

Airport Management Services Limited

# SkyCity Golf Course EM&A Monthly Impact Report

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March 2006

7 April 2006

Report no: 01332R0021

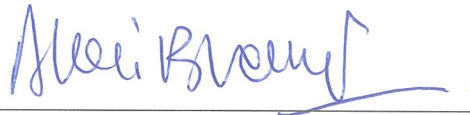


Airport Management Services Limited

# SkyCity Golf Course EM&A Monthly Impact Report

March 2006

Author: Alexi BHANJA



Checker: Adi LEE



Approver: Coleman NG



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Hyder Consulting Ltd  
COI Number 126012  
47th Floor, Hopewell Centre, 183 Queens Road East, Wanchai, Hong Kong  
Tel: +852 2911 2233 Fax: +852 2805 5028 www.hyderconsulting.com



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# 1 Executive Summary

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The purpose of this Project is to construct and operate a 9-hole Golf Course at the east side of the North Commercial District (NCD) on the Airport Island as an interim arrangement prior to the area's future development as a business park (see Figure 1-1). The proposed interim golf facility, known as "SkyCity Golf Course" is intended to serve airport passengers, overseas visitors and airport workers until August 2013.

The Project will be managed by Airport Management Services Limited (AMS) who have employed a Works Contractor, Wing Fat Construction Co. Ltd., to carry out the construction works. Hyder Consulting have been employed as the Environmental Team (ET) for the Construction Period and have engaged ALS Technichem Pty Ltd as the HOKLAS accredited testing laboratory to carry out marine water analysis.

The construction work commenced on 7 March 2006 and it anticipated to last for a period of six to seven months. According to the approved EM&A Manual, impact monitoring during the Construction Period is required for suspended solids, dissolved oxygen and turbidity.

The monthly site audit revealed that there were no significant non-compliances in terms of water, air, noise, waste or landscape and visual, although the Environmental Team made a number of recommendations to the Works Contractor to improve environmental conditions.

Impact monitoring was carried out during March 2006 in accordance with the approved EM&A Manual. Monitoring was carried out on 14, 18, 21, 24, 27 and 31 March. The monitoring results are detailed in this report, which complies with the reporting requirements stated in the approved EM&A Manual.

There were five exceedances Limit Level for suspended solids during March 2006. However, there was little rainfall and there were no discharges from site during the reporting period. As such, these exceedances cannot be attributed to site activities and so cannot be considered as exceedances in terms of the EM&A programme. No action or follow-up is thus deemed to be necessary. Notwithstanding, future monitoring results will be examined closely and correlations with any discharge from site will be followed up immediately to ensure that no adverse environmental impacts are caused by this Project.

There were no complaints received and no notifications of summons.

Overall, there are no adverse environmental impacts caused by the Works during the reporting month, although there is room for improvement in overall site environmental management – recommendations have been made and will be followed up in due course.

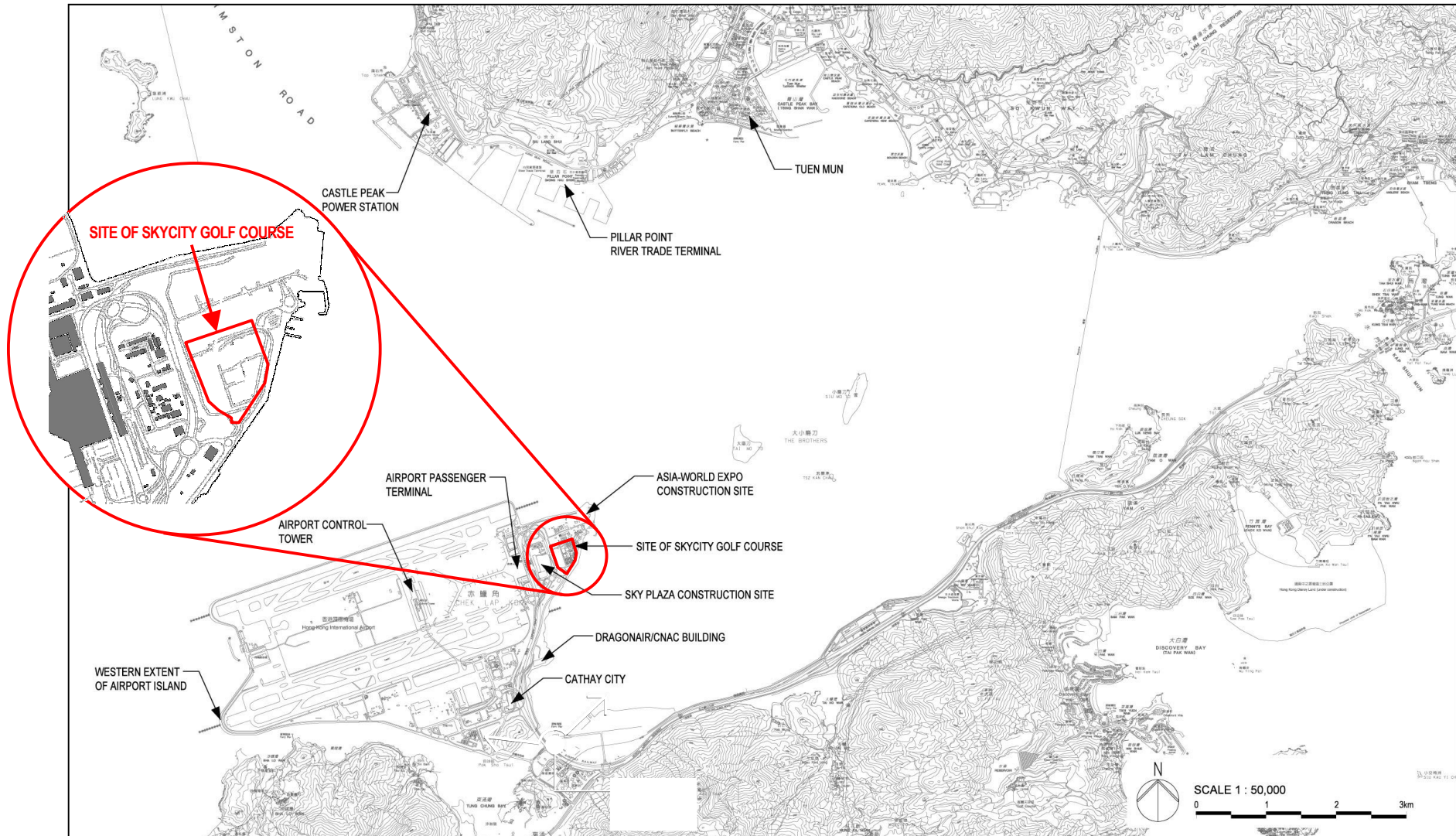


Figure 1-1 Location of SkyCity Golf Course on the Airport Island

## 2 Site Audit

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The monthly site audit examines the implementation status of environmental protection, mitigation and pollution control measures.

Appendix 1 contains the site audit checklist for March 2006. From this the following observations on the implementation status of environmental, mitigation and pollution control measures can be made. Areas for improvement and follow-up are indicated on the checklist and have been highlighted below. The Works Contractor is aware of any shortcomings and has been advised by the ET of any improvements that are required.

### 2.1 Water Quality

A vehicle wheelwash has been provided at the site egress point. Perimeter U-channels have been completed around most of the site, however, some 20m along the southern part of the site remains to be completed. The Contractor was urged to complete the perimeter drainage before the start of the wet season.

No water has been discharged from the site during the reporting month and it is intended that during forthcoming wet weather, water will be collected in the excavated lake bowls and from there percolate down to replenish the groundwater below the site. Because of this, it is not anticipated that there will be any surface runoff from the site.

Having said that, it was recommended that stockpiled material (not in use) should be covered by a tarpaulin to prevent material wash-out during rainfall.

The Contractor has been reminded to obtain a Discharge Licence under the Water Pollution Control Ordinance in the event that off-site discharge is needed. The Contractor has also been reminded to make silt traps/settlement tanks available on site in case these are needed for discharge off-site.

### 2.2 Air Quality

No watering of haul roads was apparent despite the dry conditions on site. However, there is presently very little vehicle movement within the site and so no significant fugitive dust emissions were observed. The Contractor should consider use of a water bowser if site traffic increases during dry weather.

It was recommended that stockpiled material (not in use) should be covered by a tarpaulin to prevent material wind-blown dust.

A significant amount of rock-breaking was observed on site but no watering of material was carried out. To eliminate fugitive dust emission from this source, water spraying should be carried out during rock breaking.

For loading/unloading and transport of material by truck, the material should be sprayed before loading/unloading to prevent dust emission and loads should be covered by tarpaulin before leaving site to prevent wind-blown dust.

## 2.3 Noise

No significant noise problems were noted. The most apparent noise source is overhead aircraft.

## 2.4 Waste/Chemical Management

Three-colour recycling bins have been placed near to the Contractor's site office. Correct use of these bins is recommended to be included in tool-box talks.

The Contractor has registered as a Waste Producer under the Waste Disposal Ordinance but does not appear to have designated a particular area for chemical waste storage – it is recommended that this should be done as soon as possible.

The main diesel storage tank has been provided with a drip tray, however, a number of smaller oil/lubricant drums elsewhere on site were not provided with drip trays. Although no contamination of the surrounding ground was evident, the Contractor was urged to install drip trays immediately.

## 2.5 Landscape and Visual

The site is completely surrounded by a hoarding and there are no landscape or visual issues at this time.

## 2.6 General

The Environmental Permit is displayed at the entrance to the site as required. Although the Contractor has applied and/or received other permits and licences relating to environmental protection, these are not filed in an accessible manner. The Contractor was recommended to ensure that all relevant permits and licences are easily available for inspection, by both the ET and also by EPD.

Overall, the site operation is acceptable from an environmental point of view, but there is room for improvement. The Contractor has been advised of those areas which require immediate attention and this will be followed-up during the next site audit.



### 3 Marine Water Quality EM&A

Monitoring of Dissolved Oxygen (DO) concentration in mg/l, Suspended Solids (SS) in mg/l and turbidity in NTU, was carried out by the ET to ensure that any deterioration in marine water quality could be readily detected and timely action could be taken to rectify the situation if this was due to site activities. DO and turbidity were measured *in-situ* whilst SS was determined in laboratory.

Other parameters, such as water depth, sea temperature, salinity and DO saturation are recorded for reference, and weather conditions, sea conditions, tidal stage and any particular site activities are recorded for information.

## 3.1 Monitoring Results

### 3.1.1 Summary

A summary of monitoring results for the reporting month are provided in Table 3-1, below. Detailed results are provided in Appendix 2, in which exceedances of Action/Limit (A/L) Levels are highlighted.

Station		Temperature (°C)	Salinity (mg/l)	DO Saturation (%)	DO Concentration (mg/l)	SS (mg/l)	Turbidity (NTU)
C1	<b>Mean</b>	19.9	30.8	95.5	7.3	11.8	15.3
	<b>Maximum</b>	21.1	32.0	103	7.8	25	31
	<b>Minimum</b>	19.2	29.4	86	6.6	7	8
C2	<b>Mean</b>	19.8	30.6	94.7	7.2	9.5	15.1
	<b>Maximum</b>	20.8	32.0	103	7.8	18	26
	<b>Minimum</b>	19.1	29.0	85	6.5	5	7
M1	<b>Mean</b>	19.8	31.2	95.3	7.2	10.8	13.2
	<b>Maximum</b>	21.1	34.2	103	7.8	29	28
	<b>Minimum</b>	19.2	29.5	86	6.6	5	5
M2	<b>Mean</b>	19.8	30.7	95.2	7.2	9.8	16.2
	<b>Maximum</b>	20.9	32.0	103	7.8	18	44
	<b>Minimum</b>	19.2	28.5	85	6.5	6	7

Table 3-1 Summary of Impact Monitoring Data

### 3.1.2 Equipment and Methodology

Because of the relatively shallow water, *in-situ* measurements and water sampling were conducted at only one water depth – the mid-depth. Water samples for all monitoring parameters were collected, stored, preserved and analysed according to *APHA Standard Methods for the Examination of Water and Wastewater, 19<sup>th</sup> Edition, #17*.

*In-situ* DO concentration, turbidity (and temperature, salinity and DO saturation) were carried out using a YSI Model 6820 CE-C-M-Y multi-parameter meter:

Parameter	YSI Model 6820 CE-C-M-Y		
	Range	Resolution	Accuracy
DO Concentration	0 to 50 mg/ℓ	0.01 mg/ℓ	0 to 20 mg/ℓ: ±2% of reading or 0.2 mg/ℓ, whichever is greater; 20 to 50 mg/ℓ: ±6% of reading
DO Saturation	0 to 500%	0.1%	0 to 200%: ±2% of reading or 2% air saturation, whichever is greater; 200 to 500%: ±6% of reading
Turbidity	0 to 1,000 NTU	0.1 NTU	±2% of reading or 0.3 NTU, whichever is greater
Temperature	-5 to +70°C	0.01°C	±0.15°C
Salinity	0 to 70 ppt	0.01 ppt	±1% of reading or 0.1 ppt, whichever is greater

**Table 3-2** *In-situ* Monitoring Equipment Details

A Kahlisco water sampler was used to obtain the water sample for subsequent SS analysis. Water samples were collected in high density polythene bottles, packed in ice (cooled to 4°C without being frozen), and delivered to ALS' laboratory (HOKLAS accredited) immediately after completion of monitoring. The analysis follows *APHA Standard Methods #2540D*.

A Global Positioning System (GPS) was used to determine the exact monitoring location and water depth was determined using an echo-sounder.

### 3.1.3 Maintenance and Calibration

All *in-situ* monitoring instruments are calibrated and certified by ALS at 3-monthly intervals throughout the marine water quality monitoring programme.

For DO, the probe (YSI 6820) is calibrated once per monitoring day by the wet bulb method. Calibration at ALS is carried out once every three months in a water sample of known dissolved oxygen concentration. The sensor is immersed in the water and after thermal equilibration, the known mg/l value is keyed in and the calibration is carried out automatically.

For turbidity, the probe (YSI 6820) is calibrated with a solution of known NTU at ALS once every three months. Calibration as per dissolved oxygen, above.

Calibration details are provided in Appendix 3.

### 3.1.4 Parameters Monitored

The following parameters are monitored and compared to A/L Levels :

- Dissolved Oxygen (DO)
- Suspended Solids (SS)
- Turbidity

Other parameters, such as water depth, sea temperature, salinity and dissolved oxygen saturation were recorded for reference, and weather conditions, sea conditions, tidal stage and any particular site activities were recorded for information.

### 3.1.5 Monitoring Locations

Monitoring locations together with grid references are shown in Figure 3-2. Control Stations are designated C1 and C2 and Monitoring Stations are designated M1 and M2.

### 3.1.6 Monitoring Date, Time, Frequency and Duration

Monitoring of marine water quality is carried out twice-weekly during mid-ebb and mid-flood tides. Table 3-3, below, provides details of the monitoring dates, times and duration :

Date	Duration of Ebb Tide	Monitoring at Mid-Ebb	Duration of Flood Time	Monitoring at Mid-Flood
14/03/06	10:59 to 14:59	12:59	16:45 to 20:45	18:45
18/03/06	06:37 to 10:37	14:49	12:49 to 16:49	08:37
21/03/06	07:43 to 11:43	16:51	14:51 to 18:51	09:43
24/03/06	06:10 to 10:10	20:51	18:51 to 22:51	08:10
27/03/06	09:53 to 13:53	11:53	15:14 to 19:14	17:14
31/03/06	05:59 to 09:59	14:17	12:17 to 16:17	07:59

**Table 3-3 Monitoring Date, Time, Frequency and Duration**

## 3.2 Action/Limit Levels

The A/L Levels for the impact monitoring stations (M1 and M2) were determined in the approved Interim Baseline Monitoring Report and are shown in Table 3-4 :

Parameter	Action Level	Limit Level
DO Concentration	5 <sup>th</sup> percentile of baseline data = 7.0 mg/ℓ, or 80% of the upstream control station	4.0 mg/ℓ, or 70% of the upstream control station
Turbidity	95 <sup>th</sup> percentile of baseline data = 9.6 NTU, or 120% of the upstream control station	99 <sup>th</sup> percentile of baseline data = 10.5 NTU, or 130% of the upstream control station
SS	95 <sup>th</sup> percentile of baseline data = 9.4 mg/ℓ, or 120% of the upstream control station	99 <sup>th</sup> percentile of baseline data = 9.9 mg/ℓ, or 130% of the upstream control station

**Table 3-4 Action and Limit Levels for Water Monitoring Stations**

In case of exceedance of A/L Levels at M1 or M2, the Event/ Action Plan (shown in Table 3-5, below) shall be followed.

Event	Action	
	ET	Works Contractor
Exceedance of Action Level	<ol style="list-style-type: none"> <li>1. Identify the source(s) of impact. If not from the Project then provide justification and document this</li> <li>2. If exceedance is caused by the Project then inform Contractor</li> <li>3. Check monitoring data and Contractor's working methods</li> <li>4. Discuss possible mitigation measures with Contractor</li> <li>5. Repeat measurement on next day of exceedance</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm notification of the exceedance in writing</li> <li>2. Rectify any unacceptable practice</li> <li>3. Check all plant and equipment</li> <li>4. Amend working methods if appropriate</li> <li>5. Discuss possible mitigation measures with ET</li> <li>6. Implement the agreed mitigation measures</li> </ol>
Exceedance of Limit Level	<ol style="list-style-type: none"> <li>1. Identify the source(s) of impact. If not from the Project then provide justification and document this in the EM&amp;A Report</li> <li>2. If exceedance is caused by the Project then inform Contractor</li> <li>3. Check monitoring data and Contractor's working methods</li> <li>4. Agree mitigation measures with Contractor</li> <li>5. Ensure mitigation measures are implemented immediately</li> <li>6. Increase the monitoring frequency to daily until no further exceedance of Limit Level</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm notification of the exceedance in writing</li> <li>2. Rectify any unacceptable practice</li> <li>3. Check all plant and equipment</li> <li>4. Amend working methods if appropriate</li> <li>5. Agree possible mitigation measures with ET</li> <li>6. Implement the agreed mitigation measures immediately</li> </ol>

**Table 3-5 Event Action Plan for Marine Water Quality Monitoring**

## 3.3 Summary of Exceedances

### 3.3.1 Review of Exceedances and Implications

There were five exceedances of Limit Level for suspended solids during March 2006. The Event/Action Plan was implemented.

The first action is to determine the source of the exceedance. There has been little rainfall during the reporting month and it has been confirmed there has been no surface run-off or no discharges from site. As such, the cause of these exceedances cannot be from site activities.

As such, these exceedances cannot be considered as exceedances in terms of the EM&A programme. No action or follow-up is thus deemed to be necessary.

Notwithstanding, future monitoring results will be examined closely and correlations with any discharge from site will be followed up immediately to ensure that no adverse environmental impacts are caused by this Project.

### 3.3.2 Action Taken and Follow-up

The exceedances of Limit Level noted during this reporting month are not considered to be exceedances in terms of the EM&A programme and so no action or follow-up is deemed to be necessary.

## 3.4 Complaints and Notifications of Summons

### 3.4.1 Complaints

No complaints were received during the reporting month and there are no outstanding follow-up issues to be addressed.

### 3.4.2 Notifications of Summons

No notifications of summons were received during the reporting month and there are no outstanding follow-up issues to be addressed.

## 3.5 Works Programme and Future Monitoring Schedule

Appendix 4 shows the current work programme for the works and Appendix 5 provides the future schedule for marine water quality monitoring.

Based on the work to be carried out in future months, no significant impacts to marine water quality are anticipated.

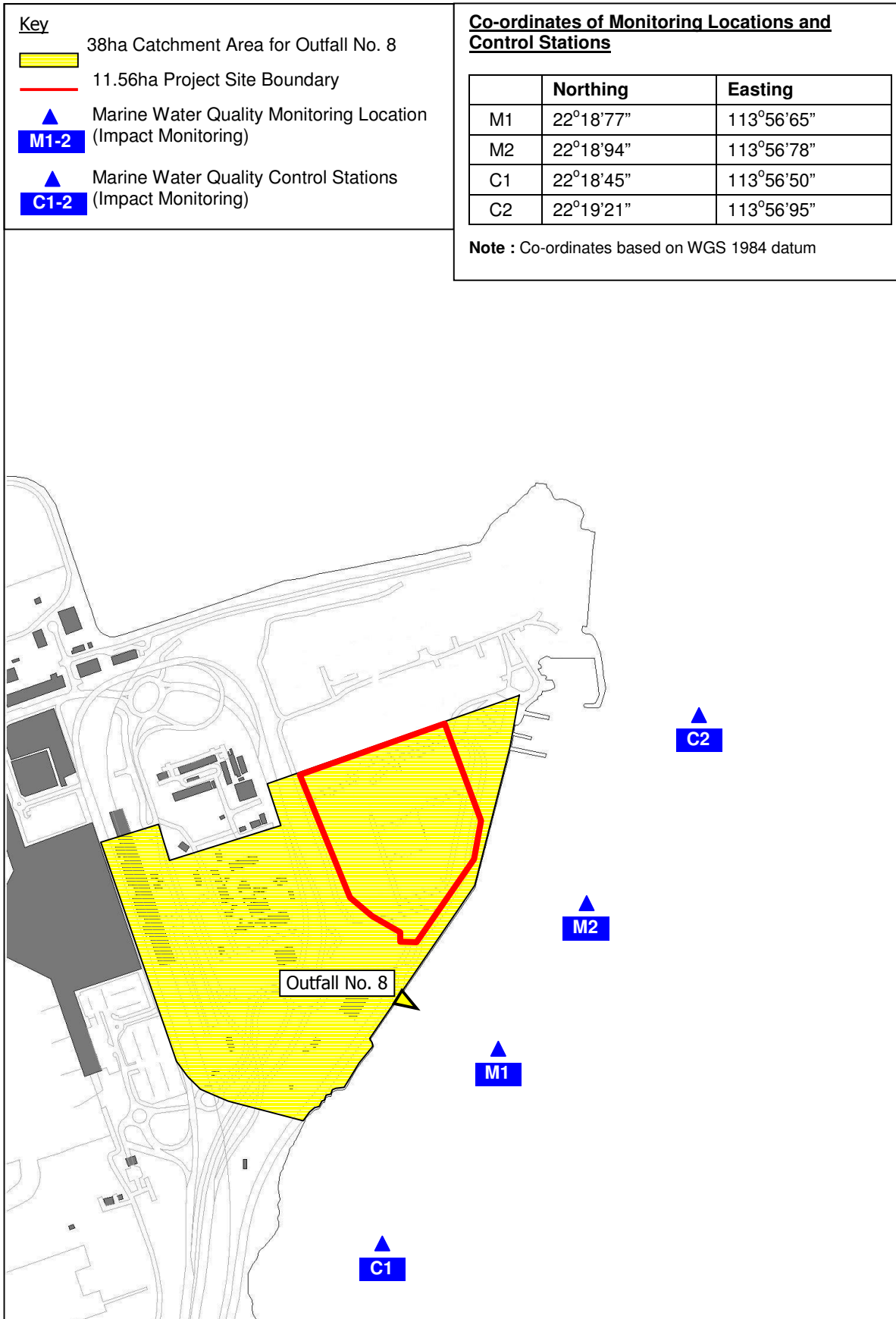


Figure 3-2 Location of Impact Monitoring Stations

## 4 Comments, Recommendations and Conclusions

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The monthly site audit revealed that there were no significant non-compliances in terms of water, air, noise, waste or landscape and visual, although the Environmental Team made a number of recommendations to the Works Contractor to improve environmental conditions.

In terms of marine water quality monitoring, there were five exceedances of Limit Level for suspended solids during March 2006. However, there was little rainfall and there were no discharges from site during the reporting period. As such, these exceedances cannot be attributed to site activities and so cannot be considered as exceedances in terms of the EM&A programme. No action or follow-up is thus deemed to be necessary. Notwithstanding, future monitoring results will be examined closely and correlations with any discharge from site will be followed up immediately to ensure that no adverse environmental impacts are caused by this Project.

There were no complaints received and no notifications of summons.

Overall, there are no adverse environmental impacts caused by the Works during the reporting month, although there is room for improvement in overall site environmental management – recommendations have been made and will be followed up in due course.

# Appendix 1

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## Site Audit Checklist



SkyCity Golf Course  
Environmental Team (ET) for Construction Period  
SITE INSPECTION/AUDIT CHECKLIST



Inspection No. 1

Inspection Date 30-3-06

Time 10-11 a.m.

Inspected By  
Client: *K.S. Chan*  
Contractor: *Joe Lo*  
ET: *Alexi, Coleman, Adi, Yony*

Site *Airport*

Contractor *Wing Fat*

Weather

Condition  Sunny  Fine  Overcast  Drizzle  Rain  Storm  Hazy

Temperature 27 °C Humidity  High  Moderate  Low

Wind  Calm  Light  Breeze  Strong Direction

	N/A or not observed	Yes	No	Photo/Remarks
<b>1 Water Quality</b>				
1.1 Perimeter cut off drains direct off-site water around the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	①
1.2 Is all surface runoff directed to silt removal facilities prior to discharge?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.3 Channels, earth bunds or sandbags direct surface runoff to silt removal facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.4 Is groundwater pumped out from tunnelling and excavations discharged via silt removal facilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5 Are there silt removal facilities for settling surface runoff prior to discharge?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5.1 Constructed from pre-formed individual cells or silt traps / basins?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5.2 Adequate capacity?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5.3 Free from silt and sand?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5.4 Inspected and maintained after rain storm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.6 Is drainage system well maintained to prevent flooding and overflow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.7 Is exposed earth stabilized after earthworks have been completed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.8 Are exposed slope surfaces covered (by tarpaulin or other means)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	②
1.9 Are open stockpiles of excavated and construction materials covered during rainstorms?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.10 Any measures to prevent the washing away of excavated and construction materials e.g. sand/silt to drains?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.11 Are manholes covered and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.12 Are vehicles and plant cleaned of earth, mud and debris before leaving the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
1.13 Are vehicle washing facilities provided at every site exit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

SkyCity Golf Course  
Environmental Team (ET) for Construction Period  
SITE INSPECTION/AUDIT CHECKLIST



	N/A or not observed	Yes	No	Photo/Remarks
1.13.1 Wastewater treated in silt removal facility? Silt removal facility emptied of silt regularly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
1.13.2 Washing area and road exiting from washing facility paved?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
1.13.3 Access road has sufficient backfall toward washing facility or bunded to prevent of untreated wastewater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
1.14 Equipment oil and lubrication replacements performed only in bunded maintenance area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
1.15 Drainage from maintenance area discharged via an oil interceptor?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
1.15.1 Oil and grease removed regularly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
1.16 Toilets that connect to foul sewer or chemical toilets provided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
1.17 Is debris and rubbish prevented from entering drains?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
1.18 Is Effluent Discharge Licence available for inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**2 AIR QUALITY**

2.1 Are hoarding not less than 2.4m tall provided beside roads or areas with public access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.2 Are the roads and unpaved areas watered regularly to avoid dust generation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	③ _____
2.3 Are stockpiles of excavated material covered or regularly watered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	④ _____
2.4 Is stockpile of dusty materials kept to not extend beyond the pedestrian barriers, fencing or traffic cones?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.5 Is the public road around the site entrance kept clean and free from dust?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.6 Do the site vehicles use the vehicle wash facility at the site exits?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.7 Are materials transported on trucks covered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⑤ _____
2.8 Are dusty materials sprayed prior to loading?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⑥ _____
2.9 Are all truck loads to a level within the side and tail boards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.10 Are areas where demolition/site clearance/breaking take place regularly watered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.11 Is every stock of more than 20 bags of cement or day covered entirely by impervious sheeting or placed in an area sheltered on the top and the three sided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.12 Are potentially dusty demolished items/debris covered or placed in a three sided shelter?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.12.1 Is the debris sprayed with water/dust suppression chemical to keep wet before it is dumped onto a debris chute?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.13 Odorous materials immediately covered and promptly removed from site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.14 Are there enclosures around the main dust-generating activities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

SkyCity Golf Course  
Environmental Team (ET) for Construction Period  
SITE INSPECTION/AUDIT CHECKLIST



Consulting

	N/A or not observed	Yes	No	Photo/Remarks
2.15 Is open burning prohibited?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.16 Are completed earthworks sealed and hydroseeded and planted as soon as practicable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.17 Are vehicles and equipment switched off while not in use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.18 Do vehicles and equipment maintained that no excessive smoke or visible vapour emitted?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
Observable dust sources	<input type="checkbox"/> Wind erosion	<input checked="" type="checkbox"/> Vehicle/equipment movements		
	<input checked="" type="checkbox"/> Loading/unloading of materials	<input checked="" type="checkbox"/> Others _____		

**3 Noise**

3.1 Are the construction works scheduled to minimise noise nuisance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
3.2 Are the works or equipment sited to minimize noise nuisance? Mobile plant sited away from NSRs? Noisy plant oriented away from NSRs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
3.3 Are all plant and equipment well maintained and in good operating condition?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
3.4 Is idle equipment turned off or throttled down?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
3.5 Are powered mechanical equipment covered or shielded by appropriate acoustic materials?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3.6 Are quiet plant used as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3.7 Are silencers/mufflers fitted and maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3.8 Are mobile/temporary noise barriers used where specified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3.9 Do air compressors ( $\geq 500\text{kPa}$ of supplying compressed air) and hand held percussive breakers ( $> 10\text{kg}$ in weight) have valid noise labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3.10 Do compressors and generators operate with doors closed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3.11 Are Construction Noise Permits available for inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Major noise source(s)	<input type="checkbox"/> Traffic	<input checked="" type="checkbox"/> Construction activities inside of site		
	<input type="checkbox"/> Construction activities outside of site	<input checked="" type="checkbox"/> Others _____		

**4 Waste/Chemical Management**

4.1 General refuse				
4.1.1 Accumulation on-site avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.1.2 Receptacles (e.g. rubbish bins) available?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.1.3 Disposed of regularly and properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.1.4 Records of quantities generated/recycled/disposed maintained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

SkyCity Golf Course  
Environmental Team (ET) for Construction Period  
SITE INSPECTION/AUDIT CHECKLIST



	N/A or not observed	Yes	No	Photo/Remarks
<b>4.2 Chemical waste</b>				
4.2.1 Stored properly in designated area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.2.2 Storage in accordance with Code of Practice?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.2.3 Disposed of properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.2.4 Trip tickets available for inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>4.3 Chemical/fuel storage</b>				
4.3.1 Is storage area bunded?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⑦ _____
4.3.2 Adequate bund capacity? (>110% of the largest tank)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.3.3 Area storage area provided with locks and located on sealed areas?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.3.4 Are oil/fuel drums and plant/equipment provided with drip trays to prevent soil contamination?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⑧ _____
<b>4.4 C&amp;D Material</b>				
4.4.1 Reused/recycled where practicable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.4.2 Inert/non inert materials segregated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.4.3 Disposed of properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.4.4 Records of quantities generated/recycled/disposed maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>4.5 Excavated Material</b>				
4.5.1 Reused where practicable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.5.2 Records of quantities generated/reused/disposed maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.6 Are spent bentonite slurries or grouts collected, reconditioned and reused?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.7 Is foam, oil, grease, litter or other objectionable matters in water to nearby drain/sewer avoided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<b>5 Landscape and Visual</b>				
5.1 Are retained trees protected by fencing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5.2 Is the work site confined within site boundaries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
5.3 Is damage to surrounding areas avoided?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____

Remarks

Observations:

- 1) Perimeter cut off drains ~~around the site~~ <sup>along the southern boundary of the site (~20m)</sup> ~~are not fully created~~, Please provide the residual part. <sub>around the site</sub> constructed
- 2) Exposed slope surface is not covered. This surface should be covered or watered regularly.
- 3) Unyowed areas should be watered more frequently during dry periods.
- 4) Stockpiles should be watered more frequently during dry periods.
- 5) Materials transport on truck are not covered. Please cover the material.
- 6) Dusty materials are not watered during loading. Please water the material.
- 7) No chemical storage area is present. Please provide this area as soon as possible.
- 8) Oil drums without drip tray are observed. Please provide drip tray for every oil drums and chemical container.
- 9) Stragglant water is observed. Please remove it as soon as possible.

Reminders:

- 10) A copy of ABC form N/A should be available on site for inspection.
- 11) Discharge licence is recommended to be applied for even no wastewater is discharged.
- 12) The contractor is strongly recommended to keep all licences, permits and relevant documents on site for inspection.

Signatures:

ET Inspector

Client's Site Agent

Contractor's Representative

Name: Tony Ng

Name:

Name: Joe Lo

Date: 30-3-2006

Date:

Date: 30/3/2006.

# Appendix 2

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## Marine Water Quality Monitoring Data

Date	Time	Station	Sample Depth (m)	Water Depth (m)	Sea Temp (°C)	Salinity (ppt)	DO Sat (%age)	DO Conc (mg/ℓ)	Turbidity (NTU)	SS (mg/ℓ)
14 Mar 06	12:59 (mid-ebb)	M1	3	6	19.4	31.8	100	7.6	12	7
14 Mar 06	12:59 (mid-ebb)	M2	3	6	19.5	31.8	100	7.6	11	9
14 Mar 06	12:59 (mid-ebb)	C1	1.5	3	19.4	31.7	101	7.7	10	14
14 Mar 06	12:59 (mid-ebb)	C2	3	6	19.4	31.6	100	7.7	10	13
14 Mar 06	18:45 (mid-flood)	M1	3	6	19.2	34.2	100	7.6	5	10
14 Mar 06	18:45 (mid-flood)	M2	3	6	19.2	31.6	100	7.6	8	18
14 Mar 06	18:45 (mid-flood)	C1	1.5	3	19.2	31.7	100	7.6	10	11
14 Mar 06	18:45 (mid-flood)	C2	3	6	19.1	31.4	99	7.5	6	7
18 Mar 06	8:37 (mid-flood)	M1	3	6	19.2	34.0	100	7.6	5	28
18 Mar 06	8:37 (mid-flood)	M2	3	6	19.2	32.0	100	7.6	8	20
18 Mar 06	8:37 (mid-flood)	C1	1.5	3	19.2	32.0	100	7.6	10	19
18 Mar 06	8:37 (mid-flood)	C2	3	6	19.1	31.0	99	7.5	6	18
18 Mar 06	14:49 (mid-ebb)	M1	3	6	19.4	32.0	100	7.6	12	11
18 Mar 06	14:49 (mid-ebb)	M2	3	6	19.5	32.0	100	7.6	11	18
18 Mar 06	14:49 (mid-ebb)	C1	1.5	3	19.4	32.0	101	7.7	10	16
18 Mar 06	14:49 (mid-ebb)	C2	3	6	19.4	32.0	100	7.7	10	19
21 Mar 06	9:43 (mid-flood)	M1	3	6	19.7	31.5	103	7.8	7	9
21 Mar 06	9:43 (mid-flood)	M2	3	6	19.6	31.5	103	7.8	8	10
21 Mar 06	9:43 (mid-flood)	C1	2	4	19.8	31.6	103	7.8	7	10
21 Mar 06	9:43 (mid-flood)	C2	3	6	19.5	31.5	103	7.8	7	11
21 Mar 06	16:51 (mid-ebb)	M1	3	6	19.8	31.5	102	7.7	7	11
21 Mar 06	16:51 (mid-ebb)	M2	3	6	19.6	31.5	102	7.8	8	12
21 Mar 06	16:51 (mid-ebb)	C1	2	4	19.8	31.6	103	7.8	8	10

Date	Time	Station	Sample Depth (m)	Water Depth (m)	Sea Temp (°C)	Salinity (ppt)	DO Sat (%age)	DO Conc (mg/ℓ)	Turbidity (NTU)	SS (mg/ℓ)
21 Mar 06	16:51 (mid-ebb)	C2	3	6	19.5	31.5	102	7.8	7	12
24 Mar 06	8:10 (mid-flood)	M1	3	6	19.9	29.8	86	6.6	10	8
24 Mar 06	8:10 (mid-flood)	M2	3	6	19.9	29.8	85	6.5	6	9
24 Mar 06	8:10 (mid-flood)	C1	1.5	3	19.9	29.7	86	6.6	9	15
24 Mar 06	8:10 (mid-flood)	C2	3	6	20.0	30.2	86	6.5	6	12
24 Mar 06	14:49 (mid-ebb)	M1	3	6	20.0	29.6	87	6.6	8	9
24 Mar 06	14:49 (mid-ebb)	M2	3	6	20.0	29.5	87	6.6	6	8
24 Mar 06	14:49 (mid-ebb)	C1	1.5	3	20.0	29.4	86	6.6	7	15
24 Mar 06	14:49 (mid-ebb)	C2	3	6	20.0	29.7	85	6.6	5	9
27 Mar 06	11:53 (mid-ebb)	M1	3	6	19.7	30.3	91	7.0	7	5
27 Mar 06	11:53 (mid-ebb)	M2	3	6	19.8	29.9	90	6.9	6	7
27 Mar 06	11:53 (mid-ebb)	C1	1.5	3	19.8	30.3	91	7.0	13	9
27 Mar 06	11:53 (mid-ebb)	C2	3	6	19.8	29.6	89	6.8	12	24
27 Mar 06	17:14 (mid-flood)	M1	3	6	19.7	30.1	91	6.9	8	11
27 Mar 06	17:14 (mid-flood)	M2	3	6	19.7	30.7	91	7.0	12	14
27 Mar 06	17:14 (mid-flood)	C1	1.5	3	19.7	30.4	91	6.9	14	8
27 Mar 06	17:14 (mid-flood)	C2	3	6	19.7	30.6	91	6.9	10	9
31 Mar 06	14:17 (mid-ebb)	M1	6	3	20.9	29.5	92	6.9	19	22
31 Mar 06	14:17 (mid-ebb)	M2	6	3	20.6	29.4	91	6.8	18	44
31 Mar 06	14:17 (mid-ebb)	C1	3	1.5	21.0	29.4	92	6.9	19	31
31 Mar 06	14:17 (mid-ebb)	C2	6	3	20.8	29.4	91	6.8	17	26
31 Mar 06	7:59 (mid-flood)	M1	6	3	21.1	29.6	92	6.9	29	27
31 Mar 06	7:59 (mid-flood)	M2	6	3	20.9	28.5	93	7.0	16	25



Date	Time	Station	Sample Depth (m)	Water Depth (m)	Sea Temp (°C)	Salinity (ppt)	DO Sat (%age)	DO Conc (mg/ℓ)	Turbidity (NTU)	SS (mg/ℓ)
31 Mar 06	7:59 (mid-flood)	C1	3	1.5	21.1	29.7	92	6.9	25	25
31 Mar 06	7:59 (mid-flood)	C2	6	3	20.7	29.0	91	6.9	18	21

**Notes** : “-“ indicates no data is available

**Bold** indicates Action Level exceedance

**Bold** indicates Limit Level exceedance

<b>Mean</b>	19.8	30.8	95.2	7.2	10.5	14.9
<b>Minimum</b>	21.1	34.2	103	7.8	29	44
<b>Maximum</b>	19.1	28.5	85	6.5	5	5

# Appendix 3

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## Equipment Calibration Details

# CERTIFICATE OF ANALYSIS



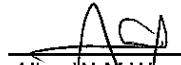
Batch: HK49674  
Sub Batch : 0  
Date of Issue: 24/02/2006  
Client: MAUNSELL ENV MGT CNLT LTD  
Client Reference:

## Calibration of Tubidimeter

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6820-C-M  
Serial No. : 0001093A  
Equipment No. : W-026-23  
Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B  
Date of Calibration : 23 February,2006

### Testing Results :

Expected Reading	Recording Reading
0.00 NTU	0.00 NTU
4.00 NTU	4.30 NTU
16.0 NTU	16.7 NTU
80.0 NTU	84.6 NTU
160 NTU	167 NTU
Allowing Deviation	±10%

  
Alice W M Wong  
Laboratory Manager - Hong Kong

# CERTIFICATE OF ANALYSIS




Batch: HK49674  
Sub Batch : 0  
Date of Issue: 24/02/2006  
Client: MAUNSELL ENV MGT CNLT LTD  
Client Reference:

## Calibration of Conductivity System

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6820-C-M  
Serial No. : 0001093A  
Equipment No. : W-026-23  
Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2510B  
Date of Calibration : 23 February,2006

### Testing Results :

Expected Reading	Recording Reading
1412 uS/cm	1488 uS/cm
6667 uS/cm	6720 uS/cm
58670 uS/cm	59330 uS/cm
Allowing Deviation	±10%

  
\_\_\_\_\_  
Alice W M Wong  
Laboratory Manager - Hong Kong

# CERTIFICATE OF ANALYSIS



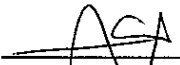
Batch: HK49674  
Sub Batch : 0  
Date of Issue: 24/02/2006  
Client: MAUNSELL ENV MGT CNLT LTD  
Client Reference:

## Calibration of Salinity System

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6820-C-M  
Serial No. : 0001093A  
Equipment No. : W-026-23  
Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2520 A and B  
Date of Calibration : 23 February,2006

### Testing Results :

Expected Reading	Recording Reading
10.0 g/L	10.1 g/L
20.0 g/L	20.3 g/L
30.0 g/L	30.6 g/L
Allowing Deviation	±10%

  
\_\_\_\_\_  
Alice W M Wong  
Laboratory Manager - Hong Kong

# CERTIFICATE OF ANALYSIS



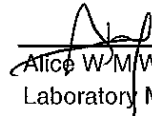
Batch: HK49674  
Sub Batch : 0  
Date of Issue: 24/02/2006  
Client: MAUNSELL ENV MGT CNLT LTD  
Client Reference:

## Calibration of Thermometer

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6820-C-M  
Serial No. : 0001093A  
Equipment No. : W-026-23  
Calibration Method : In-house Method  
Date of Calibration : 23 February,2006

### Testing Results :

Reference Temperature (°C)	Recorded Temperature (°C)
18.0 °C	18.2 °C
40.0 °C	40.1 °C
Allowing Deviation	±2.0°C

  
Alice W.M. Wong  
Laboratory Manager - Hong Kong

# CERTIFICATE OF ANALYSIS



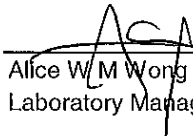
Batch: HK49674  
Sub Batch : 0  
Date of Issue: 24/02/2006  
Client: MAUNSELL ENV MGT CNLT LTD  
Client Reference:

## Calibration of DO System

Item : YSI SONDE Environmental Monitoring System  
Model No. : 6820-C-M  
Serial No. : 0001093A  
Equipment No. : W-026-23  
Calibration Method : This meter was calibrated in accordance with standard method APHA (18th Ed.) 4500-OC & G  
Date of Calibration : 23 February,2006

### Testing Results :

Expected Reading	Recording Reading
0.00 mg/L	0.00 mg/L
2.88 mg/L	3.00 mg/L
4.88 mg/L	4.96 mg/L
8.52 mg/L	8.46 mg/L
Allowing Deviation	±0.2 mg/L

  
Alice W M Wong  
Laboratory Manager - Hong Kong

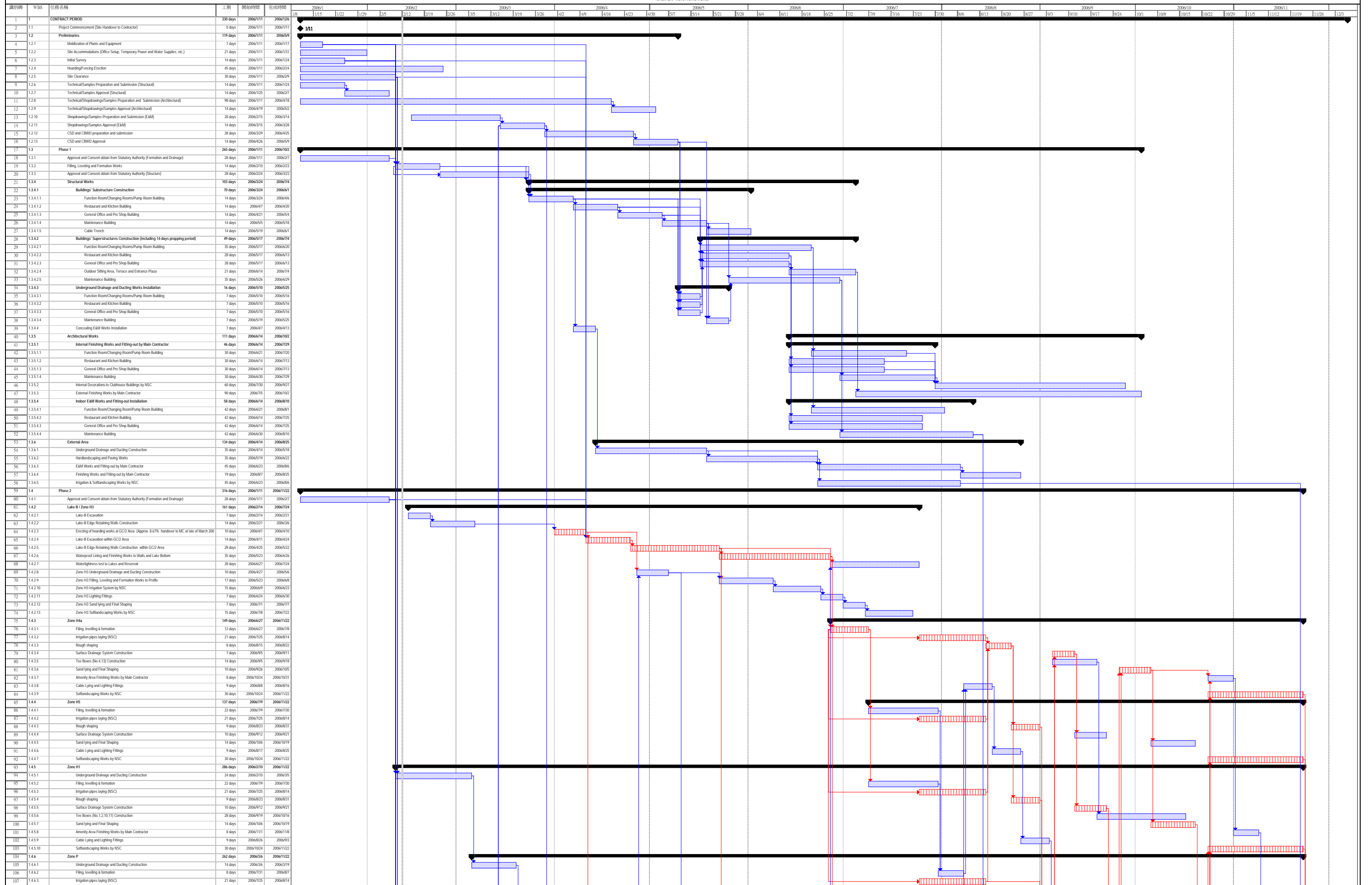
# Appendix 4

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## Works Programme



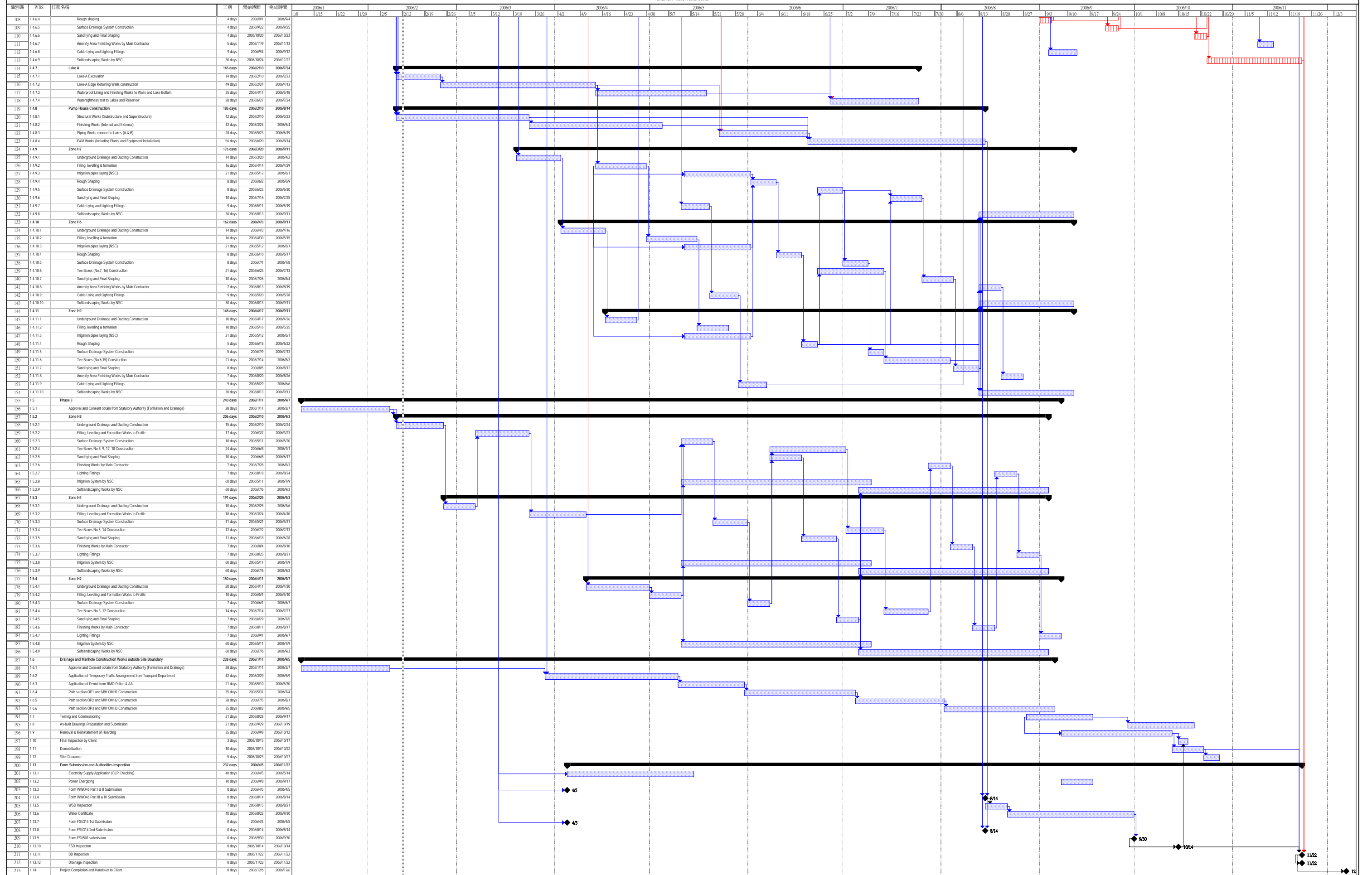
PROJECT: SKY CITY GOLF COURSE  
LOT NO.825, REP. OF CHEK LAP KOK LOT NO. 1 AND THE EXTENSION THERETO,  
CHEK LAP KOK, HONG KONG



Title: Master Programme Revision 1  
Revision Date: 10 Feb 2006

任務 (Task)   變更任務 (Change Task)   進度 (Progress)   里程碑 (Milestone)   摘要 (Summary)   上層型任務 (Parent Task)   上層型變更任務 (Parent Change Task)   上層型里程碑 (Parent Milestone)   上層型進度 (Parent Progress)   分割 (Split)   外部任務 (External Task)   專家摘要 (Expert Summary)   摘要詳組 (Summary Detail Group)

PROJECT: SKY CITY GOLF COURSE  
LOT NO 825, REP. OF CHEK LAP KOK LOT NO. 1 AND THE EXTENSION THERE TO,  
CHEK LAP KOK, HONG KONG



# Appendix 5

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## Marine Water Monitoring Schedule for Next Month

**Sky City Golf Course EM&A  
Tentative Water Quality Monitoring Schedule for April 2006**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	01-Apr
	Mid-Ebb 11:53 09:53 <i>09:36</i> 14:10 Mid-Flood 17:14 15:14 19:14 <i>14:10</i> <i>20:18</i>				Mid-Flood 07:59 05:59 09:59 <i>04:56</i> 11:02 Mid-Ebb 14:17 12:17 16:17 <i>11:02</i> <i>17:32</i>	
02-Apr	03-Apr	04-Apr	05-Apr	06-Apr	07-Apr	08-Apr
	Mid-Flood 09:15 07:15 11:15 <i>06:01</i> 12:29 Mid-Ebb 16:28 14:28 18:28 <i>12:29</i> <i>20:27</i>				Mid-Flood 08:44 06:44 10:44 <i>00:30</i> 16:58 Mid-Ebb 21:11 19:11 23:11 <i>16:58</i> <i>01:25</i>	
09-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	15-Apr
	Mid-Ebb 11:42 09:42 13:42 <i>09:10</i> 14:15 Mid-Flood 17:17 15:17 19:17 <i>14:15</i> <i>20:20</i>				Mid-Ebb 13:25 11:25 15:25 <i>10:08</i> 16:42 Mid-Flood 19:52 17:52 21:52 <i>16:42</i> <i>23:03</i>	
16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr
	Mid-Flood 08:18 06:18 10:18 <i>05:14</i> 11:22 Mid-Ebb 15:05 13:05 17:05 <i>11:22</i> <i>18:48</i>				Mid-Flood 06:14 04:14 08:14 <i>22:06</i> 14:23 Mid-Ebb 18:54 16:54 20:54 <i>14:23</i> <i>23:26</i>	
23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr
	Mid-Ebb 10:49 08:49 12:49 <i>08:29</i> 13:09 Mid-Flood 16:07 14:07 18:07 <i>13:09</i> <i>19:05</i>				Mid-Flood 06:46 04:46 08:46 <i>03:40</i> 09:52 Mid-Ebb 13:17 11:17 15:17 <i>09:52</i> <i>16:43</i>	