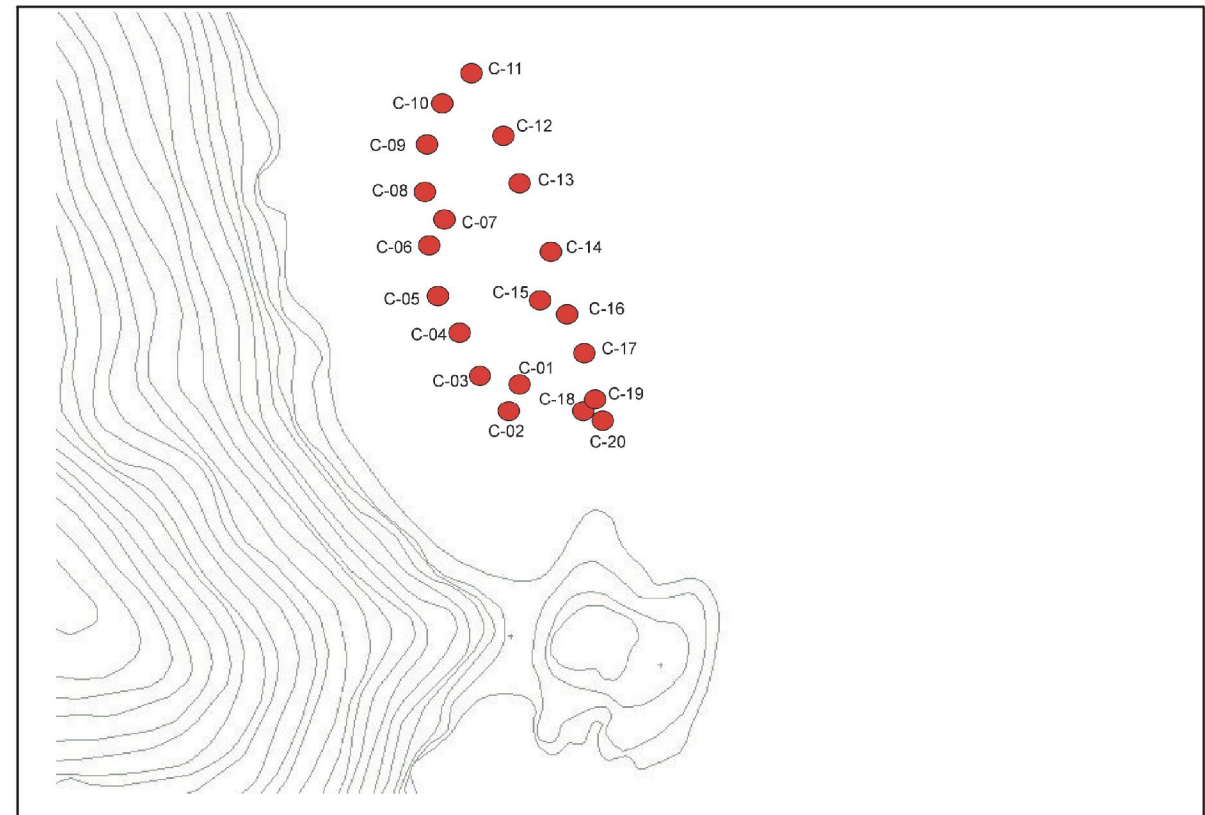


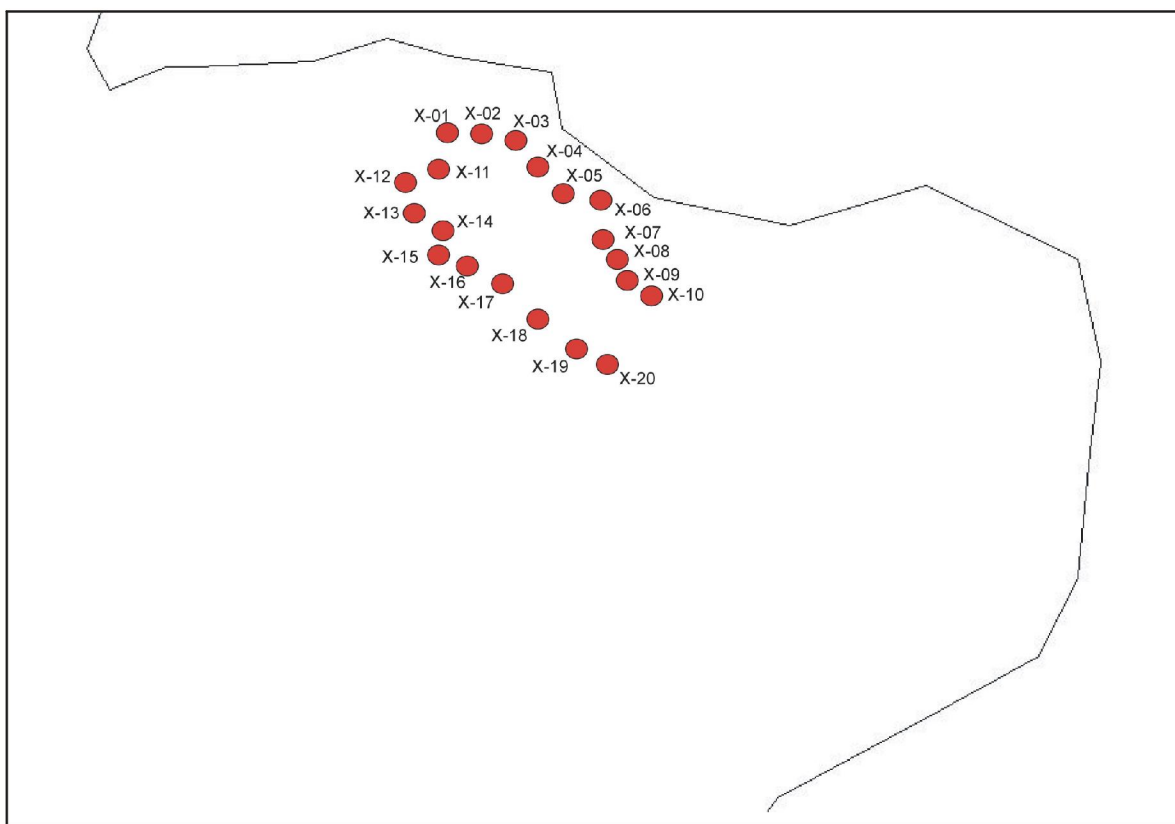
Figure 4.1 The locations of the four coral monitoring sites (  )



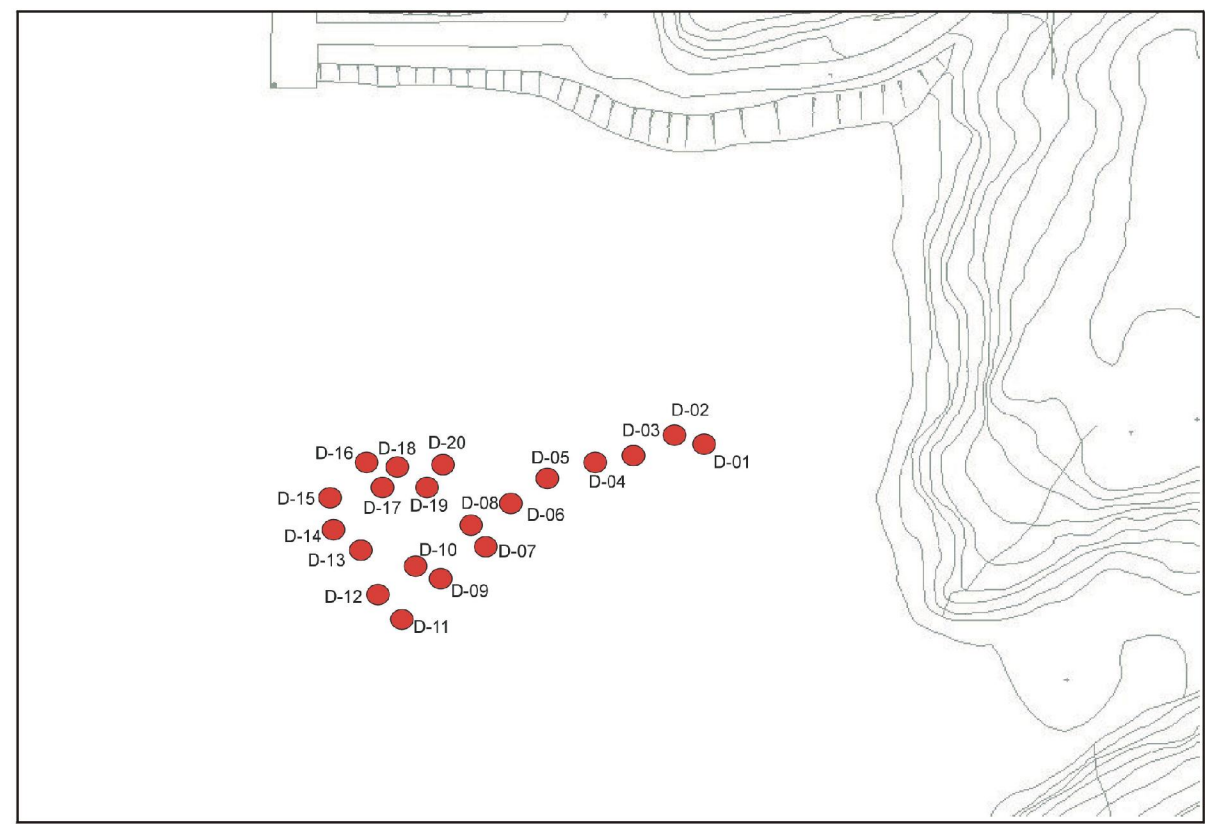
**Site B2**



**Site C**



**Control Site**



**Site D2**

Figure 4.2 Indicative locations of the tagged corals at four monitoring sites

# **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	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of complaint and propose remedial measures;</li> <li>2. Inform IC(E) and Engineer;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase to daily monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IC(E) and Engineer;</li> <li>3. Advise Engineer on effectiveness of proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase to daily monitoring;</li> <li>6. Discuss with IC(E) and Contractor remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IC(E) and Engineer;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor possible remedial measures;</li> <li>4. Advise ET on the effectiveness of proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm in writing receipt of notification of exceedance;</li> <li>2. Notify Contractor;</li> <li>3. Supervise proper implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial measures to Engineer within three working days of notification;</li> <li>2. Implement agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>
<b>LIMIT LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate causes of exceedance and propose remedial measures;</li> <li>2. Inform IC(E), Engineer, Contractor and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase to daily monitoring;</li> <li>5. Assess effectiveness of Contractor's remedial actions</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor possible remedial measures;</li> <li>4. Advise Engineer on effectiveness of proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm in writing receipt of notification of exceedance;</li> <li>2. Notify Contractor;</li> <li>3. Supervise proper implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IC(E) within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposals if appropriate.</li> </ol>

EVENT	ACTION			
	ET	IC(E)	Engineer	CONTRACTOR
	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**

## **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						
27-Sep-06	3.5862	3.9461	1.38	1.38	10486.6	10510.6	24.0	181.5	Sunny	0.36	1.38	1982.9
03-Oct-06	3.5085	3.8592	1.52	1.52	10510.6	10534.6	24.0	160.0	Sunny	0.35	1.52	2191.7
09-Oct-06	3.5512	3.8478	1.52	1.52	10534.6	10558.6	24.0	135.3	Sunny	0.30	1.52	2191.7
14-Oct-06	3.6365	3.9176	1.45	1.45	10558.6	10582.6	24.0	134.6	Fine	0.28	1.45	2088.0
20-Oct-06	3.7030	3.8663	1.38	1.38	10582.6	10606.6	24.0	82.4	Fine	0.16	1.38	1982.9
26-Oct-06	3.5343	3.8011	1.38	1.38	10606.6	10630.6	24.0	134.6	Sunny	0.27	1.38	1982.9
01-Nov-06	3.4942	3.9598	1.52	1.52	10630.6	10654.6	24.0	<b>212.4</b>	Sunny	0.47	1.52	2191.7
07-Nov-06	3.5191	3.8101	1.32	1.32	10654.6	10678.6	24.0	153.1	Sunny	0.29	1.32	1900.8
10-Nov-06	3.5385	3.9993	1.52	1.52	10678.6	10702.6	24.0	<b>210.2</b>	Sunny	0.46	1.52	2191.7
13-Nov-06	3.4844	3.7451	1.56	1.56	10702.6	10726.6	24.0	116.2	Sunny	0.26	1.56	2243.5
18-Nov-06	3.4889	3.7634	1.56	1.56	10726.6	10750.6	24.0	122.4	Fine	0.27	1.56	2243.5
21-Nov-06	3.5067	3.5988	1.60	1.60	10750.6	10774.6	24.0	40.1	Rainy	0.09	1.60	2296.8
24-Nov-06	3.5238	3.7727	1.32	1.32	10774.6	10798.6	24.0	130.9	Fine	0.3	1.3	1900.8
30-Nov-06	3.5422	3.7348	1.52	1.52	10798.6	10822.6	24.0	87.9	Fine	0.19	1.52	2191.7
06-Dec-06	3.4955	3.8840	1.49	1.49	10822.6	10846.6	24.0	181.6	Fine	0.39	1.49	2139.8
12-Dec-06	3.6603	3.7218	1.12	1.12	10846.6	10870.6	24.0	38.0	Fine	0.06	1.12	1617.1
18-Dec-06	3.6543	3.9160	1.29	1.29	10870.6	10894.6	24.0	141.0	Sunny	0.26	1.29	1856.2
22-Dec-06	3.6597	3.8733	1.60	1.60	10894.6	10918.6	24.0	93.0	Fine	0.21	1.60	2296.8

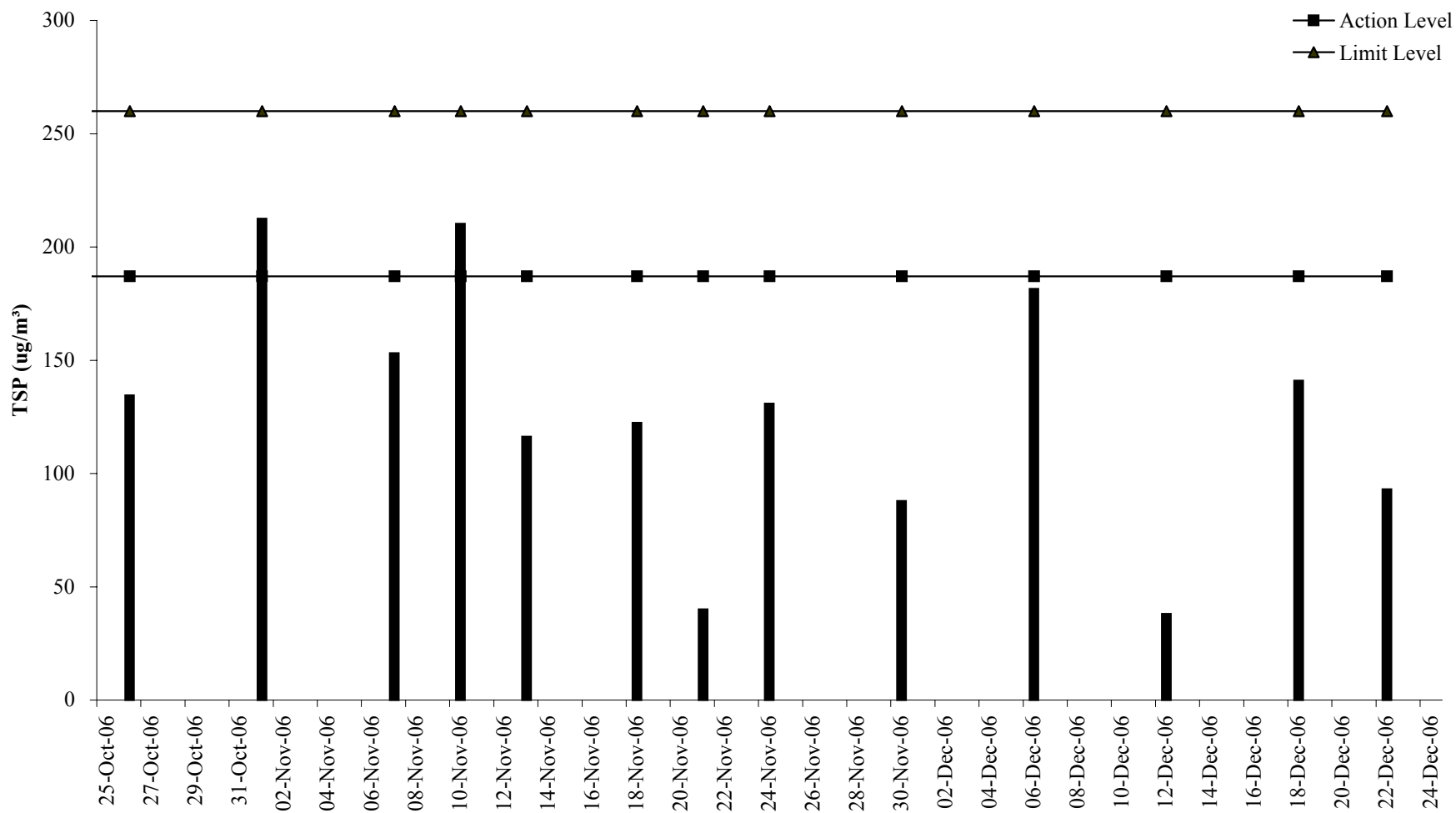
Ad-hoc

Ad-hoc

Min	38.0
Max	212.4
Average	130.8

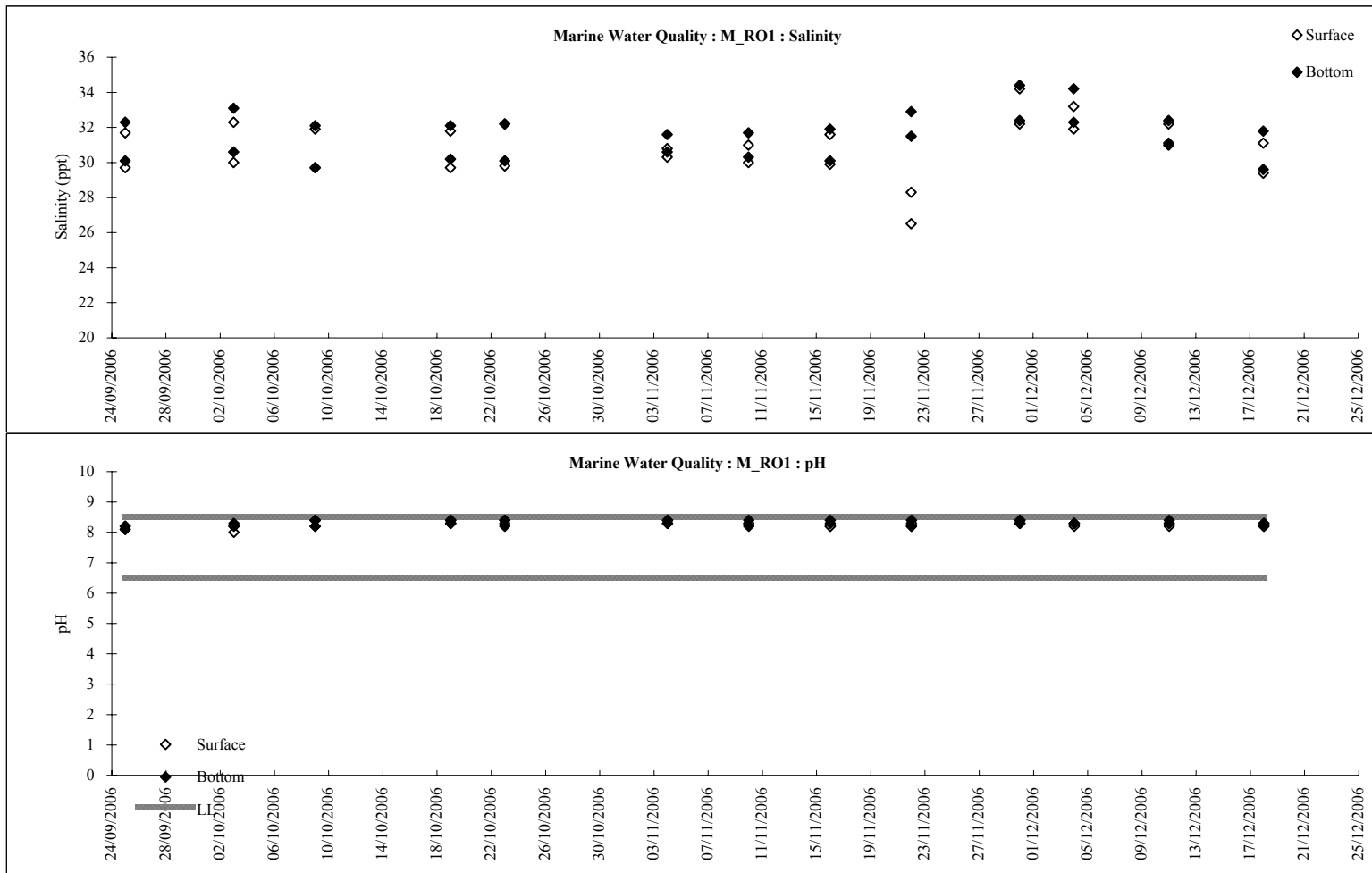
Remark: Bold value indicated an Action level exceedance  
 Bold & Italic value indicated an Limit level exceedance

24-hour TSP Monitoring Results at Station GCA B1 (Oct - Dec 2006)

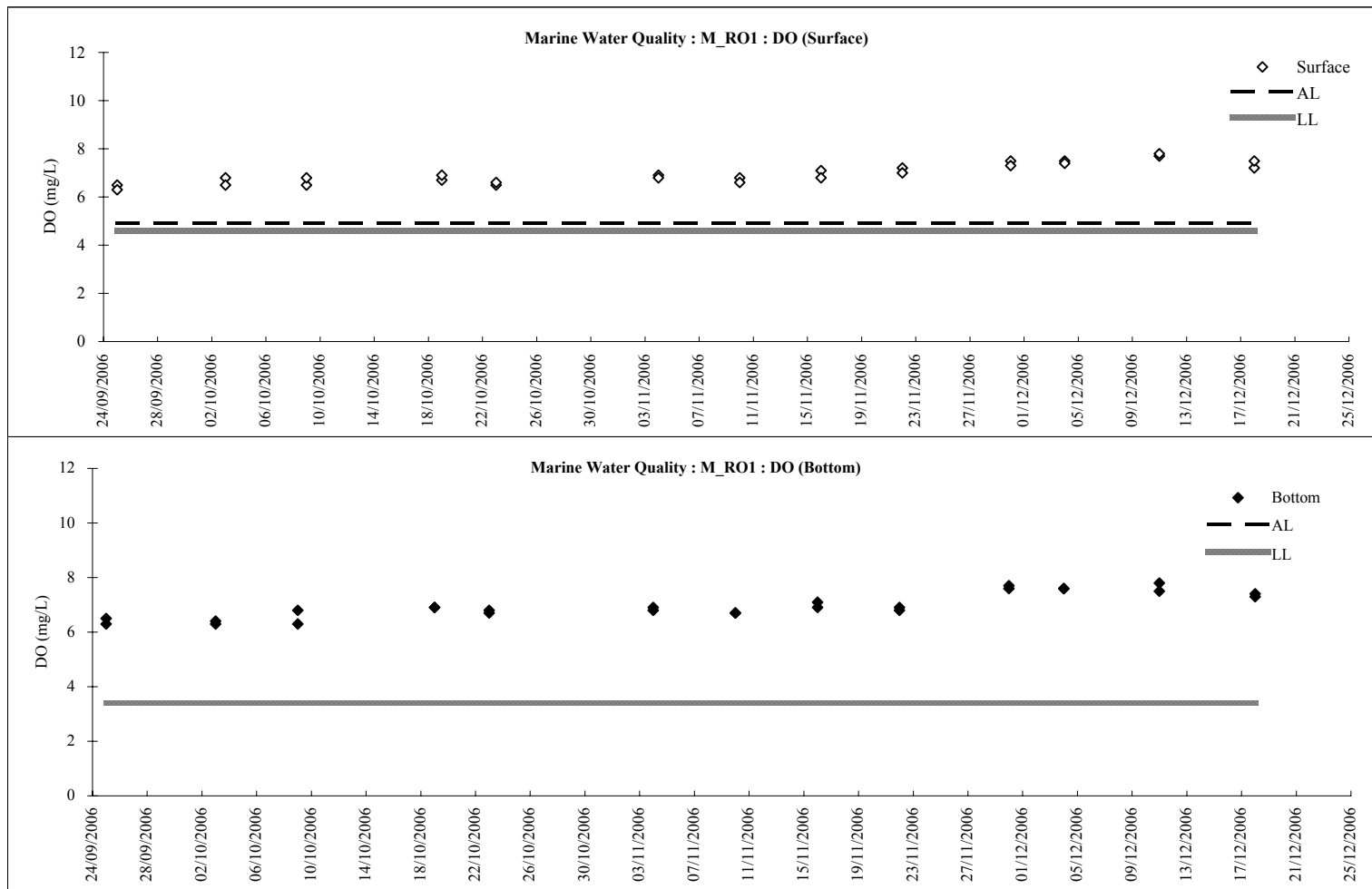


# Water Quality

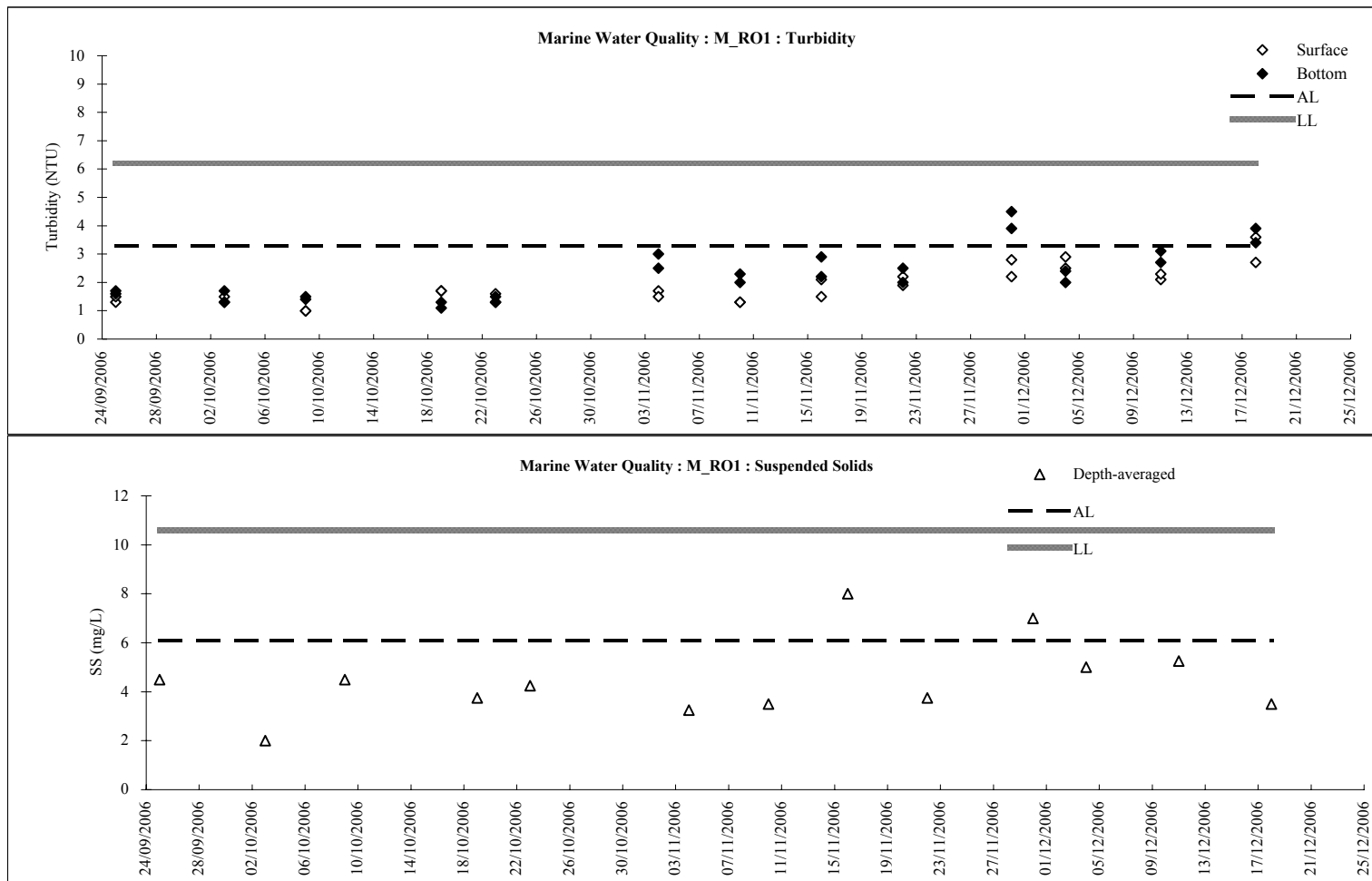




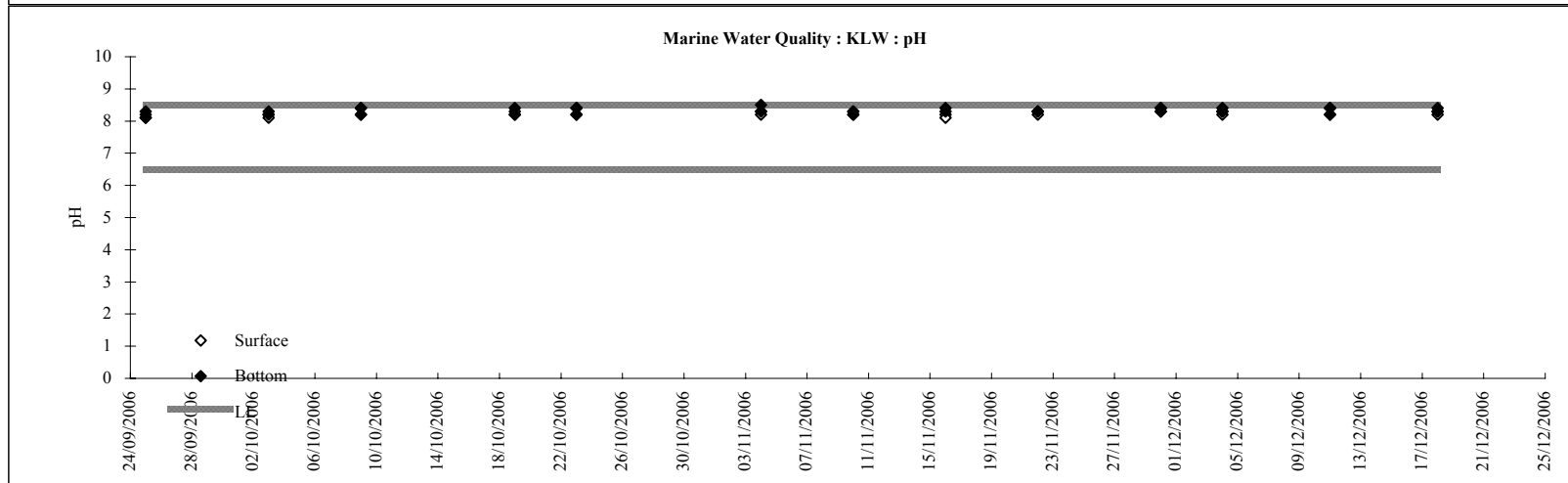
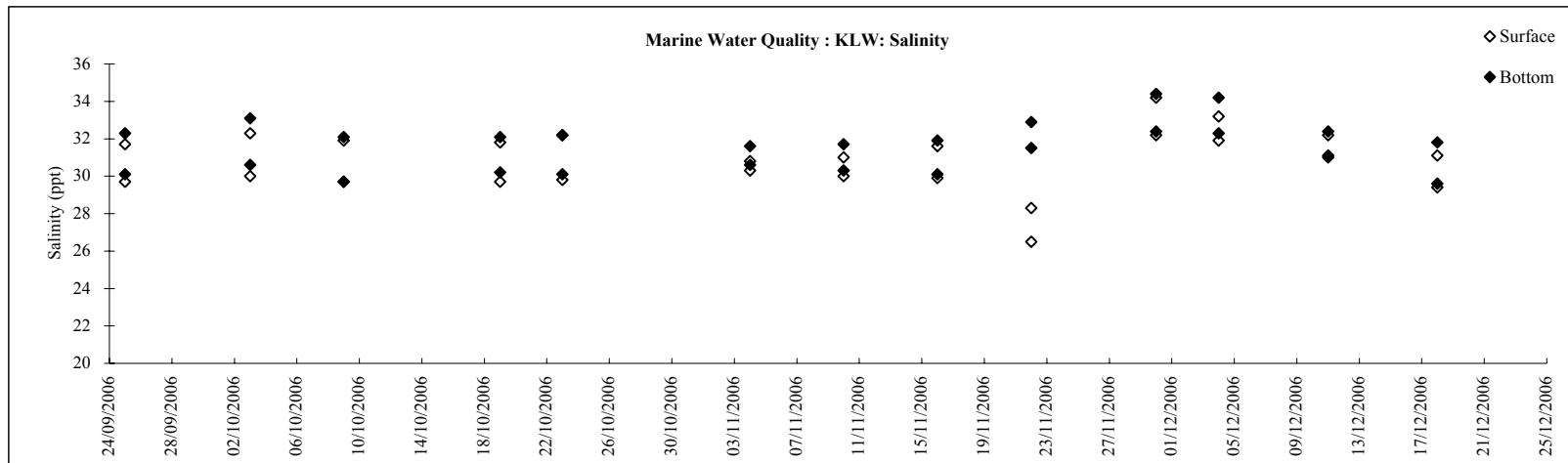
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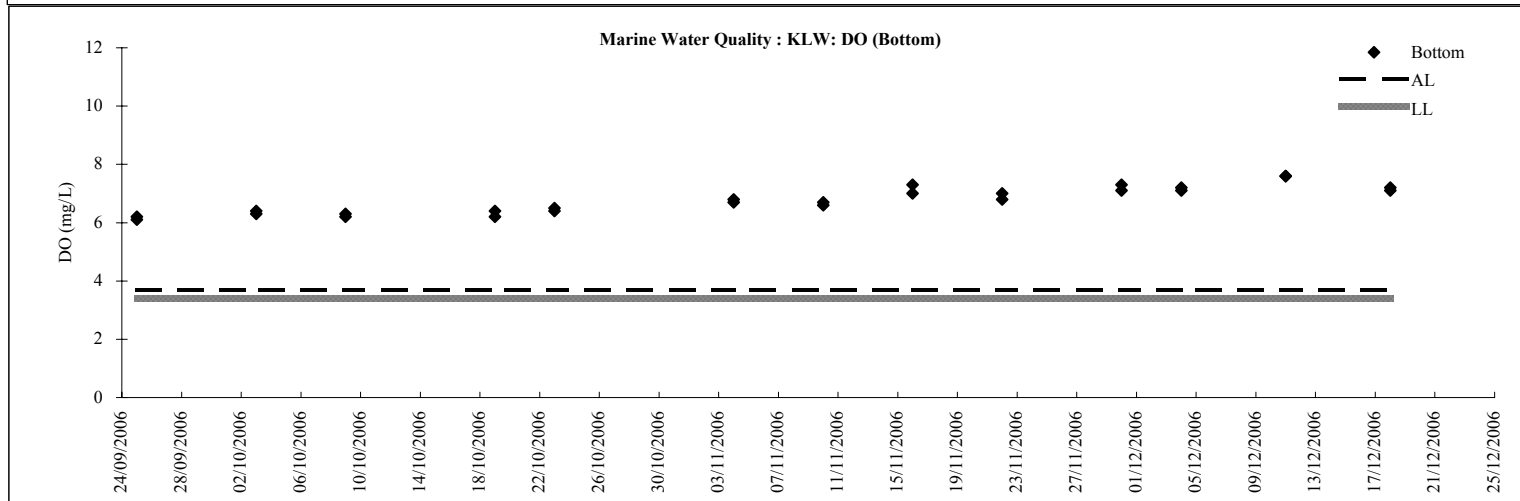
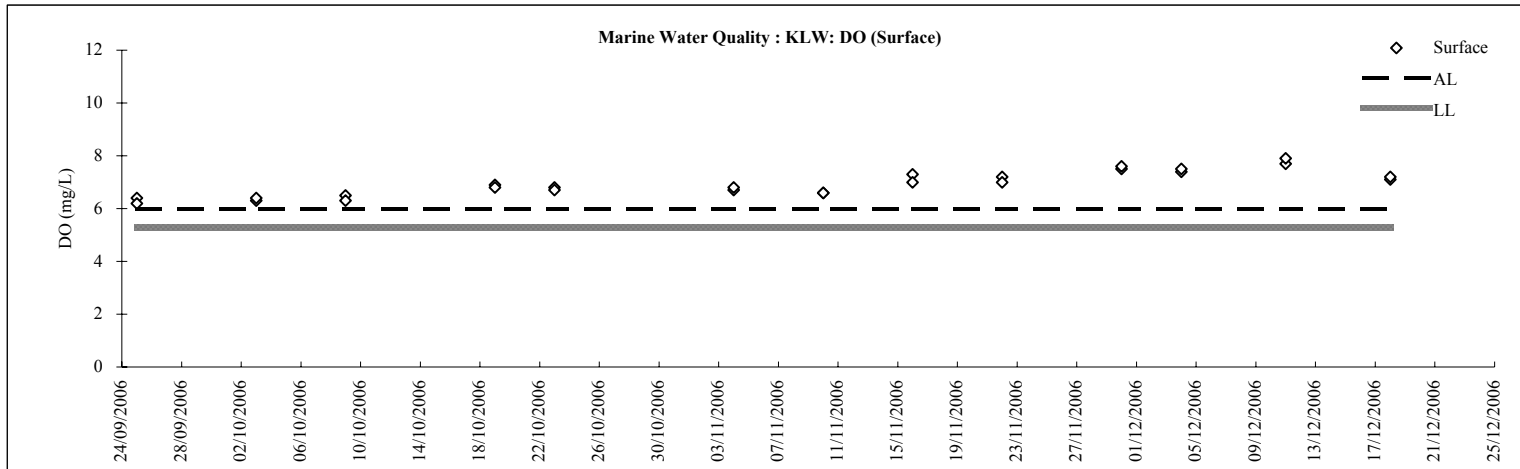
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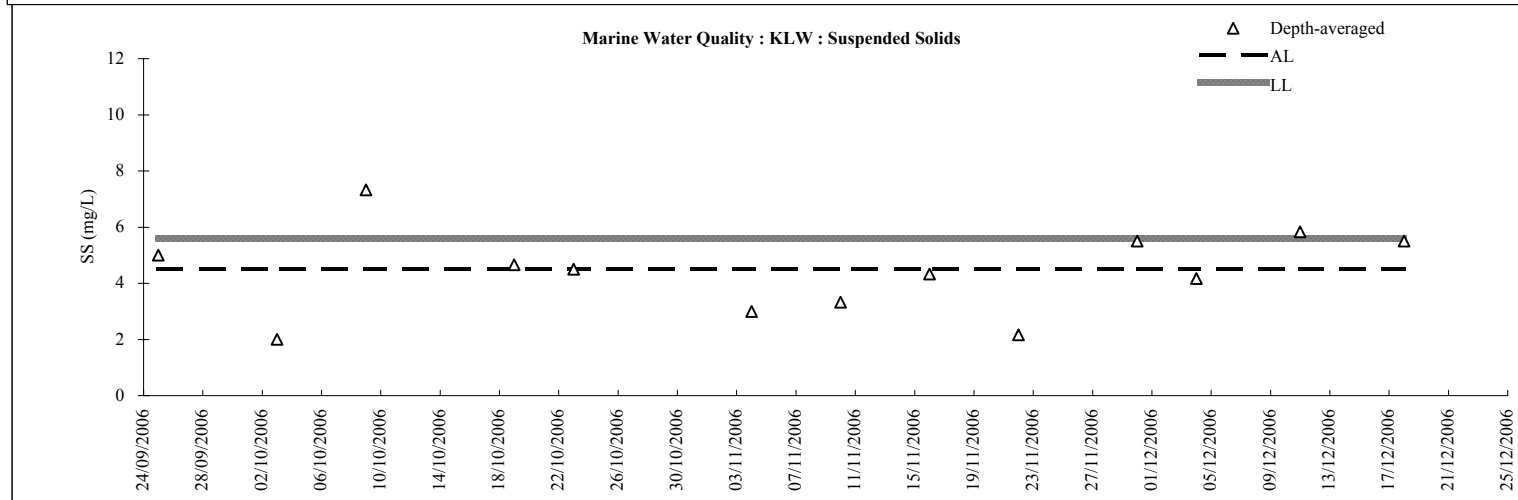
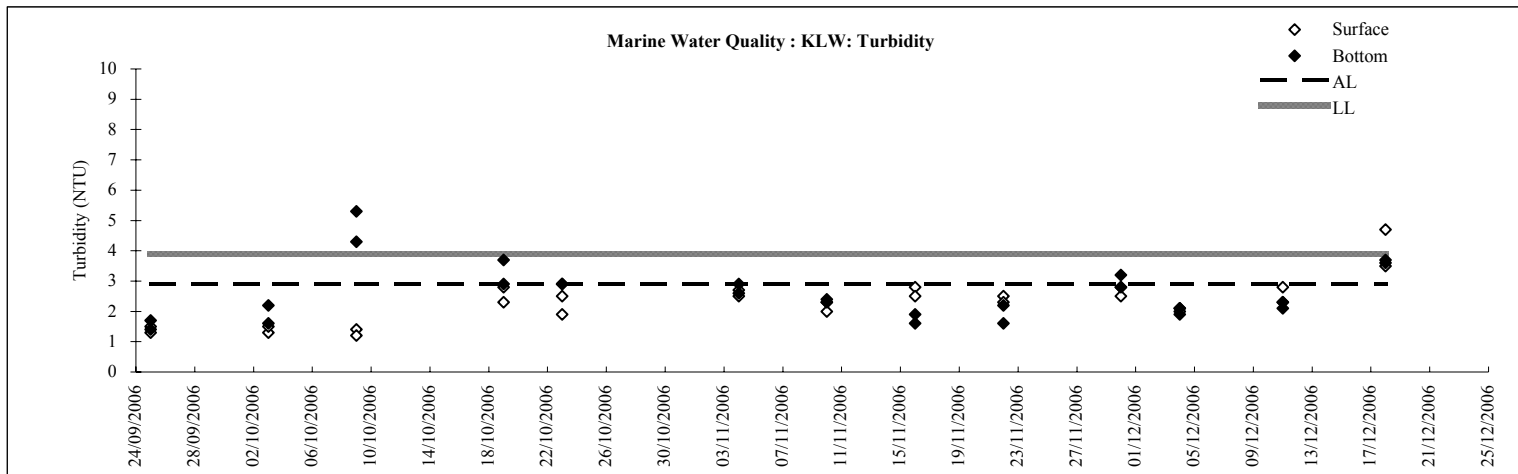
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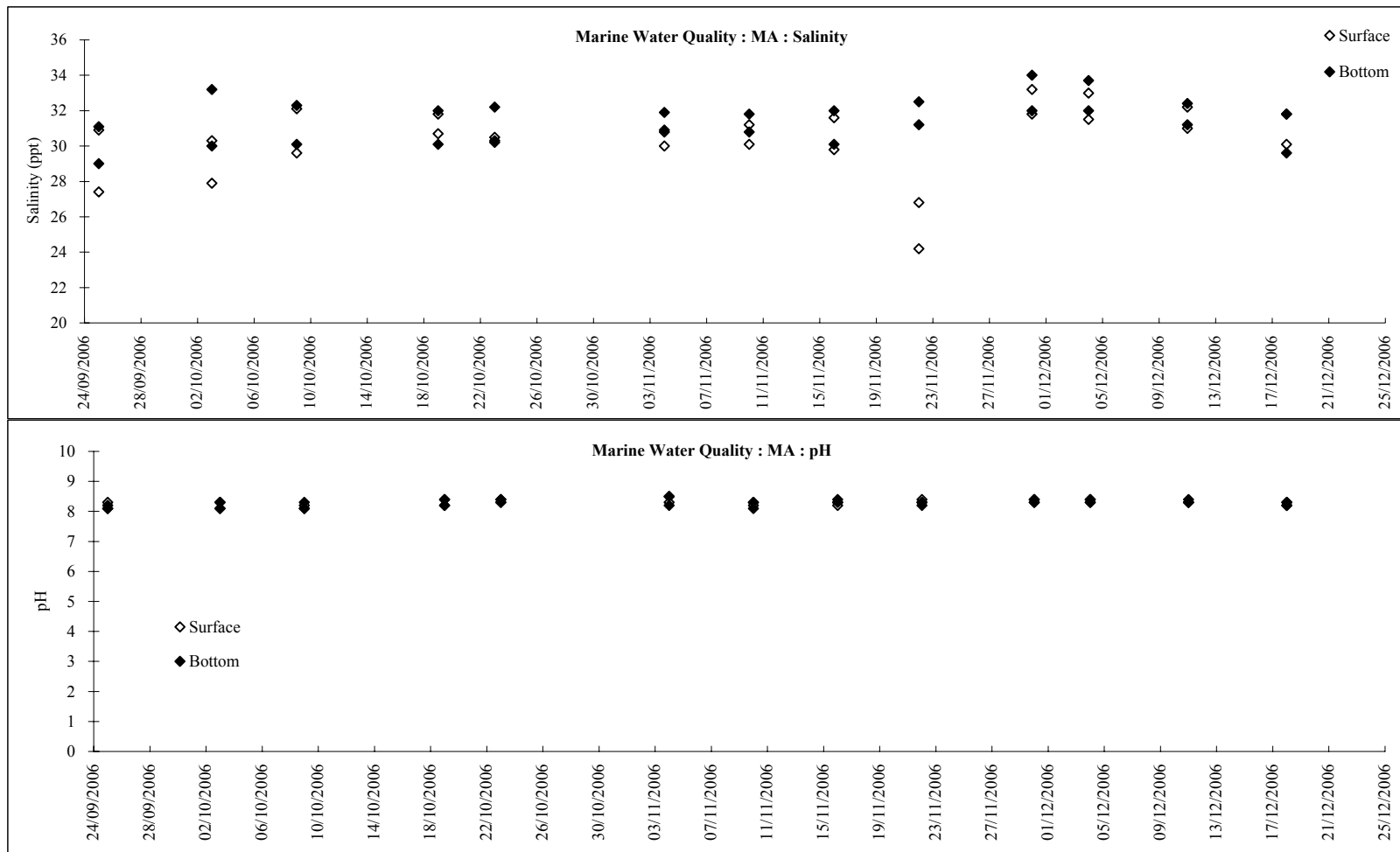


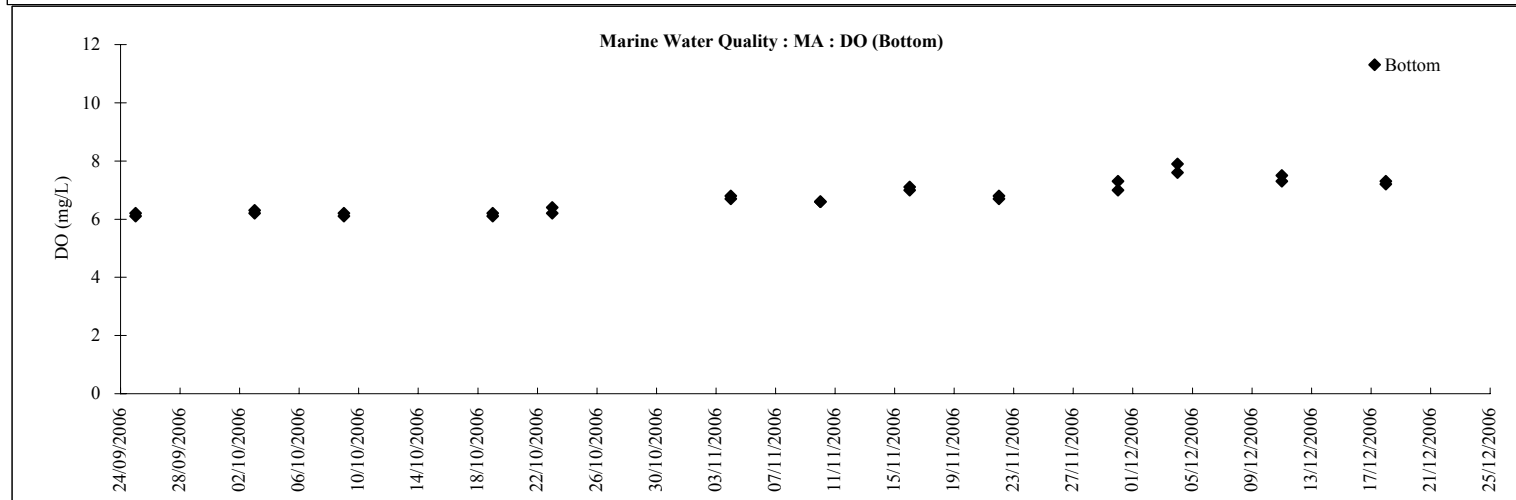
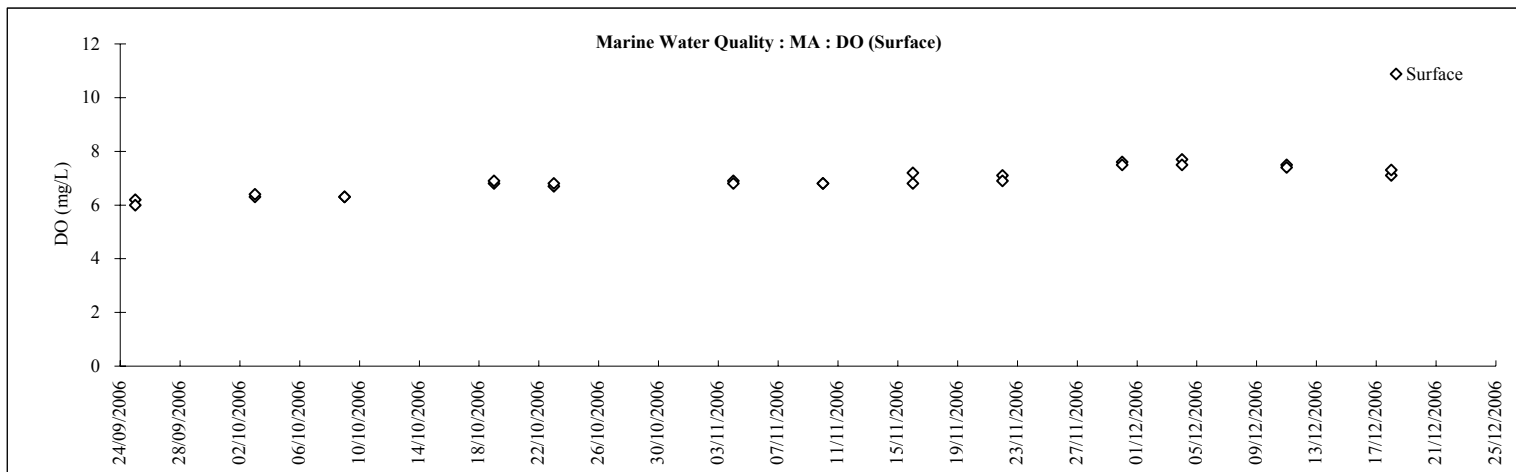
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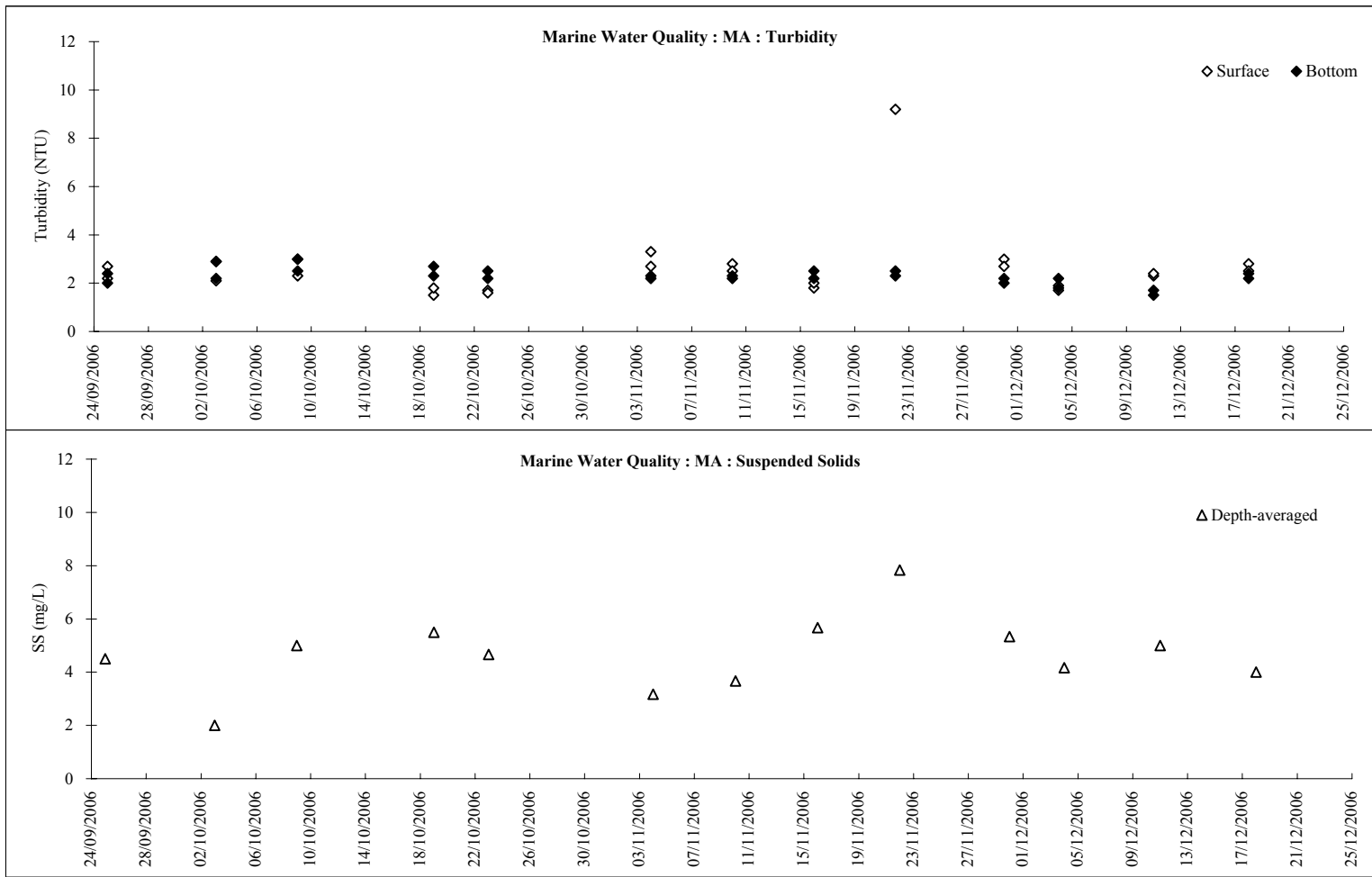
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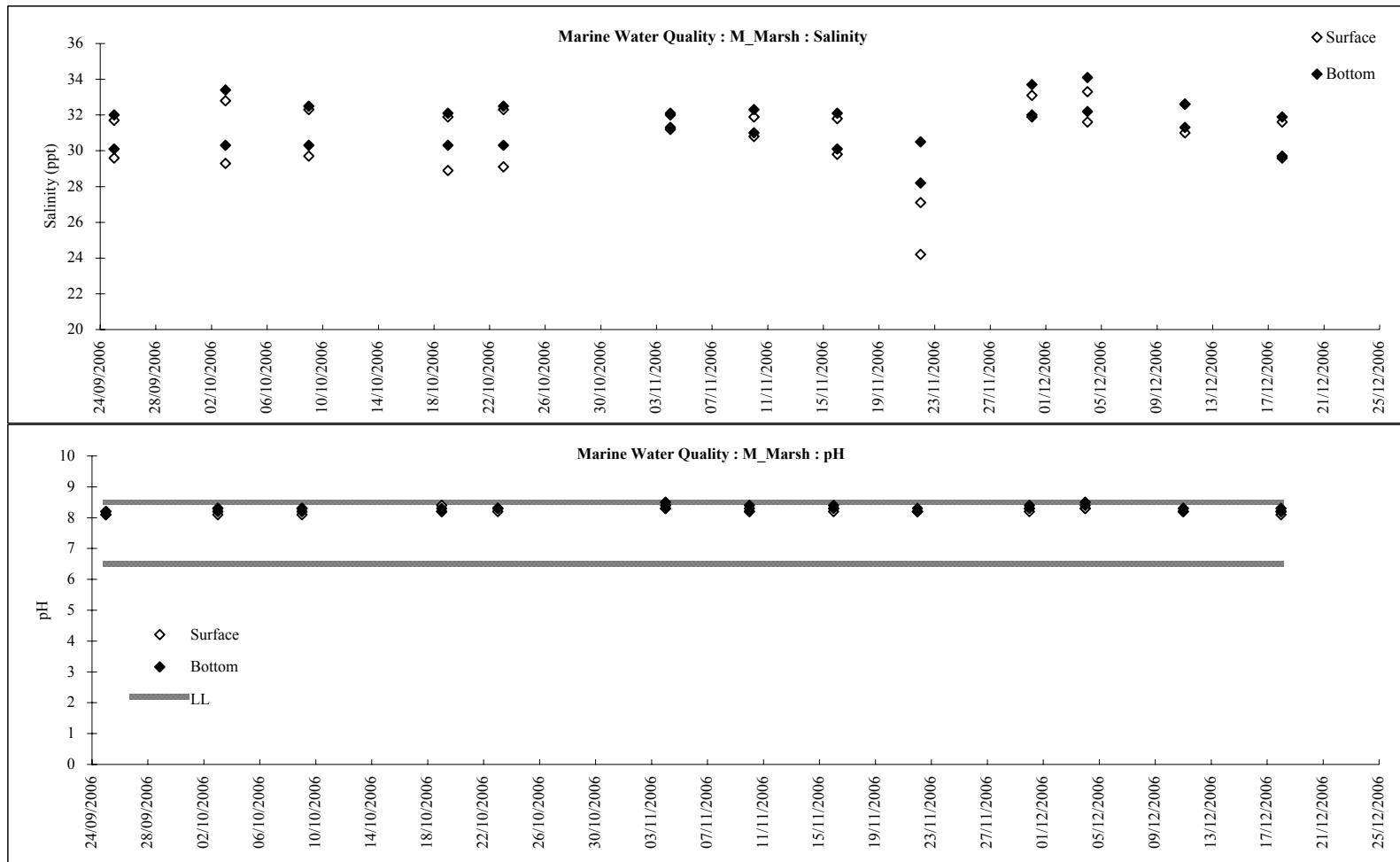




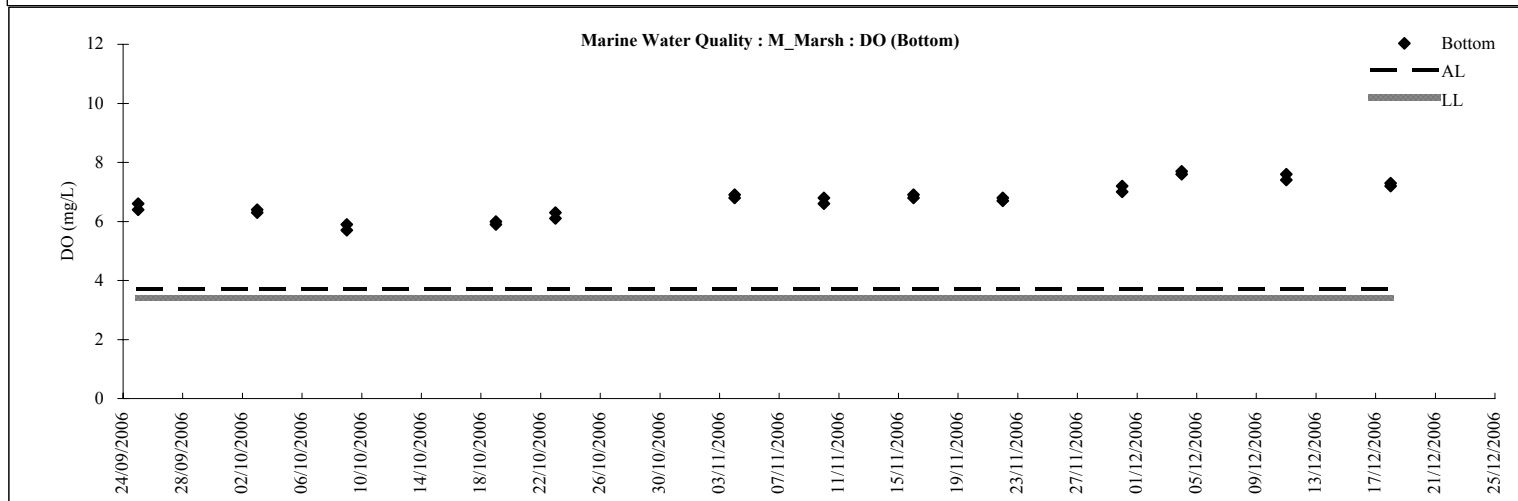
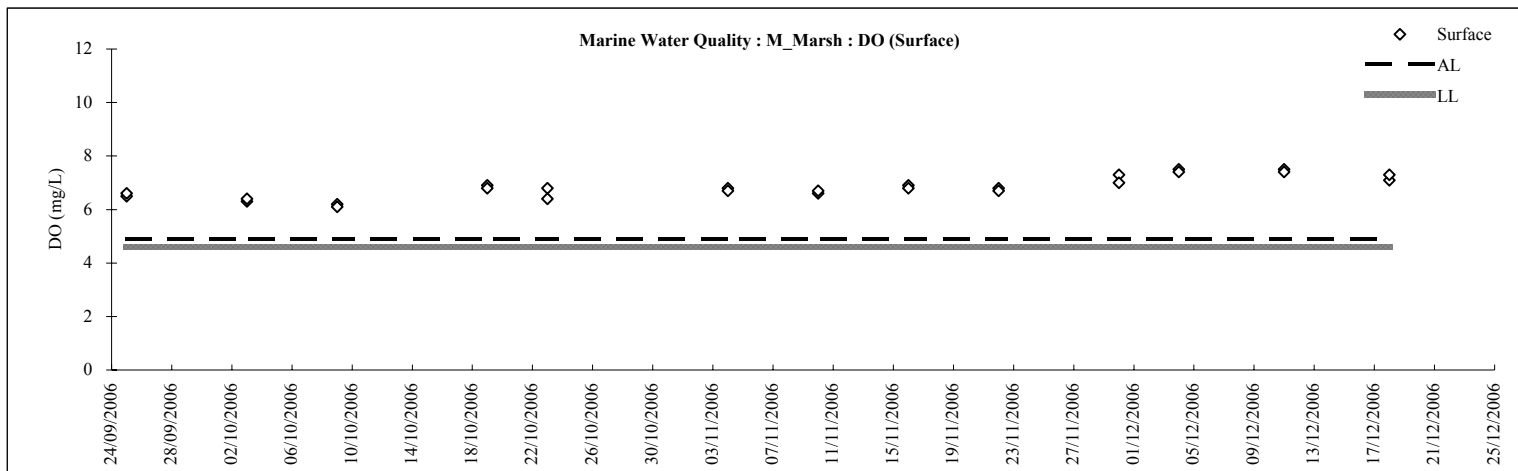




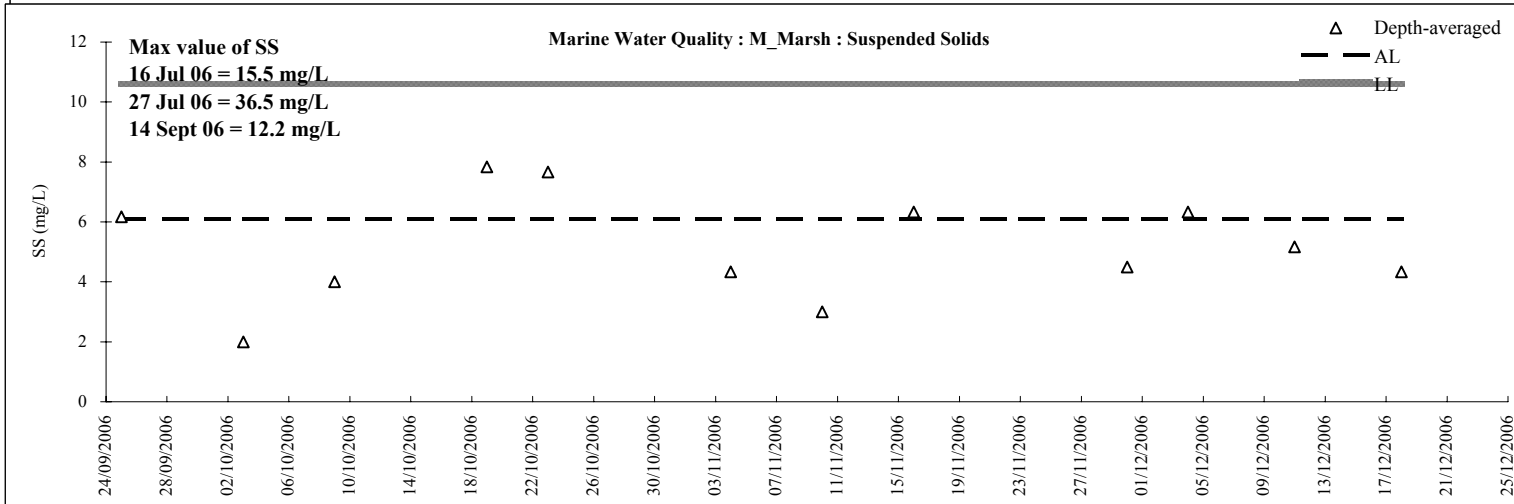
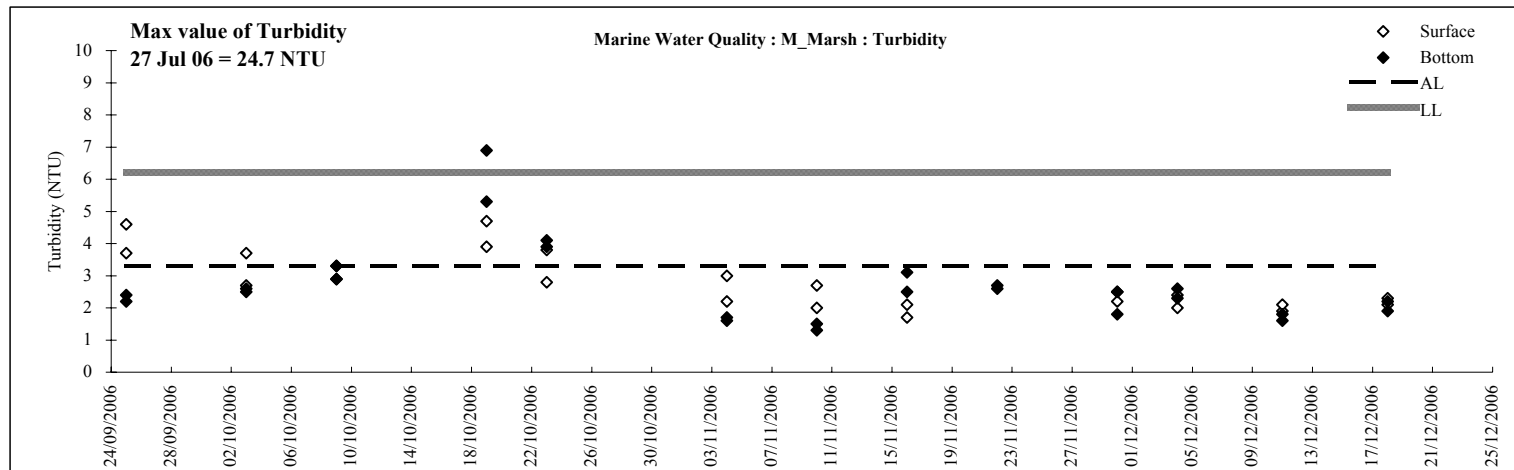




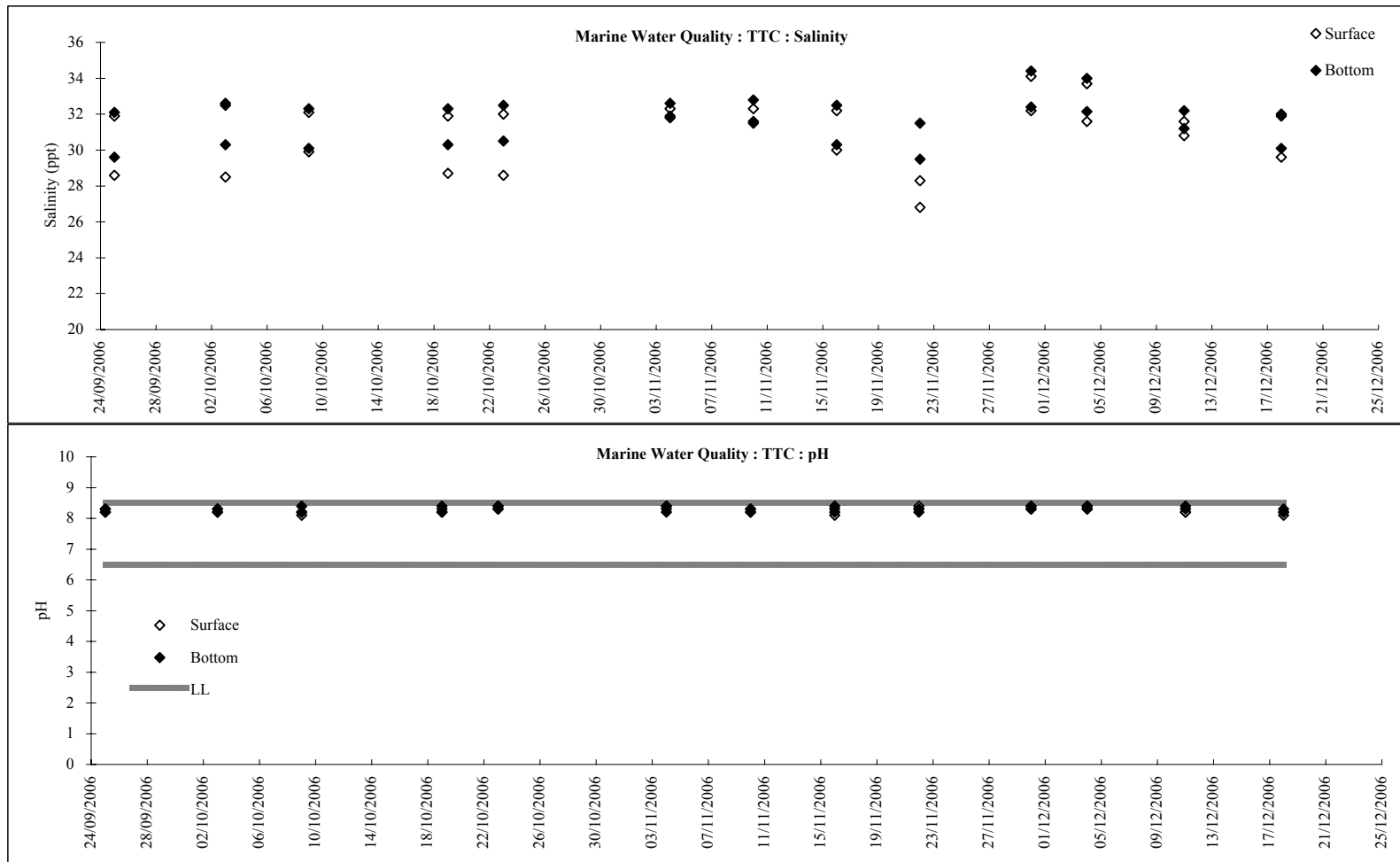
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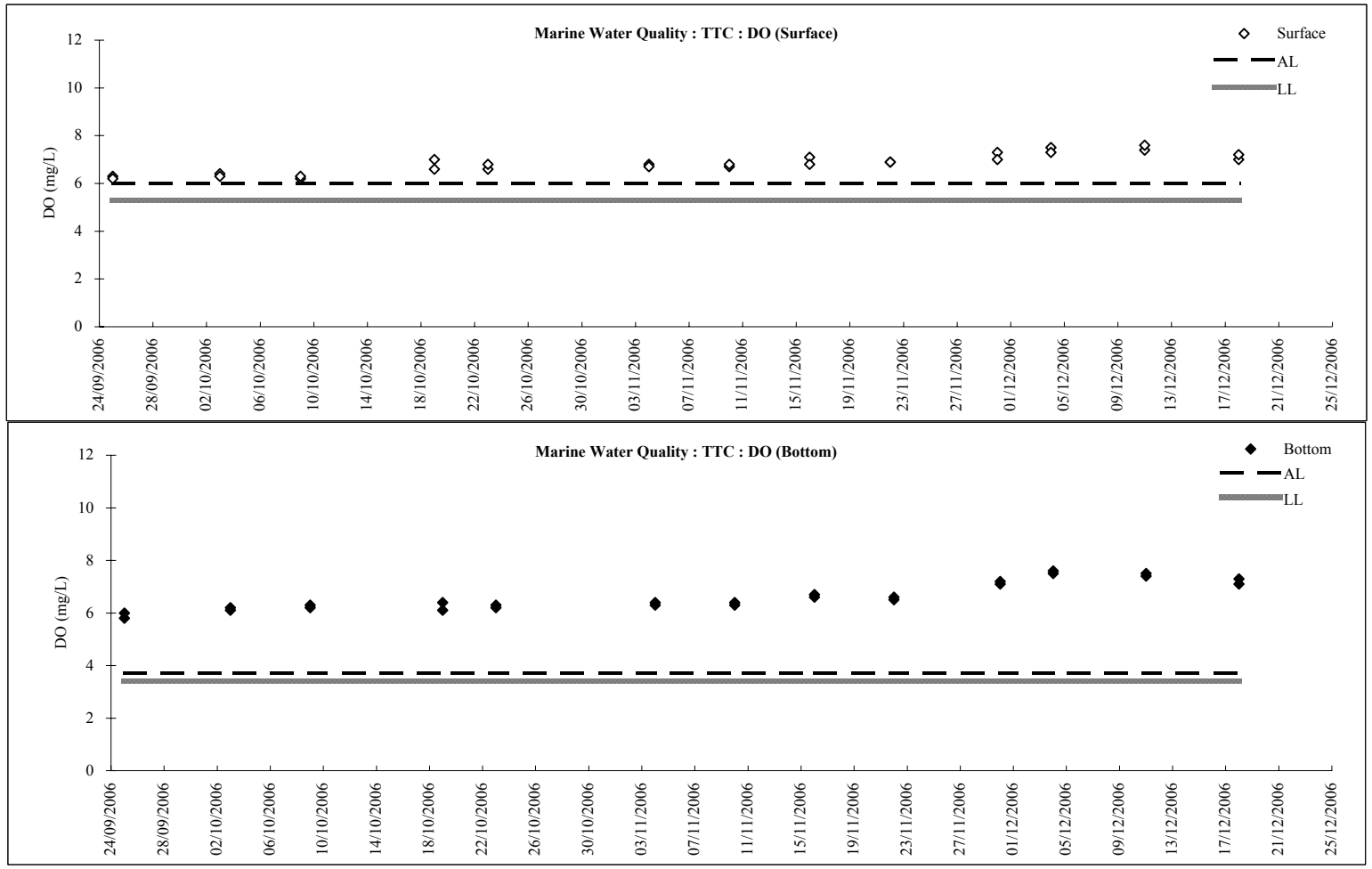


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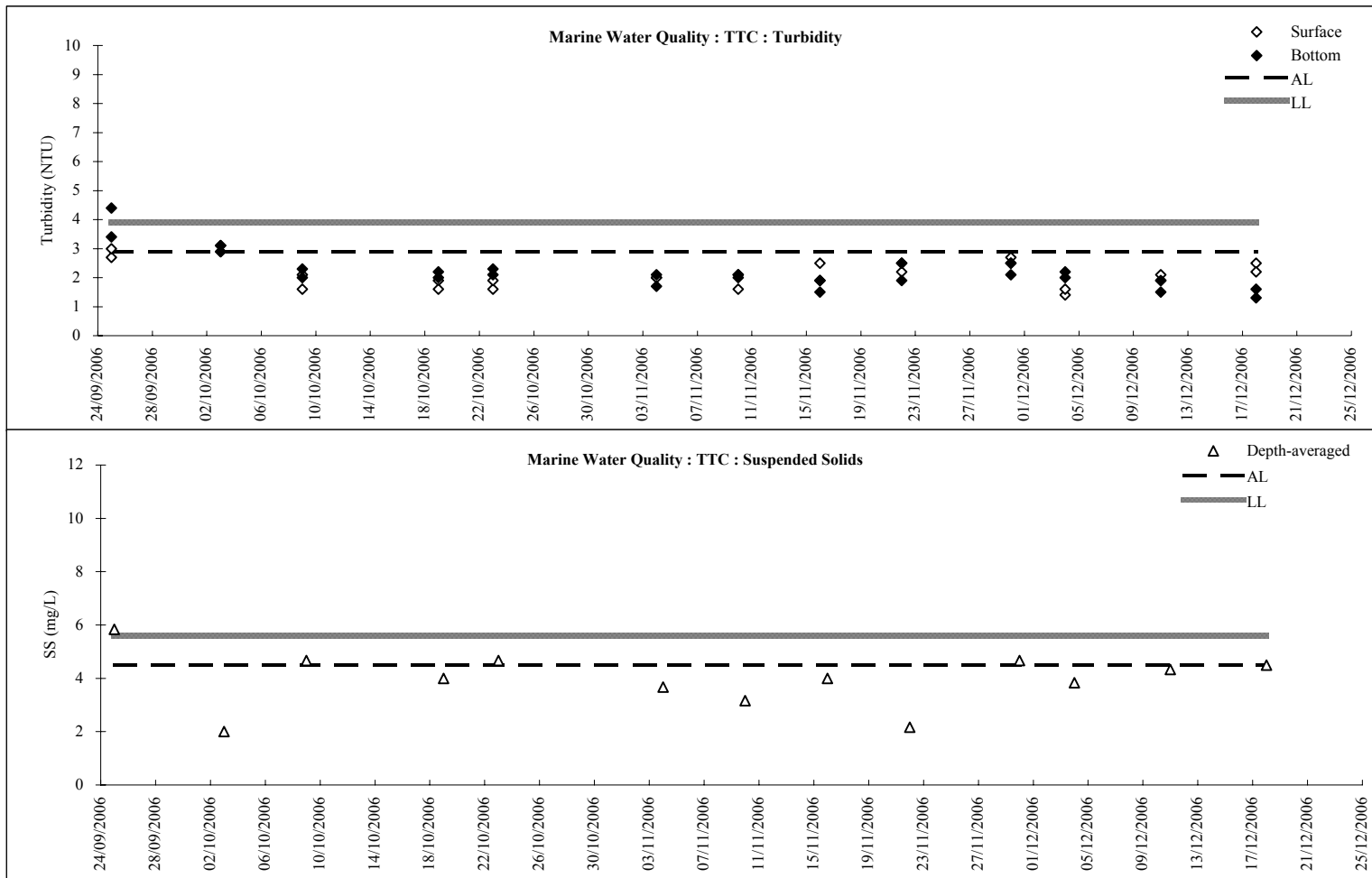


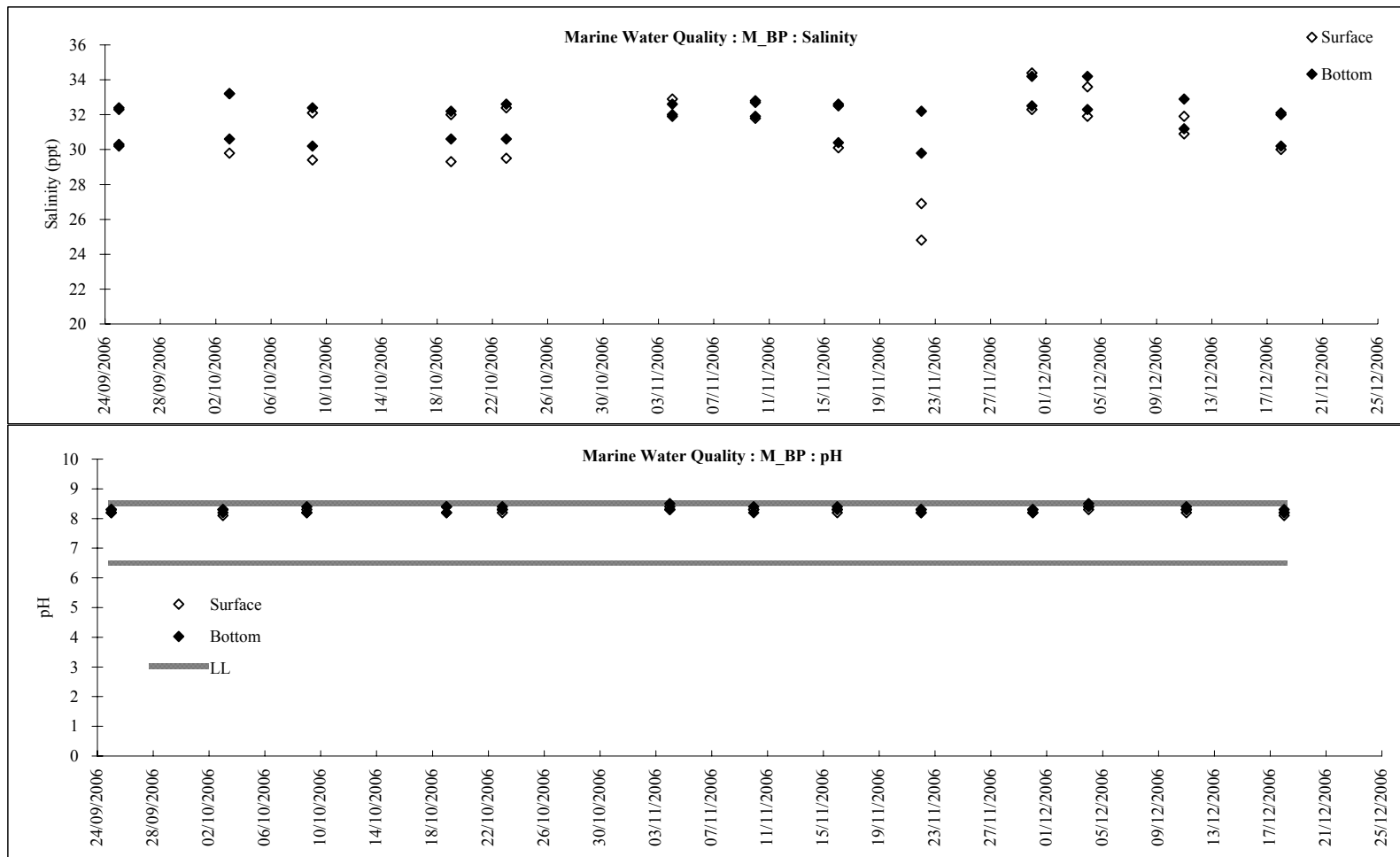
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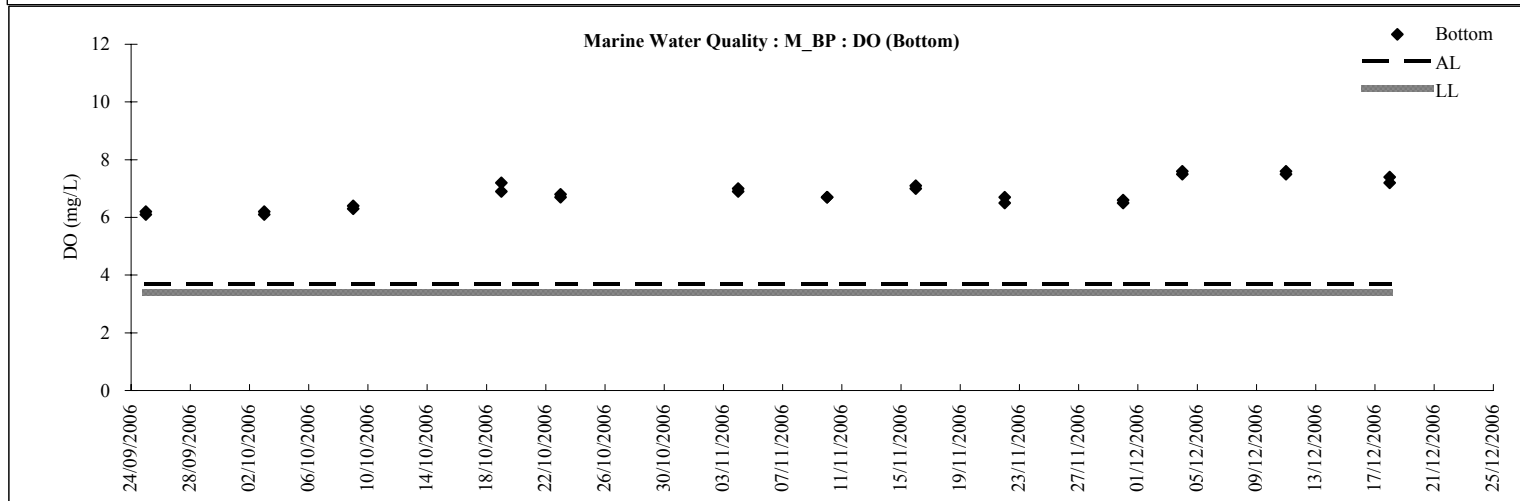
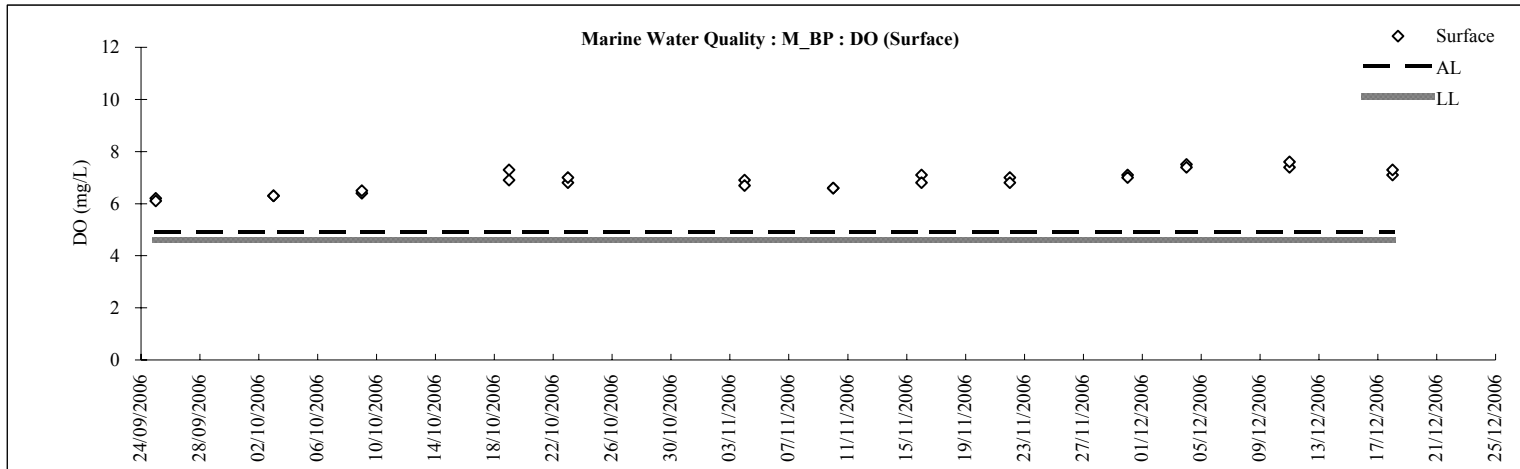
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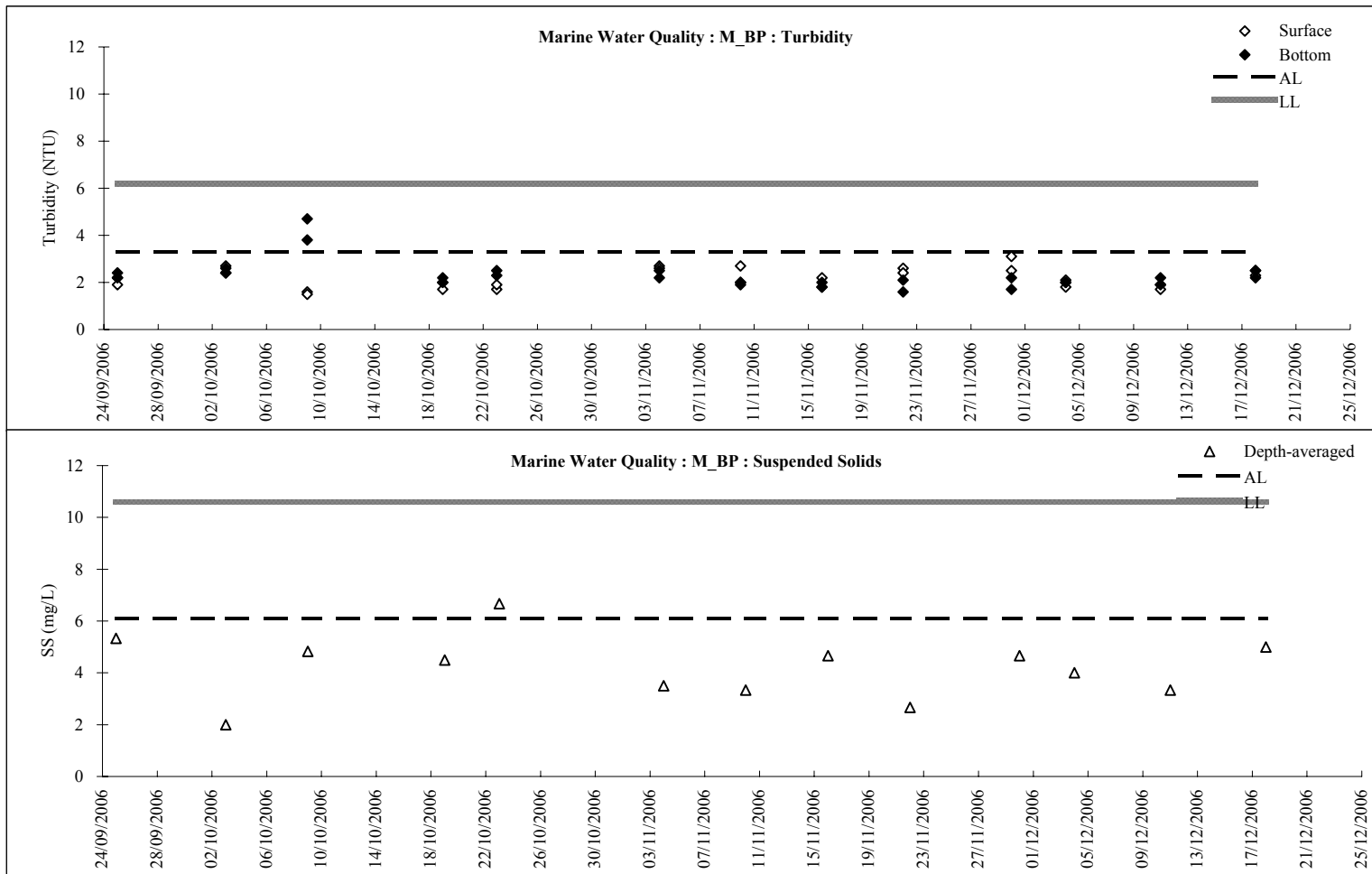


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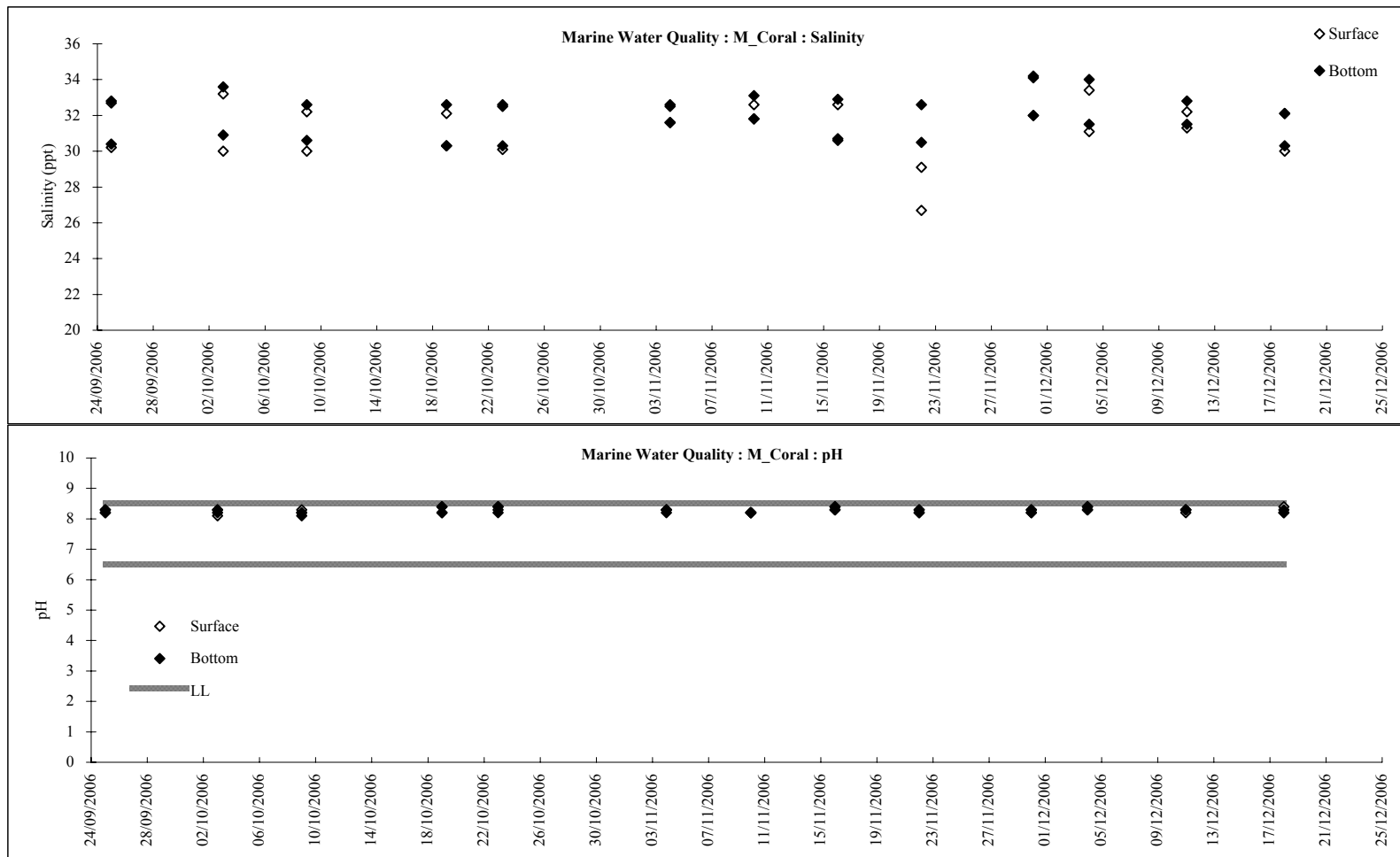




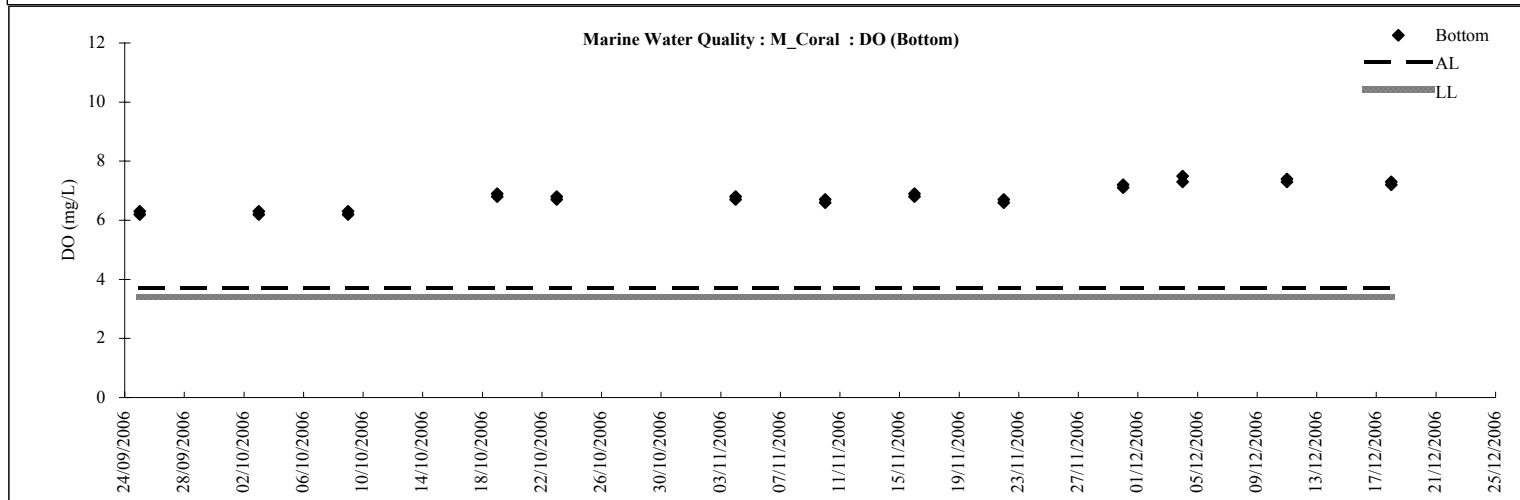
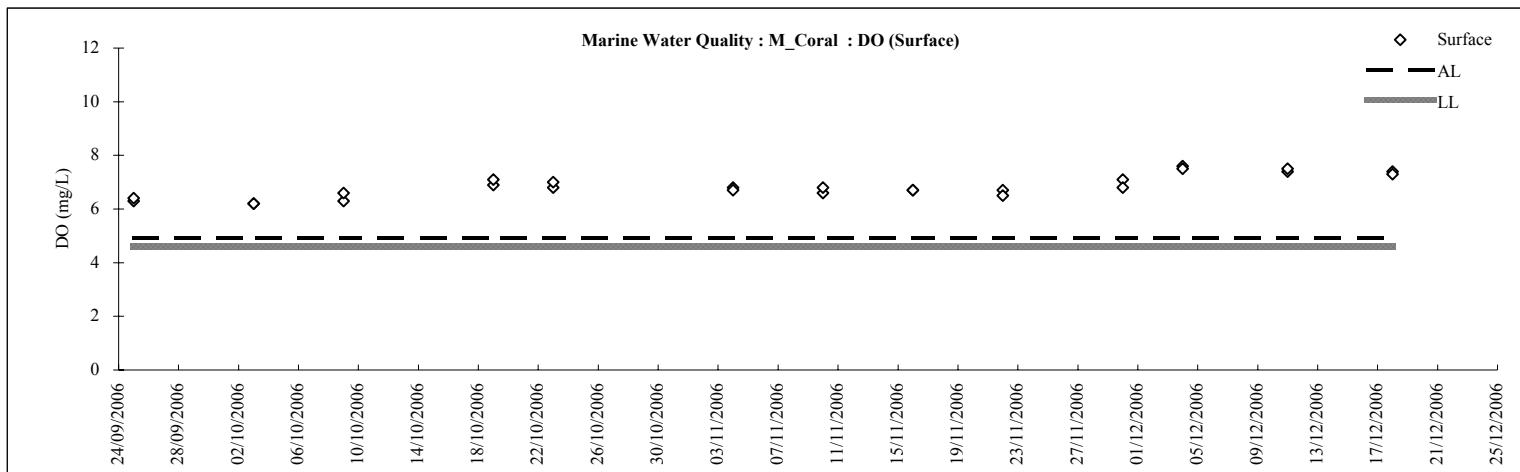
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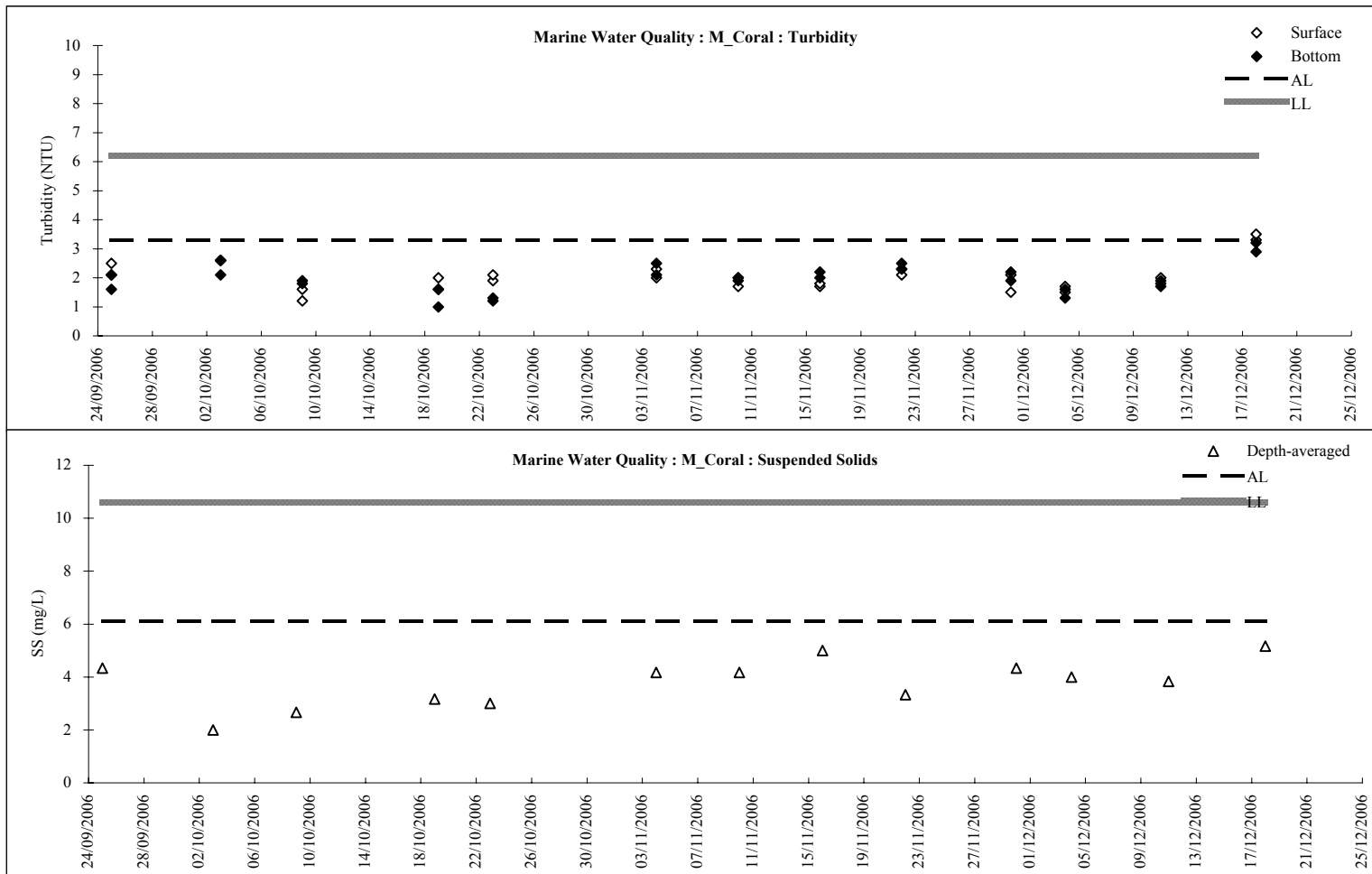
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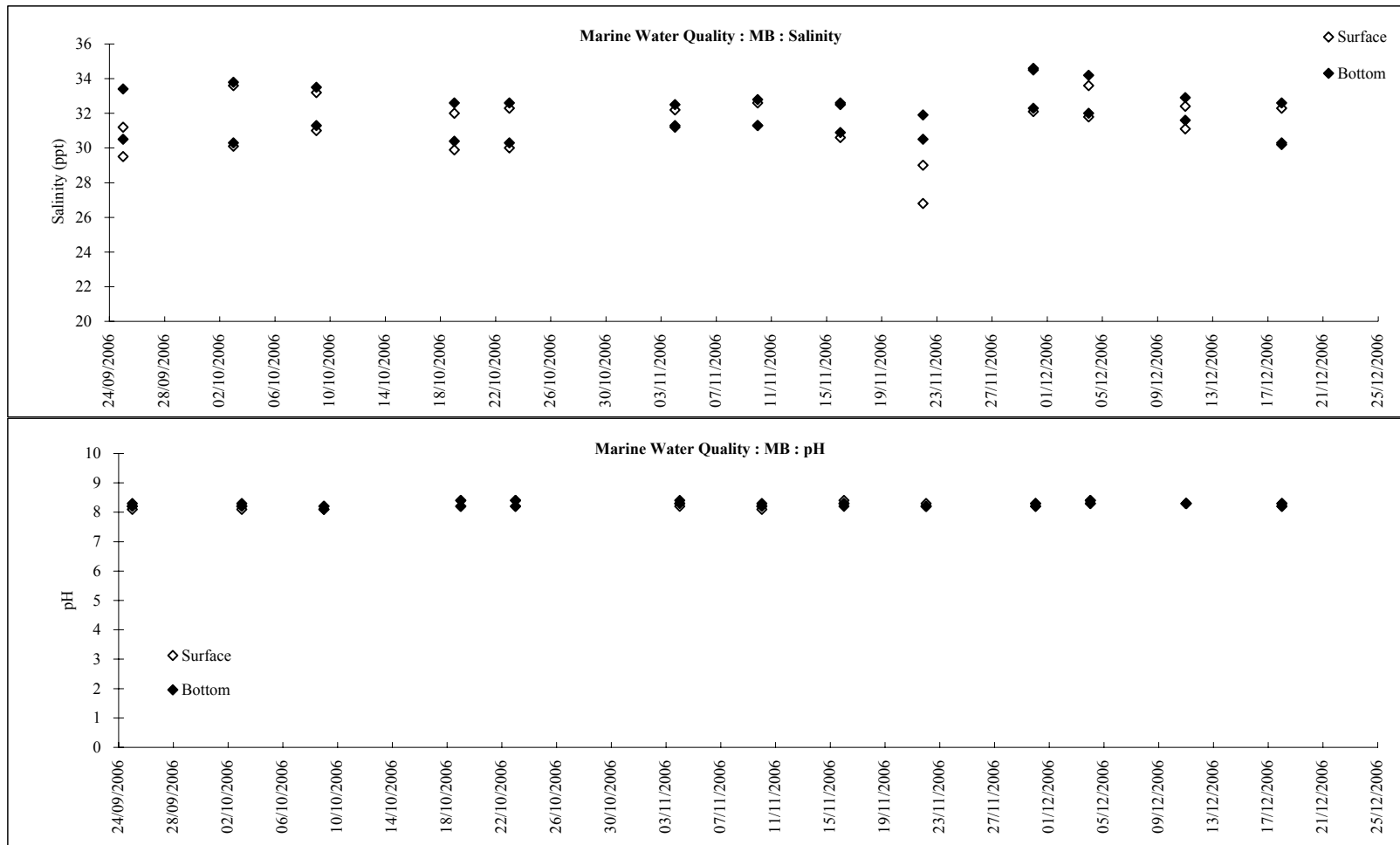
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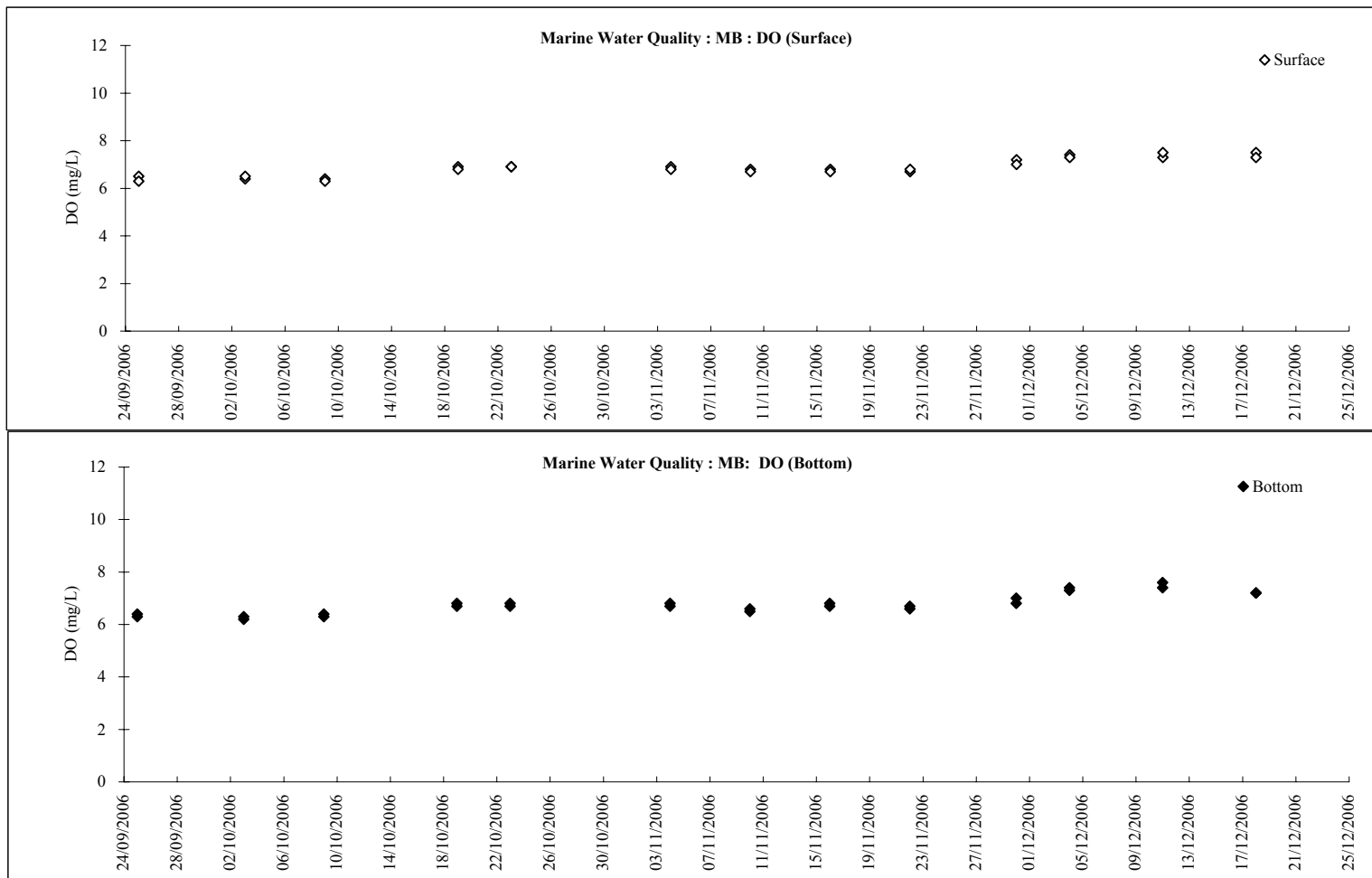


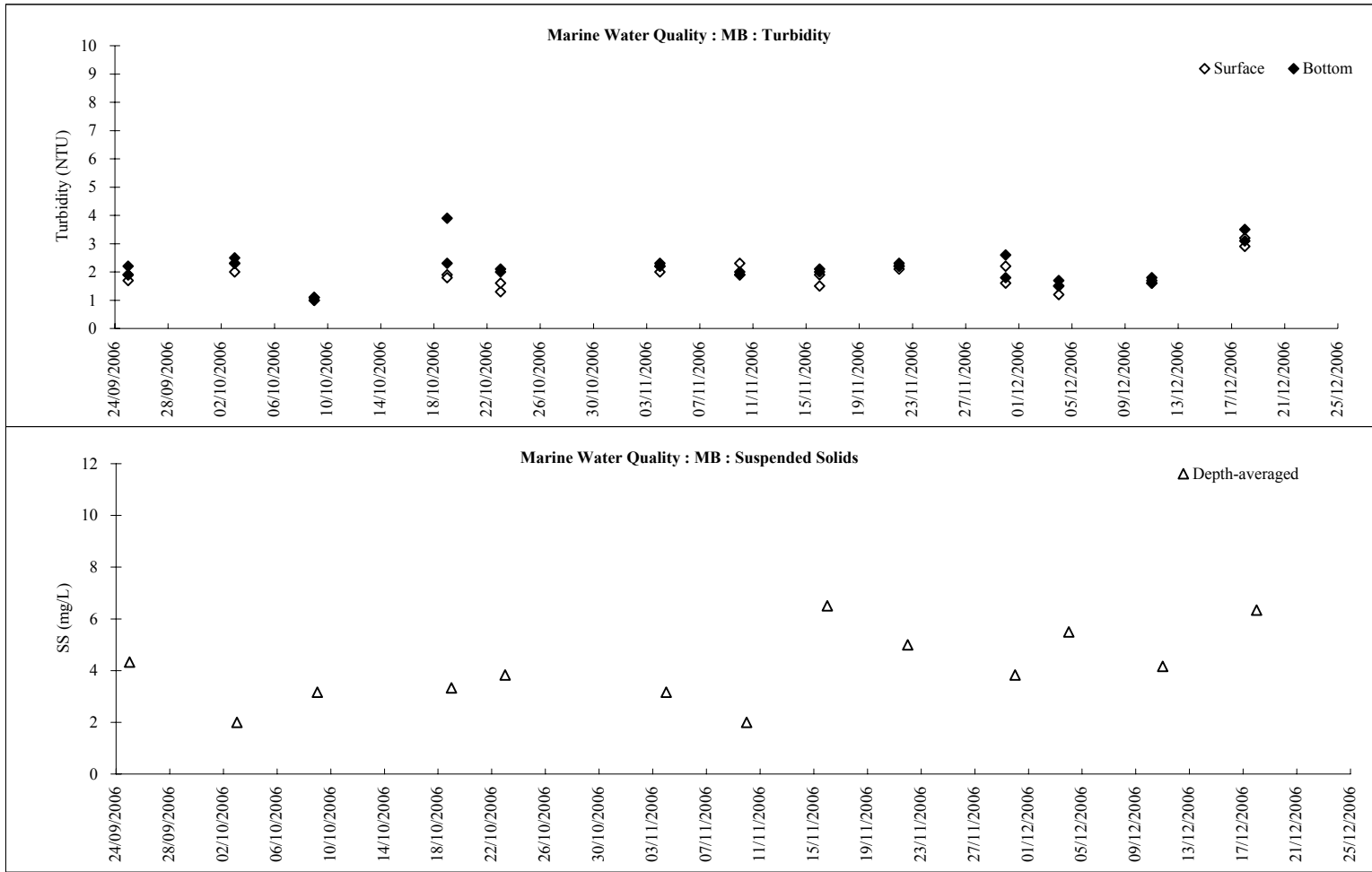
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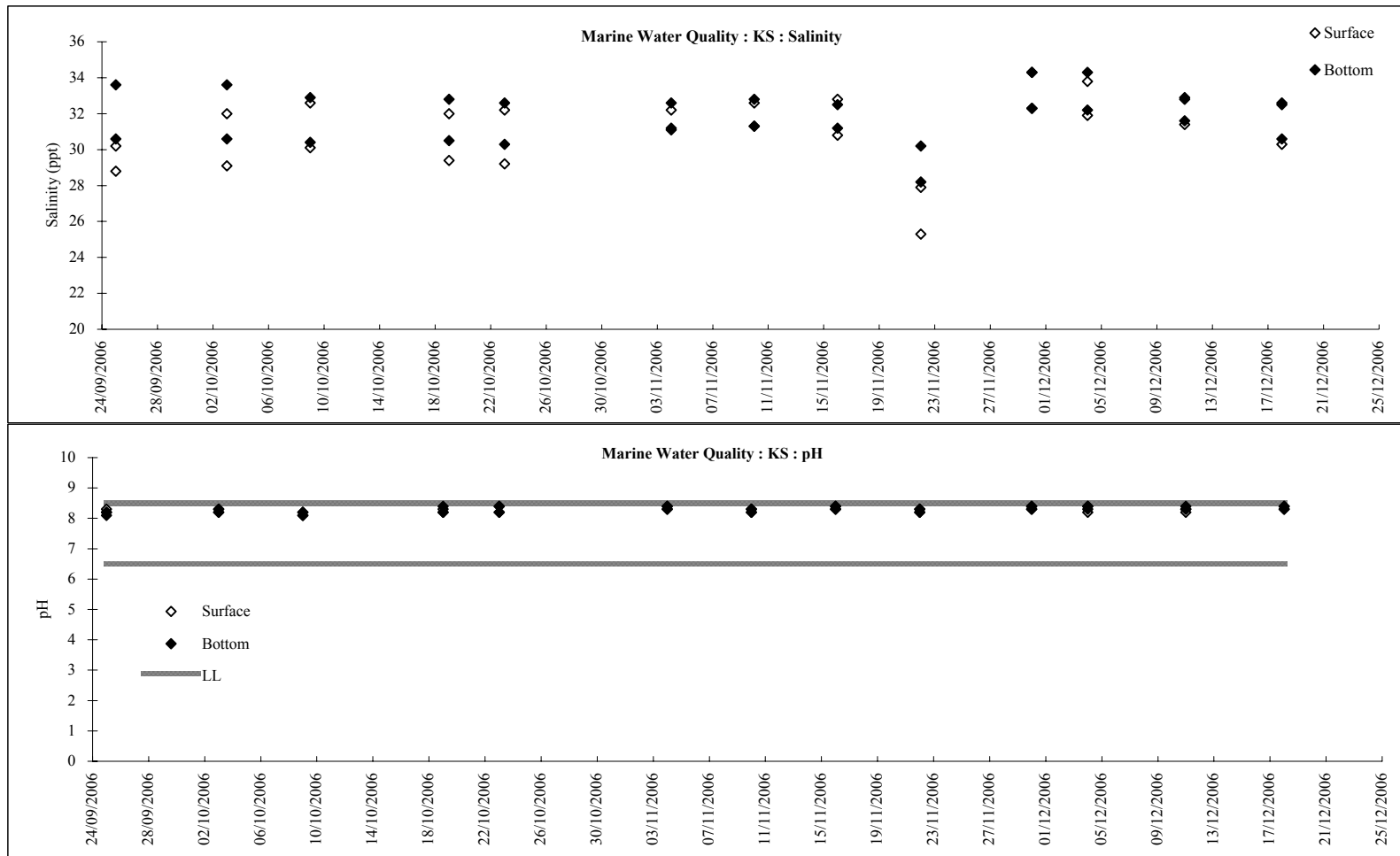
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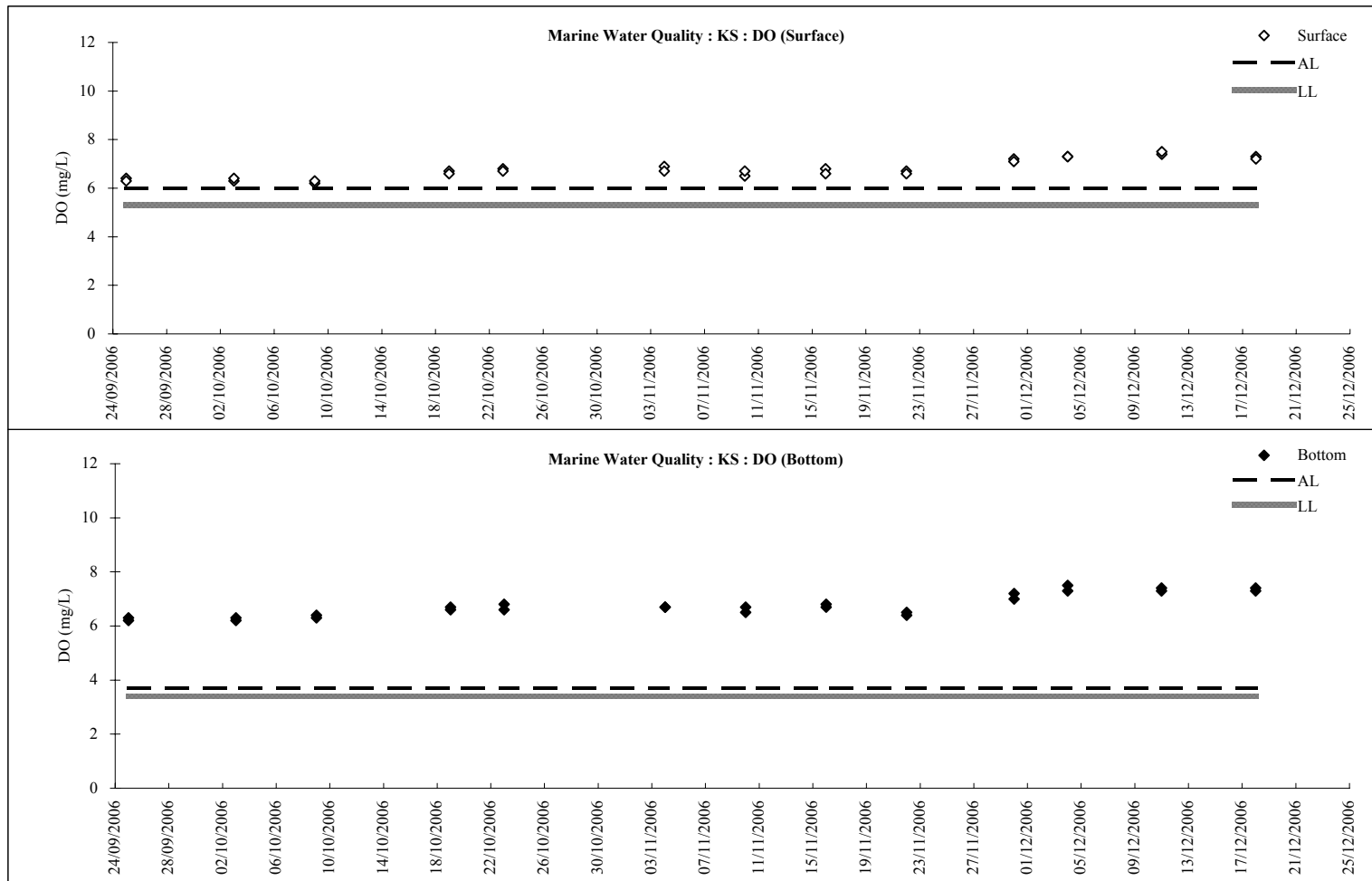


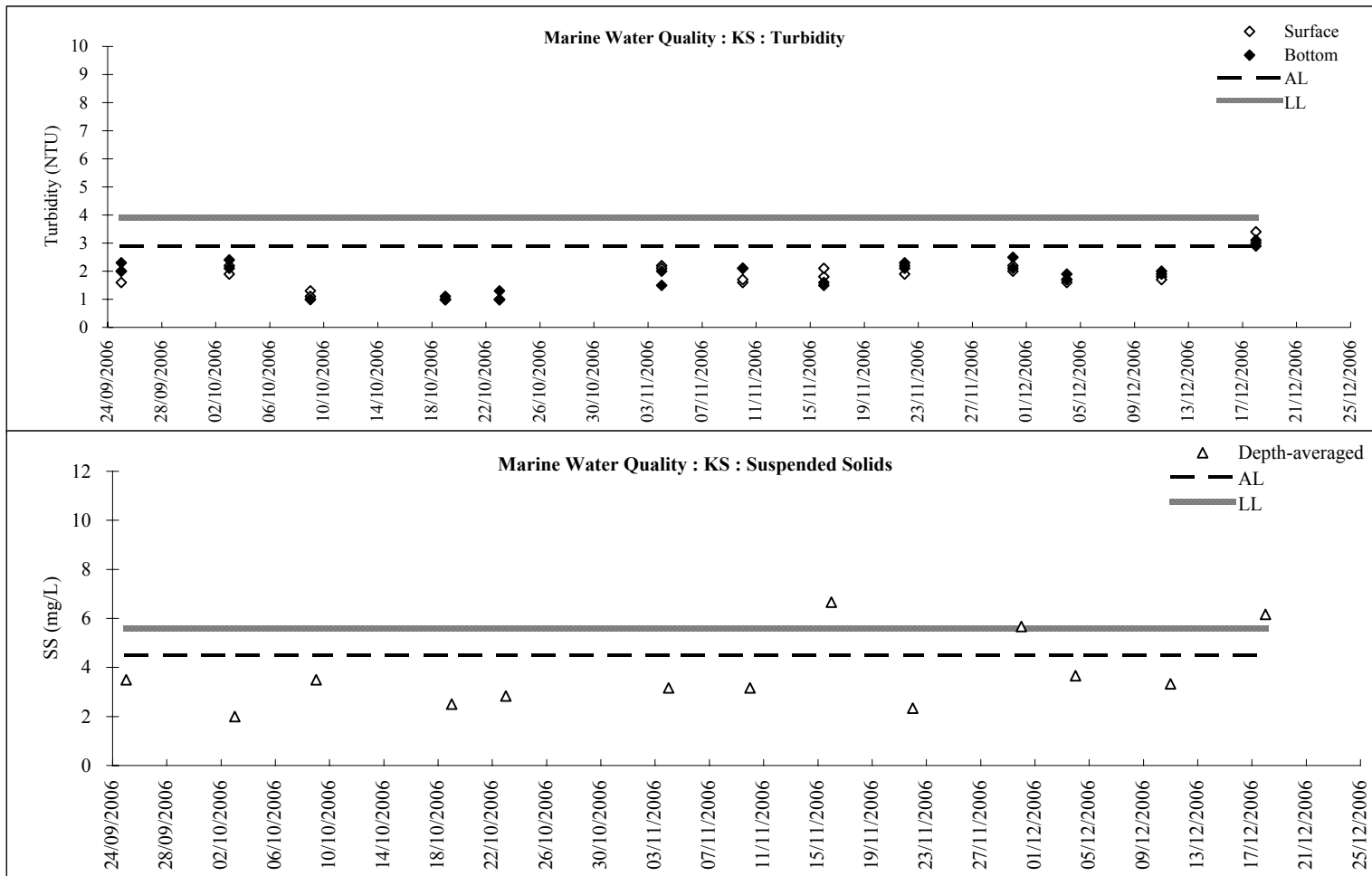


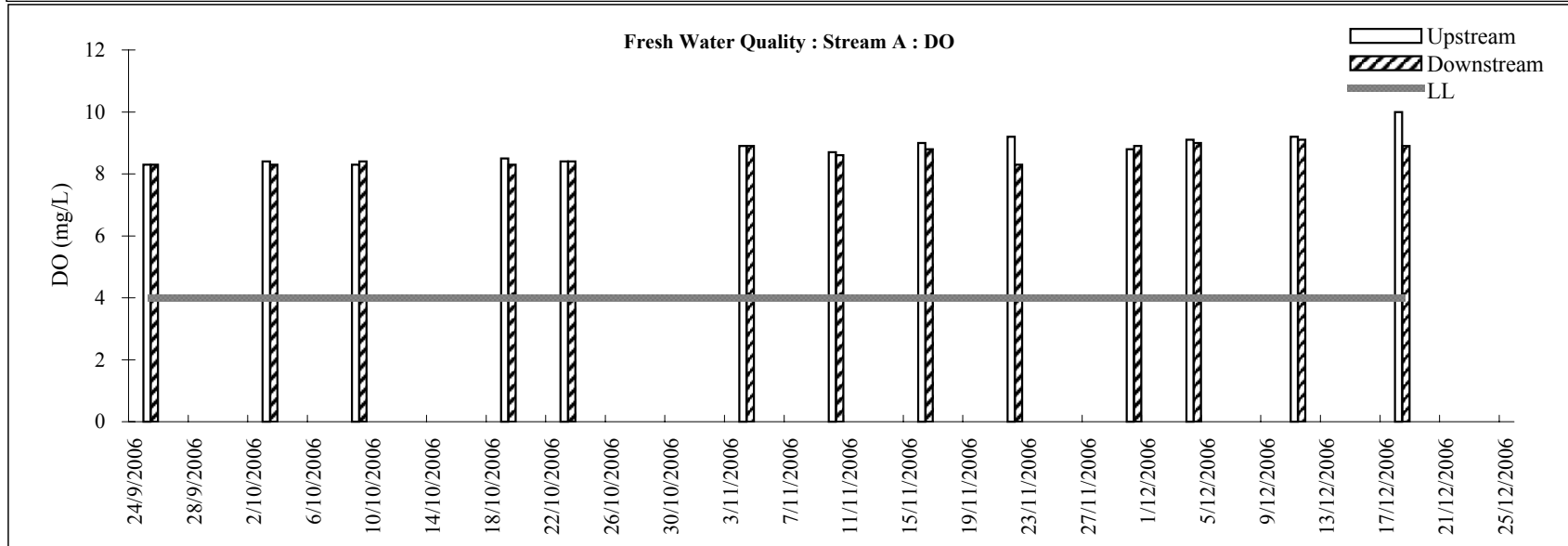
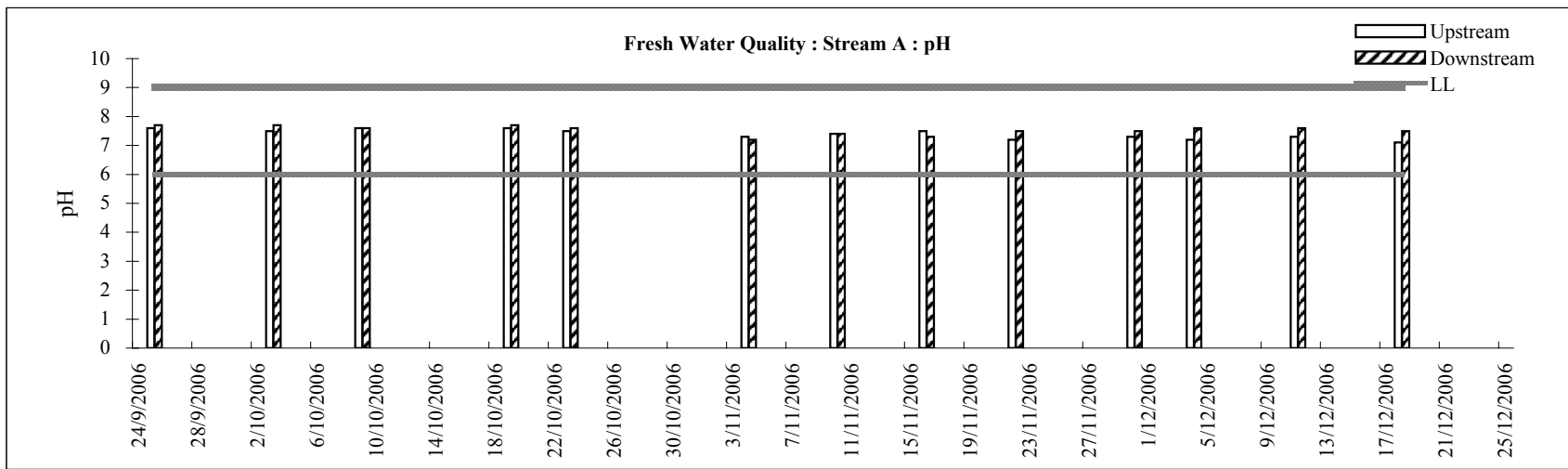


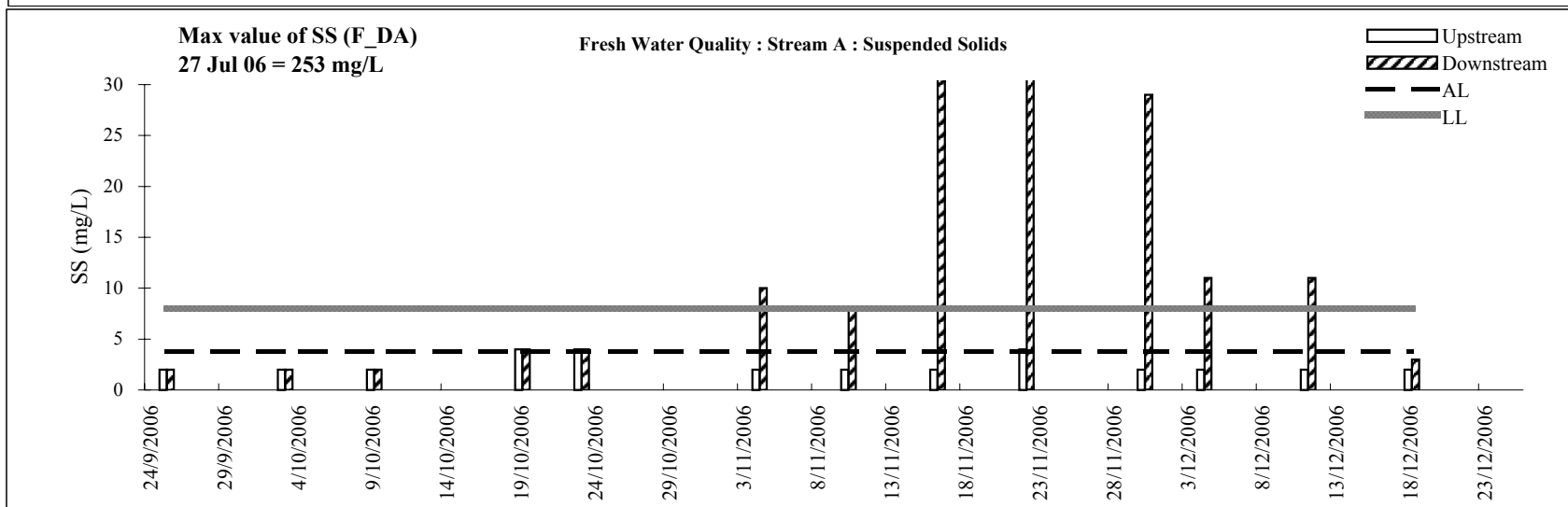
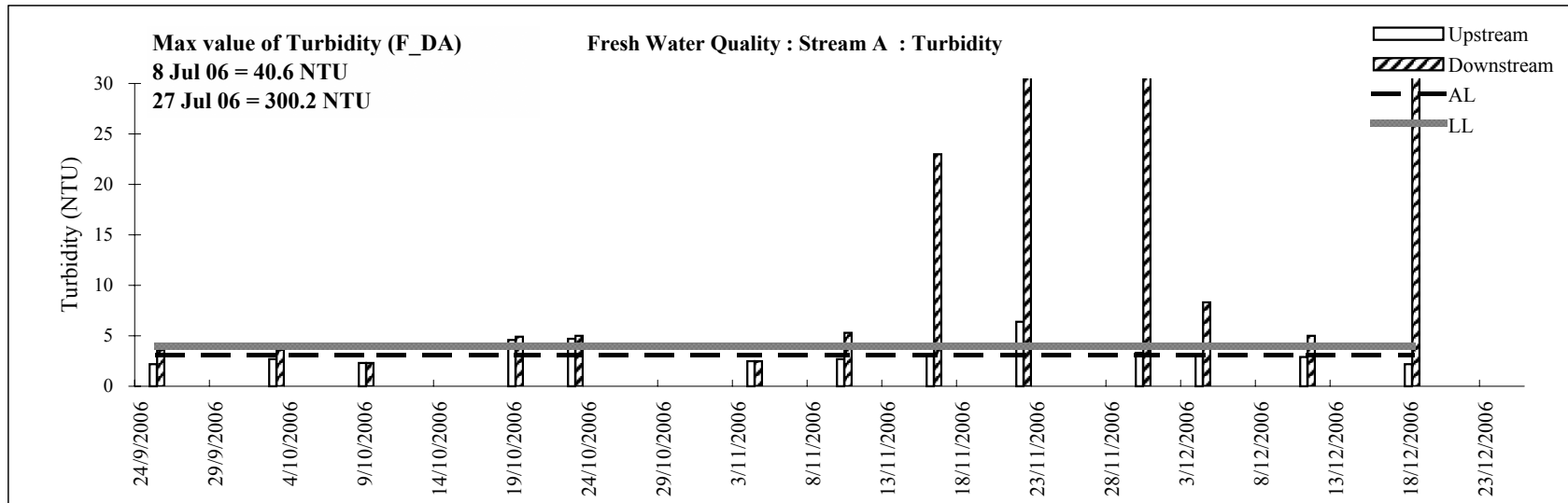


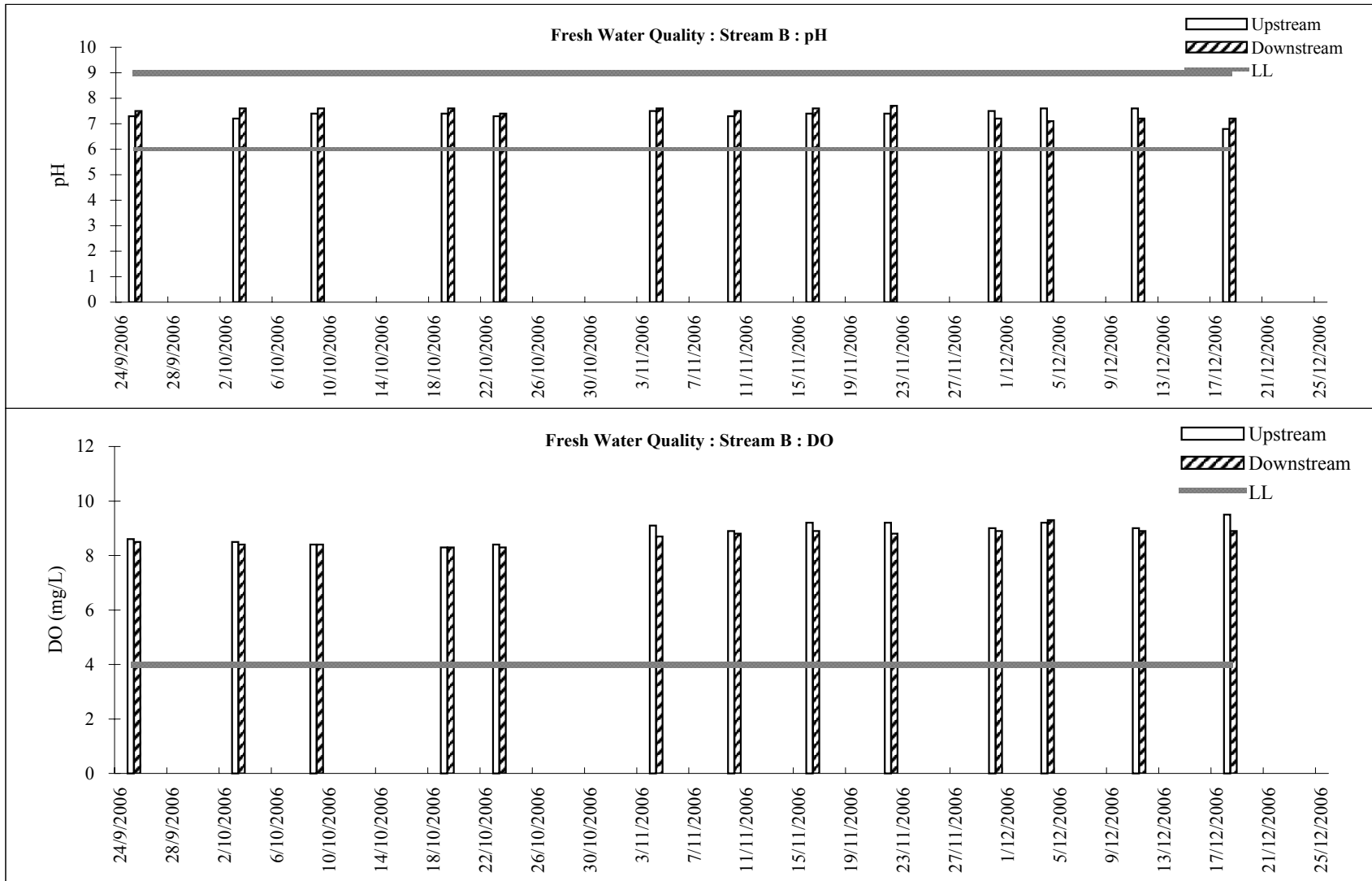


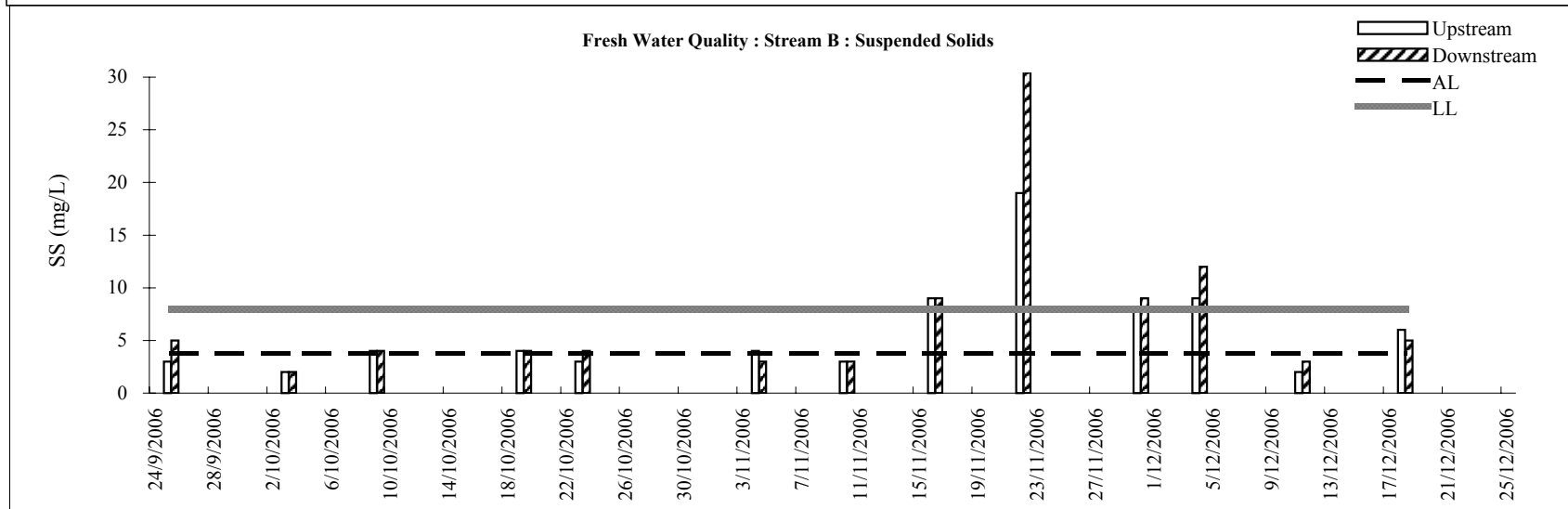
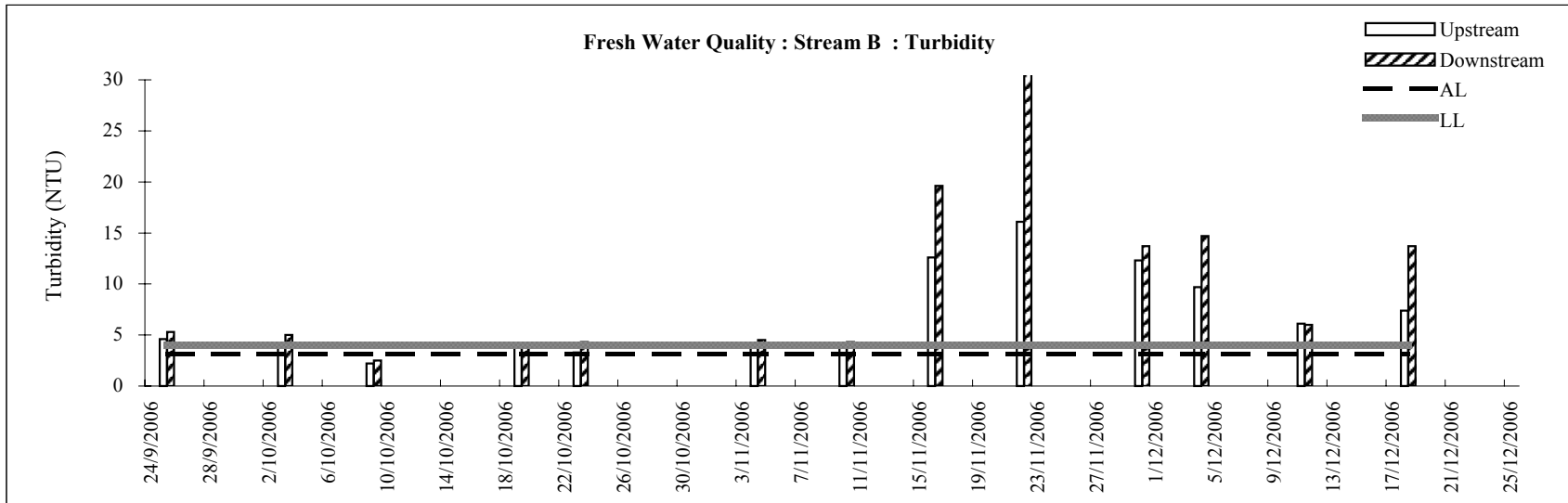


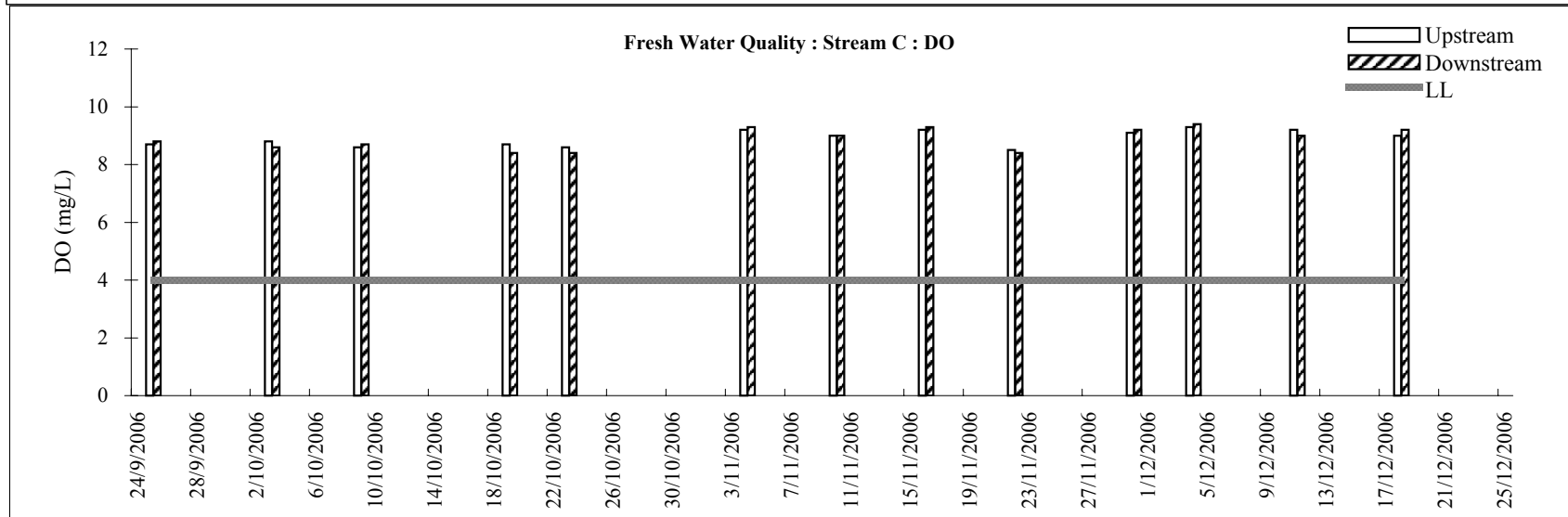
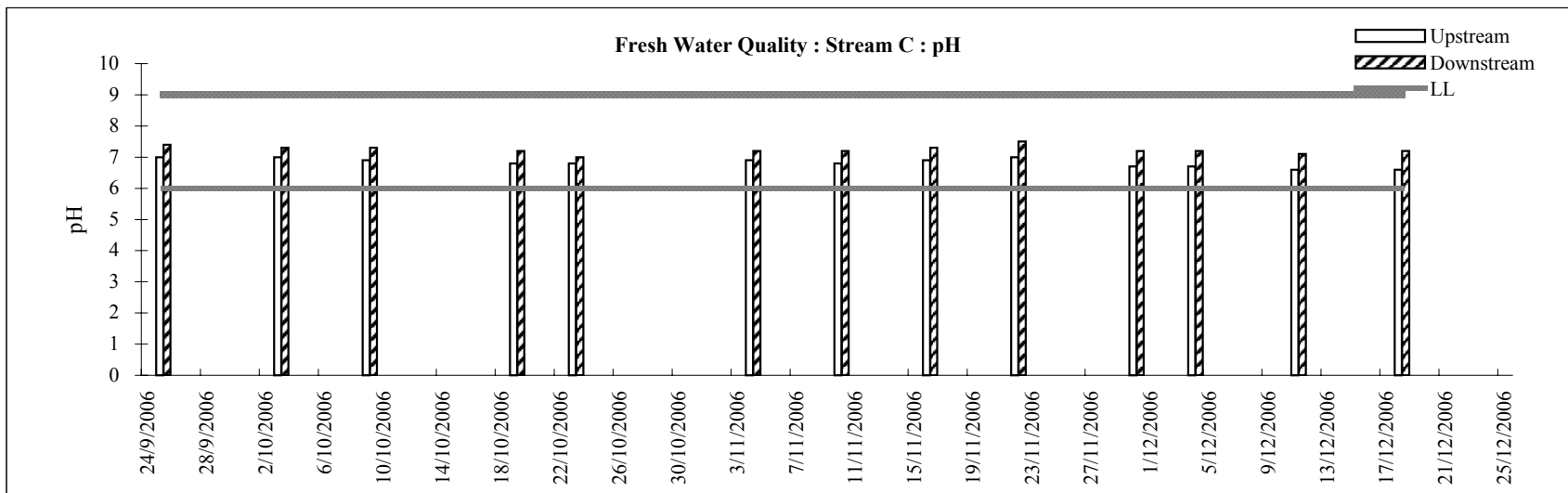




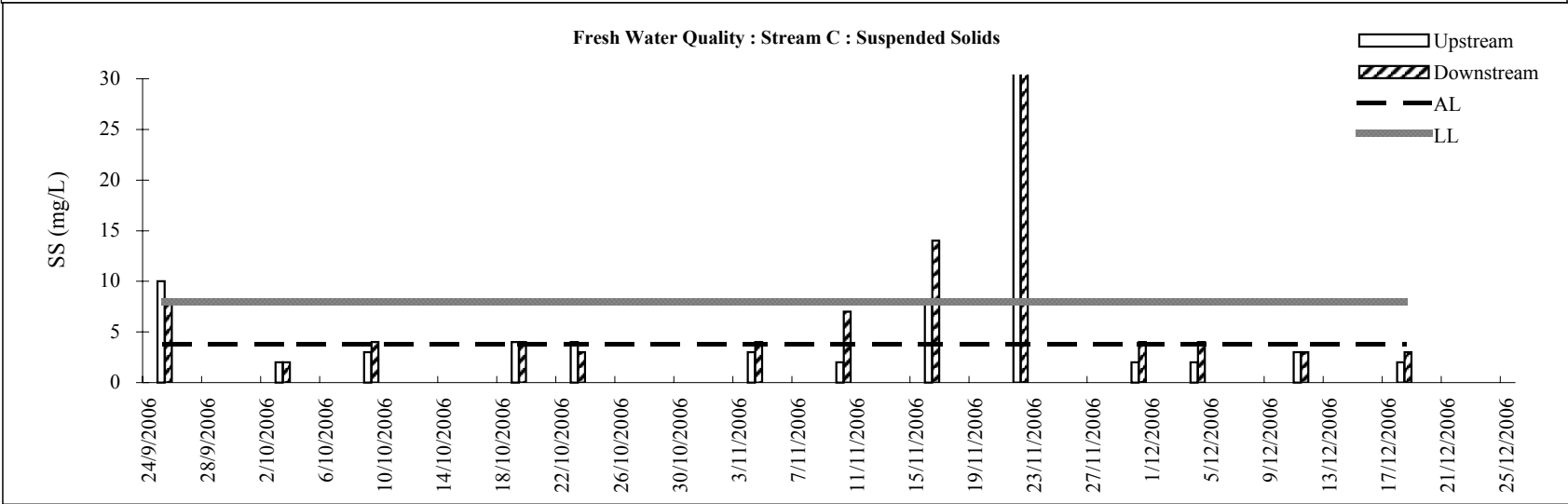
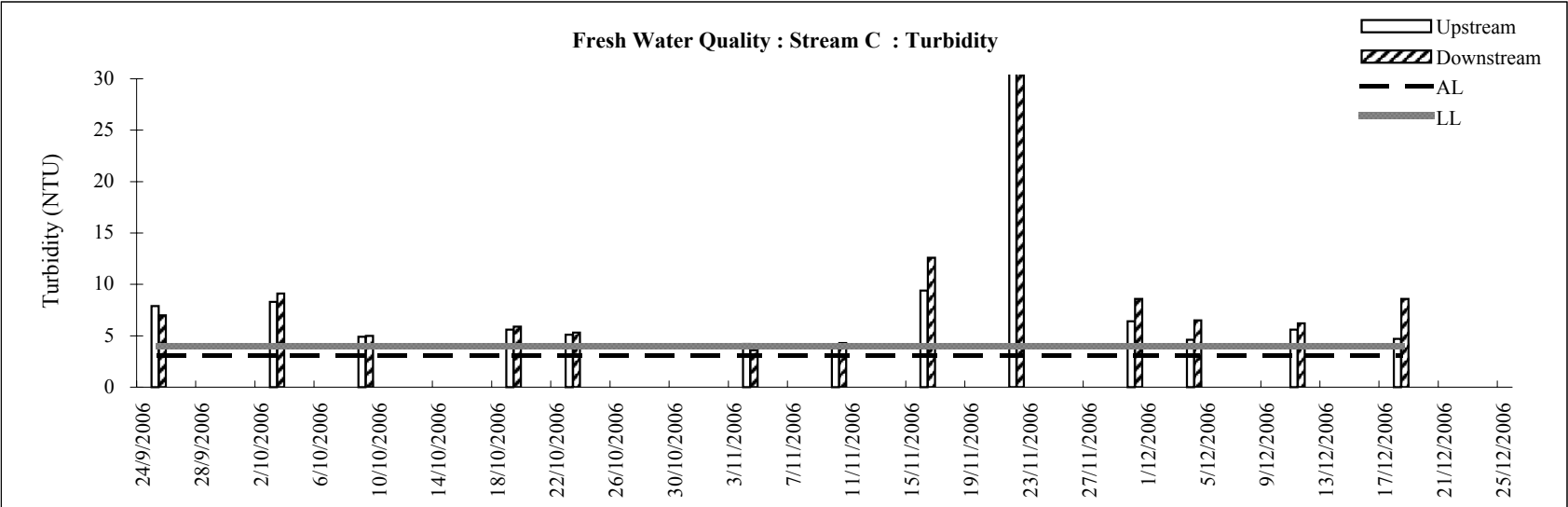


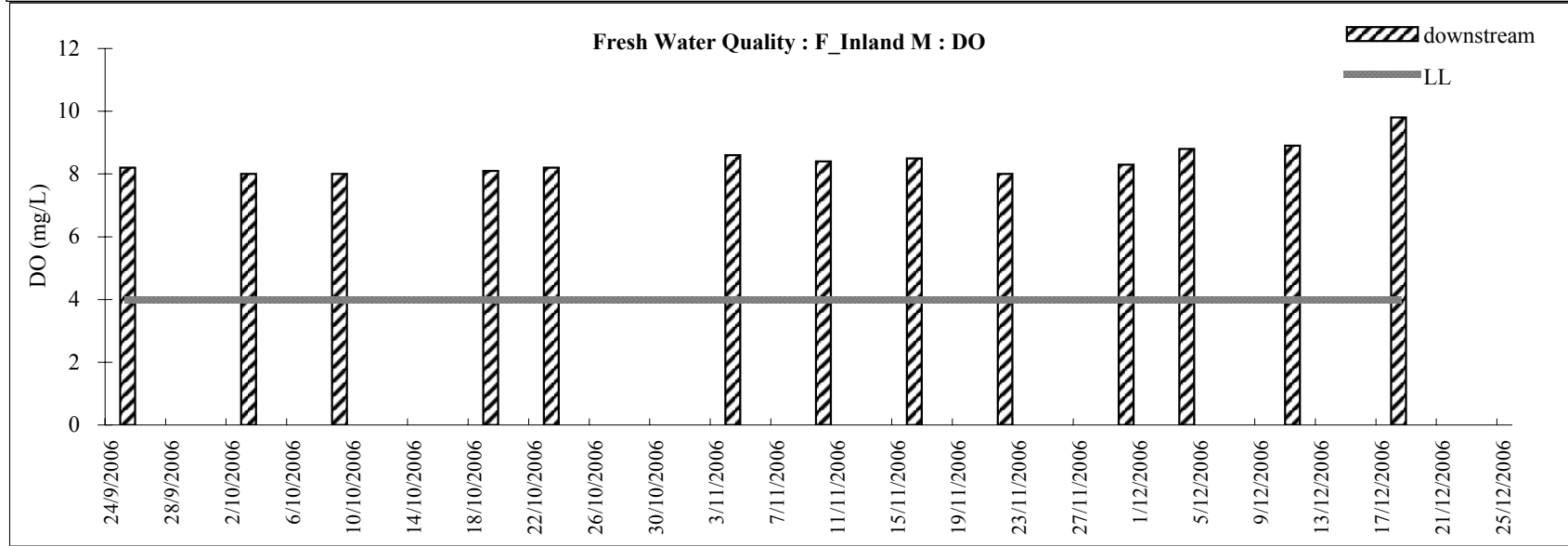
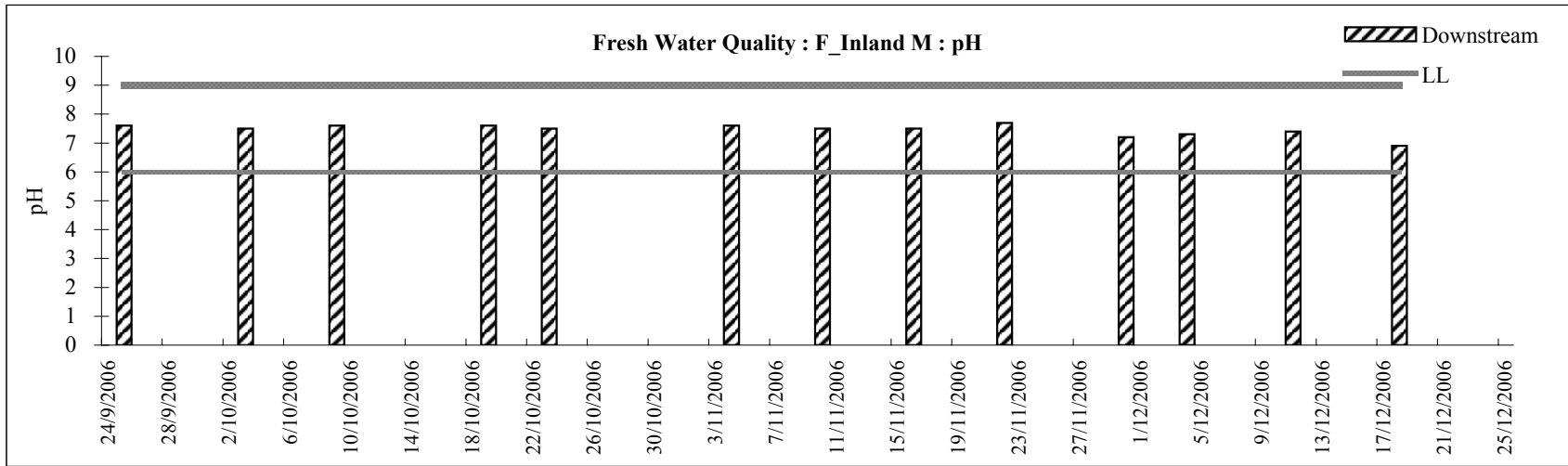




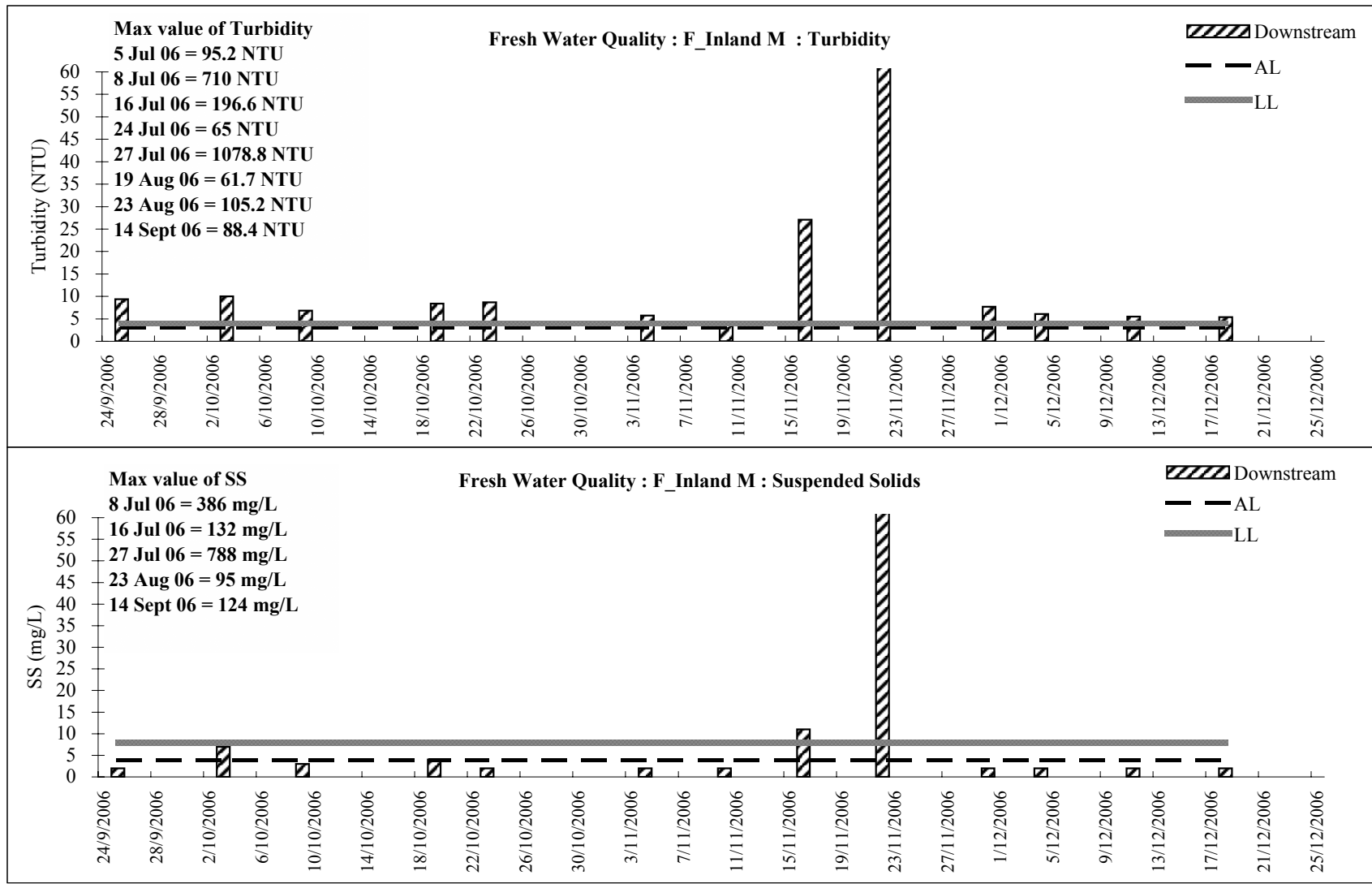








F\_Inland M



F\_Inland M

**Marine Water Monitoring Stations (Fish Culture Zones - FCZ)**  
(Depth-averaged value for marine water quality samples)

TTC	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.7	30.6	6.1	8.3	3.0	<b>5.8</b>
3-Oct-06	27.0	31.1	6.2	8.3	2.8	2.0
9-Oct-06	27.3	31.1	6.3	8.3	2.3	<b>4.7</b>
19-Oct-06	27.3	30.9	6.6	8.3	1.9	4.0
23-Oct-06	27.1	31.0	6.6	8.3	2.0	<b>4.7</b>
4-Nov-06	25.0	32.2	6.6	8.4	1.9	3.7
10-Nov-06	24.9	32.0	6.6	8.3	2.0	3.2
16-Nov-06	23.9	31.2	6.8	8.3	2.0	4.0
22-Nov-06	23.6	29.1	6.7	8.3	2.2	2.2
30-Nov-06	22.4	33.3	7.2	8.3	2.4	<b>4.7</b>
4-Dec-06	21.8	32.9	7.5	8.4	1.7	3.8
11-Dec-06	21.6	31.5	7.4	8.3	1.8	4.3
18-Dec-06	18.5	30.9	7.2	8.2	1.9	4.5

Remarks: Exceedance

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

☾ = Rainstorm event  
(21 Nov 06 - Sample take at 22 Nov 06)

KLW	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.7	30.9	6.2	8.2	1.4	<b>5.0</b>
3-Oct-06	26.7	31.4	6.4	8.2	1.7	2.0
9-Oct-06	27.2	30.9	6.4	8.3	2.5	<b>7.3</b>
19-Oct-06	27.2	31.0	6.6	8.3	2.4	<b>4.7</b>
23-Oct-06	27.0	31.1	6.5	8.3	2.2	4.5
4-Nov-06	25.1	30.9	6.9	8.4	2.7	3.0
10-Nov-06	25.2	30.7	6.7	8.3	2.3	3.3
16-Nov-06	24.5	30.9	7.1	8.3	2.0	4.3
22-Nov-06	23.5	30.2	7.0	8.3	2.1	2.2
30-Nov-06	23.0	33.3	7.4	8.4	2.7	<b>5.5</b>
4-Dec-06	22.4	33.0	7.3	8.3	2.2	4.2
11-Dec-06	21.8	31.7	7.7	8.3	2.4	<b>5.8</b>
18-Dec-06	19.8	30.6	7.2	8.3	<b>3.6</b>	<b>5.5</b>

KS	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	27.0	30.9	6.3	8.2	2.0	3.5
3-Oct-06	27.4	31.5	6.3	8.2	2.3	2.0
9-Oct-06	27.3	31.6	6.3	8.2	1.2	3.5
19-Oct-06	27.0	31.2	6.7	8.3	1.0	2.5
23-Oct-06	26.9	31.2	6.7	8.3	1.0	2.8
4-Nov-06	24.7	31.8	6.8	8.4	2.0	3.2
10-Nov-06	24.6	32.0	6.7	8.3	1.8	3.2
16-Nov-06	23.9	31.8	6.7	8.3	1.7	<b>6.7</b>
22-Nov-06	23.4	27.8	6.6	8.2	2.1	2.3
30-Nov-06	23.1	33.3	7.1	8.4	2.2	<b>5.7</b>
4-Dec-06	22.4	33.1	7.4	8.3	1.7	3.7
11-Dec-06	21.9	32.1	7.4	8.3	1.9	3.3
18-Dec-06	18.7	31.5	7.3	8.4	<b>3.2</b>	<b>6.2</b>

**Marine Water Monitoring Stations (Other than FCZ)**  
(Depth-averaged value for marine water quality samples)

M RO1	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.7	30.8	6.4	8.2	1.5	4.5
3-Oct-06	26.7	30.7	6.5	8.2	1.5	2.0
9-Oct-06	27.4	31.0	6.6	8.3	1.2	4.5
19-Oct-06	27.4	30.8	6.9	8.4	1.5	3.8
23-Oct-06	26.9	30.9	6.7	8.3	1.4	4.3
4-Nov-06	25.3	30.7	6.9	8.4	2.2	3.3
10-Nov-06	25.3	30.7	6.7	8.3	1.7	3.5
16-Nov-06	24.5	30.6	7.0	8.3	2.2	<b>8.0</b>
22-Nov-06	23.5	28.5	7.0	8.3	2.2	3.8
30-Nov-06	22.5	33.5	7.5	8.4	3.4	<b>7.0</b>
4-Dec-06	22.4	32.6	7.5	8.3	2.5	5.0
11-Dec-06	21.8	31.8	7.7	8.3	2.6	5.3
18-Dec-06	20.0	30.3	7.4	8.3	<b>3.4</b>	3.5

Remarks: Exceedance

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

☔ = Rainstorm event  
(21 Nov 06 - Sample take at 22 Nov 06)

M Marsh	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.5	30.8	6.5	8.2	3.2	6.2
3-Oct-06	27.0	31.5	6.4	8.2	3.0	2.0
9-Oct-06	27.3	31.2	6.1	8.2	2.6	4.0
19-Oct-06	27.4	30.9	6.5	8.3	<b>4.8</b>	<b>7.8</b>
23-Oct-06	27.1	31.1	6.5	8.3	3.3	7.7
4-Nov-06	24.8	31.7	6.8	8.4	2.0	4.3
10-Nov-06	24.8	31.4	6.7	8.3	1.8	3.0
16-Nov-06	23.8	30.9	6.8	8.3	2.1	<b>6.3</b>
22-Nov-06	23.2	27.4	6.7	8.2	<b>19.7</b>	<b>28.8</b>
30-Nov-06	22.4	32.8	7.1	8.3	2.2	4.5
4-Dec-06	21.9	32.9	7.6	8.4	2.3	<b>6.3</b>
11-Dec-06	21.6	31.8	7.5	8.3	1.8	5.2
18-Dec-06	18.6	30.6	7.3	8.2	2.1	4.3

M BP	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.7	31.3	6.2	8.3	2.2	5.3
3-Oct-06	26.9	31.7	6.2	8.2	2.5	2.0
9-Oct-06	27.4	31.1	6.4	8.3	2.6	4.8
19-Oct-06	27.3	31.1	7.1	8.3	1.9	4.5
23-Oct-06	27.2	31.4	6.9	8.3	2.0	<b>6.7</b>
4-Nov-06	25.0	32.3	6.9	8.4	2.3	3.5
10-Nov-06	24.9	32.3	6.7	8.3	2.1	3.3
16-Nov-06	24.0	31.4	7.0	8.3	1.9	4.7
22-Nov-06	23.8	29.1	6.8	8.3	2.2	2.7
30-Nov-06	22.5	33.4	6.9	8.3	2.4	4.7
4-Dec-06	21.8	33.1	7.5	8.4	1.8	4.0
11-Dec-06	23.3	31.8	7.5	8.3	1.8	3.3
18-Dec-06	18.6	31.1	7.3	8.2	2.4	5.0

M Coral	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.8	31.6	6.3	8.3	2.0	4.3
3-Oct-06	26.6	31.8	6.3	8.2	2.4	2.0
9-Oct-06	27.3	31.3	6.3	8.2	1.6	2.7
19-Oct-06	27.4	31.3	7.0	8.3	1.4	3.2
23-Oct-06	27.0	31.4	6.9	8.3	1.4	3.0
4-Nov-06	24.8	32.0	6.8	8.3	2.1	4.2
10-Nov-06	24.7	32.2	6.7	8.2	1.8	4.2
16-Nov-06	23.9	31.7	6.8	8.3	1.9	5.0
22-Nov-06	23.5	30.1	6.5	8.2	2.2	3.3
30-Nov-06	22.9	33.1	7.1	8.3	2.0	4.3
4-Dec-06	22.1	32.6	7.5	8.3	1.6	4.0
11-Dec-06	22.0	31.9	7.4	8.3	1.9	3.8
18-Dec-06	18.8	31.1	7.4	8.3	3.2	5.2

**Marine Water Monitoring Stations (Control Stations)**  
 (Depth-averaged value for marine water quality samples)

M A	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	26.3	29.9	6.1	8.2	2.5	4.5
3-Oct-06	26.8	30.5	6.3	8.2	2.7	2.0
9-Oct-06	27.3	31.1	6.3	8.2	2.4	5.0
19-Oct-06	27.4	31.0	6.6	8.3	1.9	5.5
23-Oct-06	27.0	30.9	6.6	8.4	1.8	4.7
4-Nov-06	24.8	31.0	6.8	8.4	2.4	3.2
10-Nov-06	24.9	31.0	6.7	8.2	2.1	3.7
16-Nov-06	23.9	30.9	7.0	8.3	2.0	5.7
22-Nov-06	23.8	29.4	6.9	8.3	6.4	7.8
30-Nov-06	22.9	32.9	7.4	8.3	2.4	5.3
4-Dec-06	22.1	32.6	7.7	8.4	1.9	4.2
11-Dec-06	21.8	31.7	7.4	8.3	2.1	5.0
18-Dec-06	19.3	30.8	7.2	8.3	2.6	4.0

Remarks: Exceedance

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

☔ = Rainstorm event

(21 Nov 06 - Sample take at 22 Nov 06)

M B	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	27.3	31.2	6.3	8.2	2.0	4.3
3-Oct-06	27.1	31.9	6.4	8.2	2.3	2.0
9-Oct-06	27.2	32.3	6.4	8.2	1.1	3.2
19-Oct-06	27.0	31.3	6.8	8.3	2.0	3.3
23-Oct-06	26.9	31.3	6.8	8.3	1.5	3.8
4-Nov-06	24.7	31.8	6.8	8.3	2.1	3.2
10-Nov-06	24.7	32.0	6.7	8.2	2.0	2.0
16-Nov-06	23.7	31.7	6.8	8.3	1.9	6.5
22-Nov-06	23.3	29.2	6.8	8.2	2.1	5.0
30-Nov-06	22.9	33.3	7.1	8.3	2.0	3.8
4-Dec-06	22.2	33.1	7.4	8.4	1.7	5.5
11-Dec-06	22.2	32.0	7.5	8.3	1.8	4.2
18-Dec-06	18.4	31.3	7.3	8.3	3.1	6.3

**Freshwater Monitoring Stations (Streams A & B)**  
(mid depth for freshwater quality samples)

F UA	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	25.3	<0.1	8.3	7.6	2.2	2
3-Oct-06	25.0	<0.1	8.4	7.5	2.7	2
9-Oct-06	25.0	<0.1	8.3	7.6	2.3	2
19-Oct-06	25.2	<0.1	8.5	7.6	4.6	4
23-Oct-06	25.1	<0.1	8.4	7.5	4.7	4
4-Nov-06	23.5	<0.1	8.9	7.3	2.5	2
10-Nov-06	23.3	<0.1	8.7	7.4	2.7	2
16-Nov-06	22.5	<0.1	9	7.5	3.1	2
22-Nov-06	22.0	<0.1	9.2	7.2	6.4	4
30-Nov-06	21.1	<0.1	8.8	7.3	3.3	2
4-Dec-06	19.8	<0.1	9.1	7.2	3.0	2
11-Dec-06	19.3	<0.1	9.2	7.3	2.9	2
18-Dec-06	14.4	<0.1	10	7.1	2.2	2

Remarks: Exceedance	
> Action level	<b><i>Bold &amp; Italic</i></b>
> Limit level	<b>Bold</b>
< Detection Limit	Grey

☔ = Rainstorm event  
(21 Nov 06 - Sample take at 22 Nov 06)

F DA	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	25.4	<0.1	8.3	7.7	3.6	2.0
3-Oct-06	25.3	<0.1	8.3	7.7	3.6	2.0
9-Oct-06	25.0	<0.1	8.4	7.6	2.3	2.0
19-Oct-06	25.1	<0.1	8.3	7.7	4.9	<b>4.0</b>
23-Oct-06	25.1	<0.1	8.4	7.6	<b>5.0</b>	<b>4.0</b>
4-Nov-06	23.5	<0.1	8.9	7.2	2.5	<b>10.0</b>
10-Nov-06	23.2	<0.1	8.6	7.4	<b>5.3</b>	<b>8.0</b>
16-Nov-06	22.4	<0.1	8.8	7.3	23.0	<b>174.0</b>
22-Nov-06	22.2	<0.1	8.3	7.5	<b>147.0</b>	<b>130.0</b>
30-Nov-06	21.0	<0.1	8.9	7.5	<b>46.7</b>	<b>29.0</b>
4-Dec-06	19.9	<0.1	9	7.6	<b>8.3</b>	<b>11.0</b>
11-Dec-06	19.3	<0.1	9.1	7.6	<b>5.0</b>	<b>11.0</b>
18-Dec-06	21.0	<0.1	8.9	7.5	<b>46.7</b>	3.0

F UB	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	25.1	<0.1	8.6	7.3	4.6	3
3-Oct-06	25.2	<0.1	8.5	7.2	4.2	2
9-Oct-06	25.1	<0.1	8.4	7.4	2.2	4
19-Oct-06	25.3	<0.1	8.3	7.4	3.9	4
23-Oct-06	25.2	<0.1	8.4	7.3	3.3	3
4-Nov-06	23.3	<0.1	9.1	7.5	4.1	4
10-Nov-06	23.2	<0.1	8.9	7.3	4.0	3
16-Nov-06	22.4	<0.1	9.2	7.4	12.6	9
22-Nov-06	22.1	<0.1	9.2	7.4	16.1	19
30-Nov-06	21.2	<0.1	9	7.5	12.3	8
4-Dec-06	19.9	<0.1	9.2	7.6	9.7	9
11-Dec-06	19.5	<0.1	9	7.6	6.1	2
18-Dec-06	15	<0.1	9.5	6.8	7.4	6

F DB	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	25	<0.1	8.5	7.5	5.3	<b>5.0</b>
3-Oct-06	25.2	<0.1	8.4	7.6	5.0	2.0
9-Oct-06	25.2	<0.1	8.4	7.6	2.5	<b>4.0</b>
19-Oct-06	25.3	<0.1	8.3	7.6	4.2	<b>4.0</b>
23-Oct-06	25.2	<0.1	8.3	7.4	<b>4.3</b>	<b>4.0</b>
4-Nov-06	23.4	<0.1	8.7	7.6	<b>4.5</b>	3.0
10-Nov-06	23.2	<0.1	8.8	7.5	<b>4.3</b>	3.0
16-Nov-06	22.3	<0.1	8.9	7.6	<b>19.6</b>	9.0
22-Nov-06	22.2	<0.1	8.8	7.7	<b>60.8</b>	<b>49.0</b>
30-Nov-06	21.1	<0.1	8.9	7.2	<b>13.7</b>	<b>9.0</b>
4-Dec-06	19.9	<0.1	9.3	7.1	<b>14.7</b>	<b>12.0</b>
11-Dec-06	19.5	<0.1	8.9	7.2	<b>6.0</b>	3.0
18-Dec-06	21.1	<0.1	8.9	7.2	<b>13.7</b>	<b>5.0</b>

**Freshwater Monitoring Stations (Stream C & Freshwater Inland Marsh)**  
(mid depth for freshwater quality samples)

F UC	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	25	<0.1	8.7	7	7.9	10
3-Oct-06	25	<0.1	8.8	7	8.3	2
9-Oct-06	25.2	<0.1	8.6	6.9	4.9	3
19-Oct-06	25	<0.1	8.7	6.8	5.6	4
23-Oct-06	25	<0.1	8.6	6.8	5.1	4
4-Nov-06	23.3	<0.1	9.2	6.9	4.2	3
10-Nov-06	23.2	<0.1	9	6.8	4.1	2
16-Nov-06	22.2	<0.1	9.2	6.9	9.4	8
22-Nov-06	22.1	<0.1	8.5	7	82.1	159
30-Nov-06	21	<0.1	9.1	6.7	6.4	2
4-Dec-06	19.7	<0.1	9.3	6.7	4.6	2
11-Dec-06	19	<0.1	9.2	6.6	5.6	3
18-Dec-06	15.5	<0.1	9	6.6	4.7	2

Remarks: Exceedance

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

☔ = Rainstorm event

(21 Nov 06 - Sample take at 22 Nov 06)

F DC	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	24.9	<0.1	8.8	7.4	7.0	<b>8.0</b>
3-Oct-06	25.0	<0.1	8.6	7.3	9.1	2.0
9-Oct-06	25.2	<0.1	8.7	7.3	5.0	<b>4.0</b>
19-Oct-06	25.1	<0.1	8.4	7.2	5.9	<b>4.0</b>
23-Oct-06	25.1	<0.1	8.4	7.0	<b>5.3</b>	3.0
4-Nov-06	23.2	<0.1	9.3	7.2	3.6	<b>4.0</b>
10-Nov-06	23.2	<0.1	9.0	7.2	<b>4.3</b>	<b>7.0</b>
16-Nov-06	22.1	<0.1	9.3	7.3	<b>12.6</b>	<b>14.0</b>
22-Nov-06	22.0	<0.1	8.4	7.5	<b>382.0</b>	<b>836.0</b>
30-Nov-06	20.8	<0.1	9.2	7.2	8.6	<b>4.0</b>
4-Dec-06	19.5	<0.1	9.4	7.2	6.5	<b>4.0</b>
11-Dec-06	19.2	<0.1	9.0	7.1	<b>6.2</b>	3.0
18-Dec-06	20.8	<0.1	9.2	7.2	<b>8.6</b>	3.0

F Inland M	Temp (oC)	Salinity (ppt)	DO (mg/L)	pH	Turbidity (NTU)	SS (mg/L)
25-Sep-06	25.3	<0.1	8.2	7.6	9.4	2.0
3-Oct-06	25.2	<0.1	8.0	7.5	10.0	<b>7.0</b>
9-Oct-06	25.1	0.1	8.0	7.6	6.8	3.0
19-Oct-06	25.3	<0.1	8.1	7.6	8.4	<b>4.0</b>
23-Oct-06	25.2	<0.1	8.2	7.5	<b>8.7</b>	2.0
4-Nov-06	24.2	<0.1	8.6	7.6	<b>5.7</b>	2.0
10-Nov-06	24.1	<0.1	8.4	7.5	<b>4.2</b>	2.0
16-Nov-06	23.1	0.1	8.5	7.5	<b>27.1</b>	<b>11.0</b>
22-Nov-06	22.8	<0.1	8.0	7.7	<b>682.0</b>	<b>393.0</b>
30-Nov-06	21.9	<0.1	8.3	7.2	<b>7.7</b>	2.0
4-Dec-06	20.1	<0.1	8.8	7.3	<b>6.1</b>	2.0
11-Dec-06	19.8	0.1	8.9	7.4	<b>5.5</b>	2.0
18-Dec-06	13.9	<0.1	9.8	6.9	<b>5.4</b>	2.0



# **Ecology**

Plate 5.3-1 Photos of Stream Habitat



Buffer Zone of Stream A



Buffer Zone of Stream A (2)



Stream B2 and the buffer zone



Stream B close-up



Stream C



Stream C close-up



Stream D



Shrimps in Stream D

# Plate 5.3-1 Photos of Stream Habitat



Stream A and Buffer Zone



Stream Flow in upper Stream A



Stream B2 and the buffer zone



Stream B close-up



Stream C



Stream C close-up



Shrimp in Stream C



Riparian plants in Stream C



Temporary and permanent bridges at Stream C



The piers of Stream C permanent bridge are outside the buffer zone

# Plate 5.3-1 Photos of Stream Habitat



Stream A and Buffer Zone



Stream Flow in upper Stream A



Stream B2 and the buffer zone



Stream B close-up



Stream C



Stream C close-up



Shrimp in Stream C



Riparian plants in Stream C



Stream D Banks



Close-up of Stream D

**Table 3-1 Conditions of tagged corals at Site B2**

Code of tagged corals	Species*	Baseline Survey (Dec 2005 or Apr 2006)			Month Twelve (December 2006)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
<b>Within the Temporary Barging Point Area</b>							
B-11	<i>Turbinaria peltata</i>	0	0	0	0	0	0
B-12	<i>Plesiastrea versipora</i>	0	0	0	0	0	0
B-13	<i>Plesiastrea versipora</i>	0	0	0	30	0	0
B-14	<i>Goniastrea aspera</i>	0	0	0	0	3	0
B-15	<i>Lithophyllon undulatum</i>	0	0	0	0	10	0
B-16	<i>Favia speciosa</i>	0	0	0	0	0	0
B-17	<i>Favia speciosa</i>	0	0	0	0	0	0
B-18	<i>Turbinaria peltata</i>	0	0	0	0	0	0
B-19	<i>Favia speciosa</i>	0	0	0	70	0	0
B-20	<i>Favia speciosa</i>	0	0	0	0	0	0
<b>To the North of the Temporary Barging Point Area</b>							
B-21	<i>Favia speciosa</i>	0	0	0	0	0	0
B-22	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
B-23	<i>Favia speciosa</i>	0	0	0	0	0	0
B-24	<i>Favia speciosa</i>	0	0	0	0	0	0
B-25	<i>Favites abdita</i>	0	0	0	0	0	0
B-26	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
B-27	<i>Favia speciosa</i>	0	0	0	0	0	0
B-28	<i>Goniopora columna</i>	0	0	0	0	0	0
B-29	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
B-30	<i>Favia speciosa</i>	0	0	0	0	0	0
B-31	<i>Platygyra acuta</i>	5	0	0	0	0	0
B-32	<i>Favia speciosa</i>	3	0	0	0	0	0
B-33	<i>Turbinaria peltata</i>	0	0	0	0	0	0
B-34	<i>Cyphastrea serailia</i>	0	0	0	0	5	0
B-35	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
B-36	<i>Platygyra acuta</i>	0	0	0	0	0	0
B-37	<i>Favia speciosa</i>	0	0	0	0	0	0
B-38	<i>Cyphastrea serailia</i>	0	0	0	0	0	0

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Code of tagged corals	Species*	Baseline Survey (Dec 2005 or Apr 2006)			Month Twelve (December 2006)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
B-39	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
B-40	<i>Favia speciosa</i>	0	0	0	0	0	0
<b>To the south of the Temporary Barging Point Area</b>							
B-41	<i>Leptastrea pruinosa</i>	0	0	0	0	0	0
B-42	<i>Goniastrea aspera</i>	0	0	0	<b>90</b>	0	0
B-43	<i>Favia speciosa</i>	0	0	0	0	0	0
B-44	<i>Cyphastrea serailia</i>	0	0	0	0	10	0
B-45	<i>Platygyra acuta</i>	0	0	0	0	0	0
B-46	<i>Favia speciosa</i>	0	0	0	0	0	0
B-47	<i>Favites abditia</i>	0	0	0	5	0	0
B-48	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
B-49	<i>Goniopora columna</i>	0	0	0	0	0	0
B-50	<i>Favia speciosa</i>	0	0	0	0	0	0
B-51	<i>Psammocora superficialis</i>	0	0	0	0	3	0
B-52	<i>Favia speciosa</i>	0	0	0	10	0	0
B-53	<i>Favia speciosa</i>	0	0	0	10	0	0
B-54	<i>Favia speciosa</i>	0	0	0	0	0	0
B-55	<i>Goniastrea aspera</i>	0	0	0	0	0	0
B-56	<i>Platygyra carnosus</i>	0	0	0	0	0	0
B-57	<i>Goniastrea aspera</i>	0	0	0	0	0	0
B-58	<i>Favia speciosa</i>	5	0	0	60	0	0
B-59	<i>Favia speciosa</i>	0	0	0	100	\	\
B-60	<i>Favia speciosa</i>	5	0	0	Lost	Lost	Lost

\* Damaged corals were bold.

**Table 3-2 Conditions of tagged corals at Site C**

Code of tagged corals	Species	Baseline Survey (December 2005)			Month Twelve (December 2006)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
C-01	<i>Platygyra carnosus</i>	0	0	0	0	0	0
C-02	<i>Platygyra carnosus</i>	0	0	0	0	0	0
C-03	<i>Favia speciosa</i>	0	0	0	0	0	0
C-04	<i>Favites abdita</i>	0	0	0	100	0	0
C-05	<i>Turbinaria peltata</i>	0	0	0	0	0	0
C-06	<i>Favia speciosa</i>	0	0	0	0	0	0
C-07	<i>Platygyra acuta</i>	0	0	0	0	0	0
C-08	<i>Platygyra acuta</i>	0	0	0	0	0	0
C-09	<i>Favia speciosa</i>	0	0	0	0	0	0
<b>C-10*</b>	<i>Platygyra acuta</i>	0	0	0	0	0	0
C-11	<i>Favia speciosa</i>	0	0	0	0	0	0
C-12	<i>Platygyra acuta</i>	0	0	0	0	0	0
C-13	<i>Platygyra carnosus</i>	0	0	0	0	0	0
C-14	<i>Favia speciosa</i>	0	0	0	0	0	0
C-15	<i>Goniopora columna</i>	0	0	0	0	0	0
C-16	<i>Platygyra carnosus</i>	0	0	0	0	0	0
C-17	<i>Goniopora columna</i>	0	0	0	0	0	0
C-18	<i>Platygyra carnosus</i>	0	0	0	0	0	0
C-19	<i>Favites pentagona</i>	0	0	0	0	0	0
C-20	<i>Favia speciosa</i>	0	0	0	0	0	0

\*C-10 had sign of anchor damages.

**Table 3-3 Conditions of tagged corals at Control Site**

Code of tagged corals	Species	Baseline Survey (December 2005)			Month Twelve (December 2006)		
		Mortality (%)	Sedimentation (%)	Bleaching (%)	Mortality (%)	Sedimentation (%)	Bleaching (%)
X-01	<i>Platygyra carnosus</i>	0	0	0	0	0	0
X-02	<i>Platygyra carnosus</i>	0	0	0	0	0	0
X-03	<i>Platygyra carnosus</i>	0	0	0	0	0	0
X-04	<i>Pavona decussata</i>	0	0	0	0	0	0
X-05	<i>Hydnophora exesa</i>	0	0	0	Lost	Lost	Lost
X-06	<i>Platygyra carnosus</i>	0	0	0	0	0	0
X-07	<i>Platygyra carnosus</i>	0	0	0	0	0	0
X-08	<i>Favites abdita</i>	0	0	0	0	0	0
X-09	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
X-10	<i>Cyphastrea serailia</i>	0	0	0	0	0	0
X-11	<i>Platygyra carnosus</i>	0	0	0	0	0	0
X-12	<i>Platygyra acuta</i>	0	0	0	0	0	0
X-13	<i>Platygyra acuta</i>	0	0	0	0	0	0
X-14	<i>Platygyra acuta</i>	0	0	0	0	0	0
X-15	<i>Platygyra acuta</i>	0	0	0	0	0	0
X-16	<i>Platygyra acuta</i>	0	0	0	0	0	0
X-17	<i>Favia speciosa</i>	0	0	0	0	0	0
X-18	<i>Platygyra acuta</i>	0	0	0	0	0	0
X-19	<i>Goniastrea aspera</i>	0	0	0	0	0	0
X-20	<i>Cyphastrea serailia</i>	0	0	0	0	0	0



**Table 3-4 Conditions of transplanted corals**

Coral #	Species	Baseline Condition	Baseline			1 <sup>st</sup> quarterly monitoring (Dec 2006)		
			Mortality (%)	Sediment (%)	Bleaching (%)	Mortality (%)	Sediment (%)	Bleaching (%)
1	<i>Montipora peltiformis</i>	Good	0	0	0	0	0	0
2	<i>Porites lobata</i>	Good	0	0	0	0	0	0
3	<i>Favites abdita</i>	Good	0	0	0	0	0	0
4	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
5	<i>Porites lobata</i>	Good	0	0	0	0	0	0
6	<i>Porites lobata</i>	Good	0	0	0	0	0	0
7	<i>Porites lobata</i>	Good	0	0	0	0	0	0
8	<i>Porites lobata</i>	Fairly Good	0	0	0	0	0	0
9	<i>Favites abdita</i>	Good	0	0	0	0	0	0
10	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
11	<i>Favites pentagona</i>	Good	0	0	0	0	0	0
12	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
13	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
14	<i>Favites abdita</i>	Good	0	0	0	0	0	0
15	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
16	<i>Goniastrea aspera</i>	Good	0	0	0	0	0	0
17	<i>Favites abdita</i>	Fairly Good	0	0	0	0	0	0
18	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
19	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
20	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
21	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
22	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
23	<i>Montipora peltiformis</i>	Fairly Good	0	0	0	0	0	0
24	<i>Psammocora superficialis</i>	Good	0	0	0	0	0	0
25	<i>Psammocora superficialis</i>	Good	0	0	0	0	0	0
26	<i>Porites lobata</i>	Fairly Good	0	0	0	0	0	0
27	<i>Favia speciosa</i>	Good	0	0	0	0	0	0
28	<i>Porites lobata</i>	Good	0	0	0	0	0	0
29	<i>Psammocora superficialis</i>	Fairly Good	0	0	0	0	0	0

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Coral #	Species	Baseline Condition	Baseline			1 <sup>st</sup> quarterly monitoring (Dec 2006)		
			Mortality (%)	Sediment (%)	Bleaching (%)	Mortality (%)	Sediment (%)	Bleaching (%)
30	<i>Favites abdita</i>	Good	0	0	0	0	0	0
31	<i>Favites pentagona</i>	Good	0	0	0	0	0	0
32	<i>Favites pentagona</i>	Good	0	0	0	0	0	0
33	<i>Montipora peltiformis</i>	Fairly Good	0	0	0	0	0	0
34	<i>Goniopora stutchburyi</i>	Fairly Good	0	0	0	0	0	0
35	<i>Porites lobata</i>	Good	0	0	0	0	0	0
36	<i>Porites lobata</i>	Good	0	0	0	0	0	0
37	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
38	<i>Favites abdita</i>	Good	0	0	0	0	0	0
39	<i>Psammocora superficialis</i>	Good	0	0	0	0	0	0
40	<i>Psammocora superficialis</i>	Fairly Good	0	0	0	0	0	0
41	<i>Favites pentagona</i>	Good	0	0	0	0	0	0
42	<i>Favia speciosa</i>	Good	0	0	0	0	0	0
43	<i>Cyphastrea serialia</i>	Fairly Good	0	0	0	0	0	0
44	<i>Porites lobata</i>	Fairly Good	0	0	0	0	0	0
45	<i>Porites lobata</i>	Good	0	0	0	0	0	0
46	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
47	<i>Goniastrea aspera</i>	Good	0	0	0	0	0	0
48	<i>Porites lobata</i>	Good	0	0	0	0	0	0
49	<i>Porites lobata</i>	Fairly Good	0	0	0	0	0	0
50	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
51	<i>Favia speciosa</i>	Good	0	0	0	0	0	0
52	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
53	<i>Porites lobata</i>	Good	0	0	0	0	0	0
54	<i>Porites lobata</i>	Good	0	0	0	0	0	0
55	<i>Porites lobata</i>	Good	0	0	0	0	0	0
56	<i>Favia speciosa</i>	Fairly Good	0	0	0	0	0	0
57	<i>Goniastrea aspera</i>	Good	0	0	0	0	0	0
58	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
59	<i>Pavona descussata</i>	Good	0	0	0	0	0	0
60	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
61	<i>Favites abdita</i>	Good	0	0	0	0	0	0

Proposed Extension of Public Golf Course at Kau Sai Chau Island, Sai Kung  
 Quarterly EM&A Report (Oct to Dec 06)

Coral #	Species	Baseline Condition	Baseline			1 <sup>st</sup> quarterly monitoring (Dec 2006)		
			Mortality (%)	Sediment (%)	Bleaching (%)	Mortality (%)	Sediment (%)	Bleaching (%)
62	<i>Pavona descussata</i>	Good	0	0	0	0	0	0
63	<i>Lithophyllon undulatum</i>	Good	0	0	0	0	0	0
64	<i>Porites lobata</i>	Good	0	0	0	0	0	0
65	<i>Psammocora superficialis</i>	Good	0	0	0	0	0	0
66	<i>Porites lobata</i>	Good	0	0	0	0	0	0
67	<i>Lithophyllon undulatum</i>	Good	0	0	0	0	0	0
68	<i>Porites lobata</i>	Fairly Good	0	0	0	0	0	0
69	<i>Favia speciosa</i>	Good	0	0	0	0	0	0
70	<i>Goniastrea aspera</i>	Good	0	0	0	0	0	0
71	<i>Porites lobata</i>	Good	0	0	0	0	0	0
72	<i>Porites lobata</i>	Fairly Good	0	0	0	0	0	0
73	<i>Cyphastrea serialia</i>	Fairly Good	0	0	0	0	0	0
74	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
75	<i>Porites lobata</i>	Good	0	0	0	0	0	0
76	<i>Goniastrea aspera</i>	Good	0	0	0	0	0	0
77	<i>Favites abdita</i>	Good	0	0	0	0	0	0
78	<i>Favites abdita</i>	Good	0	0	0	0	0	0
79	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
80	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
81	<i>Porites lobata</i>	Good	0	0	0	0	0	0
82	<i>Goniastrea aspera</i>	Good	0	0	0	0	0	0
83	<i>Favia speciosa</i>	Good	0	0	0	0	0	0
84	<i>Favites pentagona</i>	Good	0	0	0	0	0	0
85	<i>Goniopora stutchburyi</i>	Good	0	0	0	0	0	0
86	<i>Favites abdita</i>	Good	0	0	0	0	0	0
87	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
88	<i>Cyphastrea serialia</i>	Good	0	0	0	0	0	0
89	<i>Favia speciosa</i>	Good	0	0	0	0	0	0

# **Annex E**

## **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></p> <p>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.
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 forecated. Debris should be properly disposed of before rainstorm to avoid any inadvertent wash away into the stream; and</li> <li>emoval 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 no.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 commenced in the reporting month (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 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</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 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. The expected earliest turf establishment period will be commenced in 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
					D	C	O		
		<p>permanent drainage system, will be constructed individually. As a result, the permanent drainage 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 (bundled, 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 PN1/94</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 PN1/94</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		√	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 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. The expected earliest turf establishment period will be commenced in 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
					D	C	O		
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. The only work for the desalination plant was the land formation and construction of temporary pipelines arrangement at the existing KSC pier during the 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>							



EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
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>							

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
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 since the last reporting month. The major disposal waste was 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  No waste disposal recorded was submitted by the Contractor.  √. A sewage treatment plant was provided at the site office. Few mobile toilets were available on site at southern portion of the construction site.  No canteen was available.  √  √  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.								
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>								
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.								

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location	Implementation Agent	Implementation Stages**			Relevant Legislation and Guidelines	Implementation Status
					D	C	O		
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.	√ The Contractor was submitted update disposal records were submitted by the Contractor since last 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.	√ The Contractor was reminded to dispose/reuse the vegetation stockpiles and construction waste stockpiles properly.
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</p>	Work site / During the construction period	All Contractors		√		WDO; Public Health and Municipal Services Ordinance; The Land (Miscellaneous	√

EIA Ref	EM&A Ref	Environmental Protection Measures*	Location / Timing	Implementation Agent	Implementation Stages**			Relevant Legislation & Guidelines	Implementation Status
					D	C	O		
		process. It is anticipated that there will be no material requiring disposal off-site in public filling areas.						Provisions) Ordinance; 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.	√
7.7.10		<u>Site fencing</u> Some site fencing may be required. Attention should be paid to WBTC No. 19/2001 which introduce 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 waste storage area was not available on site. Improper storage of chemicals was observed near to the wastewater treatment plant.
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 bunded 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</i>							

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		<i>(Chemical Waste) (General) Regulation.</i> Empty paint cans should be 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 not dispose properly during 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 the reporting month. No remediation work was carried out at Stream B2 buffer zone.
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		√		-	Silt runoff and silt deposit at the stream bed in particular Stream C was recorded. 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. The Contractor was removed the newly deposited rock from rock fill of Hole 17 (by hand) at downstream A during this reporting month. No rectify work has been carried out within the stream B2 buffer zone was observed.
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		√			Coral transplantation at Site D2 was completed during 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		√			√

\* 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 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.

\* 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 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: <ul style="list-style-type: none"> <li>Site offices and the construction yard shall be decommissioned after construction.</li> <li>Haul roads shall be decommissioned and restored with hydroseeding works after construction.</li> </ul>	All site offices	All contractors		√		EIAO Guidance Note No. 8/2002	To commence
Table 12.13	MC2	Height of site offices: <ul style="list-style-type: none"> <li>The height of site offices shall be controlled in order to avoid visual impacts.</li> </ul>	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: <ul style="list-style-type: none"> <li>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.</li> </ul>	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: <ul style="list-style-type: none"> <li>Shall be orderly and carefully stored in order to appear neat and avoid visibility from outside where practical;</li> <li>Excess materials shall be removed from site as soon as practical;</li> <li>All construction plant shall be removed from site upon completion of construction works.</li> </ul>	In all construction yards.	All contractors		√		EIAO Guidance Note No. 8/2002	Complied.
Table 12.13	MC5	Construction light: <ul style="list-style-type: none"> <li>To be oriented away from the viewing location of VSRs; and</li> <li>All lighting shall have frosted diffusers and reflective covers.</li> <li>While construction at night might be required from time to time, this should be controlled and minimised.</li> </ul>	All construction lights.	All contractors		√		EIAO Guidance Note No. 8/2002	No construction lights at present.
Table 12.13	MC6	Vegetation: <ul style="list-style-type: none"> <li>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;</li> <li>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</li> <li>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.</li> </ul>	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: <ul style="list-style-type: none"> <li>The tree compensation to tree loss ratio shall be between 1:2 and 1:3;</li> <li>At least 700 new trees shall have be of light standard or larger size.</li> </ul>	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: • New slopes with a gradient larger than 30° shall have whip tree planting. • 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).	General.	All contractors	√	√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: To commence.
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: • 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; • 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; • 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.	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 • 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. • No construction activities will be allowed in the buffer zones, except for site formation works, which are required for the construction of bridge footings.	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: • Bulk site formation works shall be followed with bulk hydroseeding as soon as practical.	General.	All contractors		√		EIAO Guidance Note No. 8/2002	Design Stage: Complied Construction Stage: Permanent slope hydroseeding commenced.
Table 12.13	MS2	Grassing: • In the case of golf course areas, grassing shall be carried out as soon as practical after sanding and shaping; and • Sanding, shaping and grassing works shall be phased in sections.	At proposed grassing areas.	All contractors		√		EIAO Guidance Note No. 8/2002	To commence.
	MS3	Restoration: • 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 • 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> .	At all residual areas.	All contractors		√		EIAO Guidance Note No. 8/2002	To commence.
Table 12.13	ME1	Screening: • Bridges and pumping stations shall be screened by tree and shrub planting; and • Retaining wall shall be covered with climber plants.	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 is being constructed.
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.

\* 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 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 Holes 12 and 15 will be carried out in the next reporting month.
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 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.

\* 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

# **Annex F**

## **Status of Licensing & Permitting**

**Summary of Environmental Licensing and Permit Status**

<b>Permit/licence/notification form title</b>	<b>Submission date</b>	<b>Status</b>	<b>Registration No./Remarks</b>
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling 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), supersede by GW-RE0067-06.
Application for a construction noise permit for the use of powered mechanical equipment for the purpose of carrying out construction work other than percussive piling 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-RE0067-06)	GW-RE0157-06 (valid until 28 <sup>th</sup> Nov 2006)
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