

Airport Management Services Limited

# SkyCity Golf Course EM&A

## Monthly Impact Report

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November 2006

13 December 2006

Report no: 01332R0121



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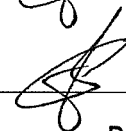
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**Report no:** 01332R0121

**Date:** 13 December 2006

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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. 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 November 2006 in accordance with the approved EM&A Manual. Monitoring was carried out on 4, 7, 11, 14, 18, 21, 25 and 28 November. The monitoring results are detailed in this report, which complies with the reporting requirements stated in the approved EM&A Manual. There was no exceedance of Action/Limit Levels of marine water quality monitoring during November 2006.

There were no complaints received and no notifications of summons during the reporting month.

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.

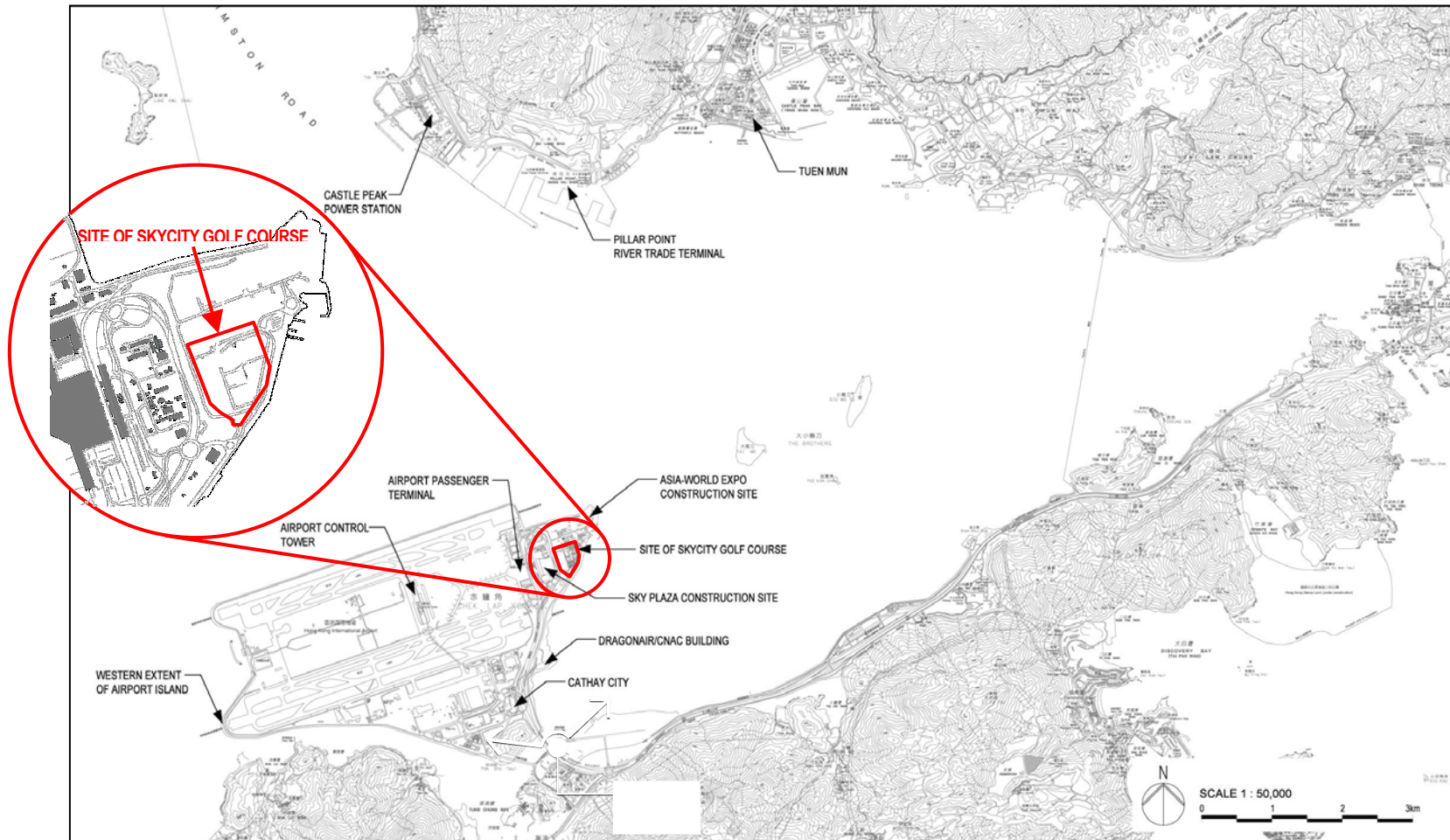


Figure 1-1 Location of SkyCity Golf Course on the Airport Island

## 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 November 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.

As indicated by the Contractor, no water has been discharged from the site during the reporting month. Rainfall occurred occasionally during the reporting month. Rainwater was collected in the excavated lake bowls with impermeable liner.

It is noted that a Discharge Licence under the Water Pollution Control Ordinance has been issued by EPD to the Contractor. The Contractor is reminded to keep the license on site for inspection.

### 2.2 Air Quality

It was observed that most of the site areas were covered by turfgrass. All the stockpiles of dusty materials were covered by tarpaulin. No adverse air quality caused by the construction activities was observed.

### 2.3 Noise

No significant noise problems were noted as noise sensitive receivers are far away from the site.

### 2.4 Waste/Chemical Management

Three-colour recycling bins have been placed near to the Contractor's site office. The Contractor has registered as a Waste Producer under the Waste Disposal Ordinance. It was observed that chemical waste storage has been provided

Some oil drums without drip tray standing on the ground near the clubhouse building was observed. The Contractor was reminded to provide drip tray for all oil drums.

Rubbish accumulated around the pump room, water tank room and generator room was observed. As advised by the Contractor, rubbish were generated and

accumulated because scaffoldings of such structures were being dismantled. The accumulated rubbishes would be removed as soon as possible.

## 2.5 Landscape and Visual

As the construction works of this project is nearly completed. It was observed that site hoardings were being dismantled and fencings were being erected. There were no landscape or visual issues at this time.

## 2.6 General

The Environmental Permit is displayed at the entrance to the site as required. The Contractor was reminded 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 is 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 (%age)	DO Concentration (mg/l)	Turbidity (NTU)	SS (mg/l)
C1	Mean	25.0	32.4	79.7	5.6	8	6
	Maximum	26.9	35.3	95.1	6.5	14	12
	Minimum	23.3	31.0	66.7	5.2	4	3
C2	Mean	25.0	32.5	78.8	5.6	8	6
	Maximum	26.6	35.4	91.9	6.3	14	12
	Minimum	23.4	31.2	63.3	5.0	4	2
M1	Mean	25.0	32.4	79.8	5.7	8	6
	Maximum	26.6	35.4	95.9	6.5	14	13
	Minimum	23.3	31.1	65.5	5.1	4	2
M2	Mean	25.0	32.4	79.9	5.7	8	6
	Maximum	26.7	35.5	97.6	6.8	14	11
	Minimum	23.0	31.2	64.6	5.1	4	2

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
04/11/06	08:44 to 14:37	11:40	14:37 to 20:52	17:44
07/11/06	11:49 to 16:06	13:57	05:17 to 11:49	08:33
11/11/06	00:10 to 08:54	04:32	08:54 to 00:52	16:53
14/11/06	03:33 to 11:48	07:40	11:48 to 19:50	15:49
18/11/06	08:41 to 14:00	11:20	14:00 to 20:17	17:08
21/11/06	11:06 to 15:12	13:09	15:12 to 21:26	18:19
25/11/06	14:34 to 16:36	15:35	07:27 to 14:34	11:00
28/11/06	18:19 to 21:14	19:46	10:07 to 18:19	14:13

**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 was no exceedance of Action/Limit Level of marine water quality monitoring during November 2006.

#### 3.3.2 Action Taken and Follow-up

As no exceedance of A/L Levels were recorded during the reporting month, 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.

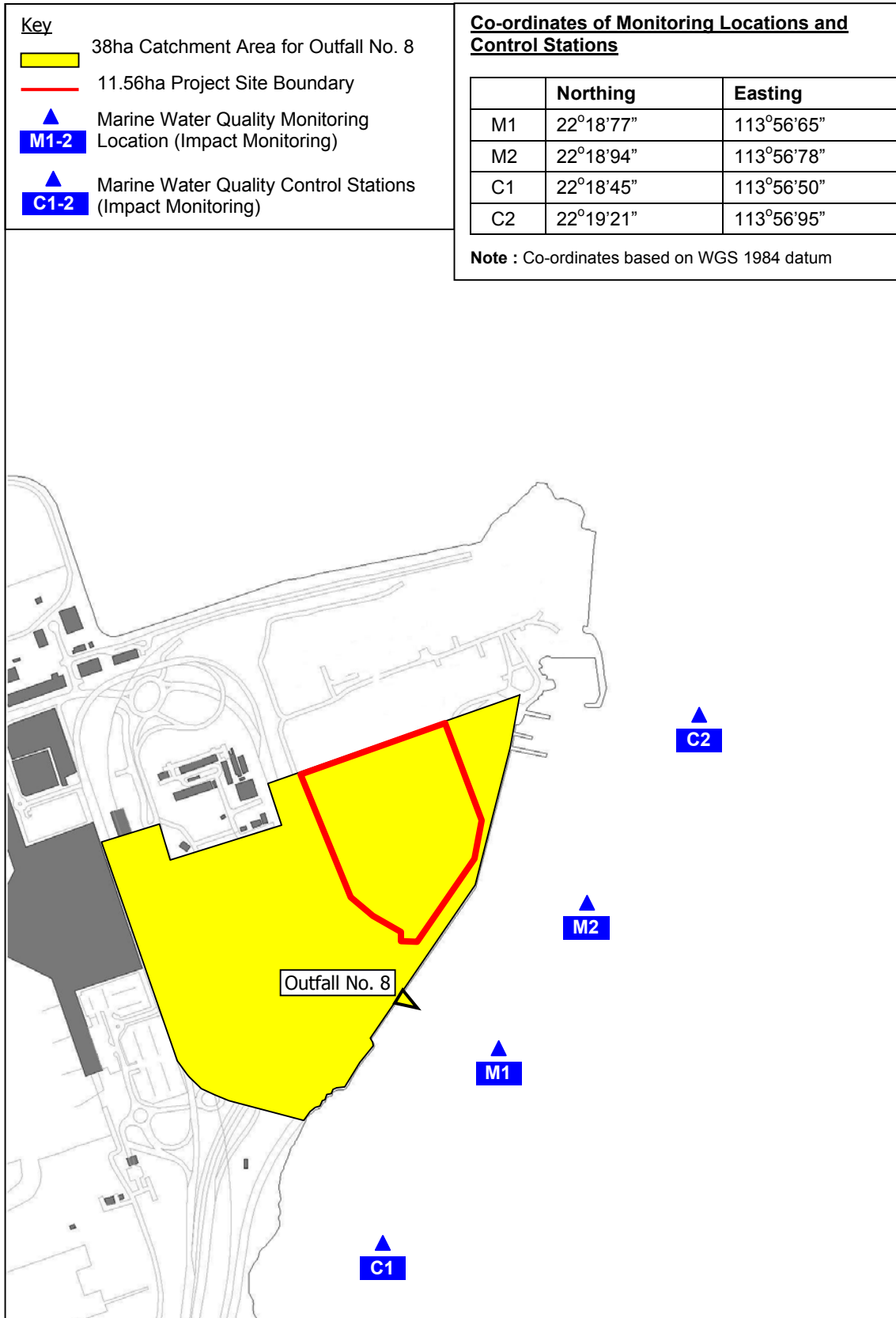
#### 3.4.2 Notifications of Summons

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 was no significant non-compliance 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 no exceedances of A/L Levels during November 2006.

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.

Inspection Date  Time  Inspected By

Site  Contractor  Client:

Contractor:  ET:

**Weather**

Condition  Sunny  Fine  Overcast  Drizzle  Rain  Storm  Hazy

Temperature  °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"/>	
1.2 Is all surface runoff directed to silt removal facilities prior to discharge?	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>	
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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
1.18 Is Effluent Discharge Licence available for inspection?	<input type="checkbox"/>	<input checked="" 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"/>	_____
2.3 Are stockpiles of excavated material covered or regularly watered?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
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 checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.8 Are dusty materials sprayed prior to loading?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.9 Are all truck loads to a level within the side and tail boards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
2.10 Are areas where demolition/site clearance/breaking take place regularly watered?	<input checked="" type="checkbox"/>	<input 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



	N/A or not observed	Yes	No	Photo/Remarks
2.15 Is open burning prohibited?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2.16 Are completed earthworks sealed and hydroseeded and planted as soon as practicable?	<input type="checkbox"/>	<input checked="" 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     Wind erosion                       Vehicle/equipment movements

Loading/unloading of materials     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 (≥500kPa of supplying compressed air) and hand held percussive breakers (>10kg in weight) have valid noise labels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
3.10 Do compressors and generators operate with doors closed?	<input type="checkbox"/>	<input checked="" 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)     Traffic                                       Construction activities inside of site

Construction activities outside of site     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"/>	See Note ④
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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.2.2 Storage in accordance with Code of Practice?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.2.3 Disposed of properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.2.4 Trip tickets available for inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
<b>4.3 Chemical/fuel storage</b>				
4.3.1 Is storage area bunded?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.3.2 Adequate bund capacity? (>110% of the largest tank)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.3.3 Area storage area provided with locks and located on sealed areas?	<input type="checkbox"/>	<input checked="" 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"/>	see note ③
<b>4.4 C&amp;D Material</b>				
4.4.1 Reused/recycled where practicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.4.2 Inert/non inert materials segregated?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.4.3 Disposed of properly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.4.4 Records of quantities generated/recycled/disposed maintained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
<b>4.5 Excavated Material</b>				
4.5.1 Reused where practicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
4.5.2 Records of quantities generated/reused/disposed maintained?	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	_____
<b>5 Landscape and Visual</b>				
5.1 Are retained trees protected by fencing?	<input type="checkbox"/>	<input checked="" 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"/>	_____

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



Remarks


- ① Mud trails on the public road outside the site entrance were cleared up. Last observation closed.
- ② All the dusty stockpiles were covered by tarpaulin sheets. Last observation closed.
- ③ Some oil drums standing on the ground without drip tray near the club house building was observed.
- ④ Accumulated rubbishes were observed around the pump room, water tank room and generator room. As advised by the Contractor, this was because scaffoldings of such buildings were being dismantled and many rubbishes were generated. The rubbishes would be removed as soon as possible.

Signatures:


ET Inspector

AMS Site Representative

Contractor's Representative

  
Name: Adi Lee

Date: 30 Nov 06

  
Name: William

Date: 4/12/06

Name: [Signature]

Date: 22-12-06

## Appendix 2

---

# 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)
04-Nov-06	(mid-ebb)	M1	3	6	26.6	33.3	73	5.3	11	13
04-Nov-06	(mid-ebb)	M2	3	6	26.7	33.4	74	5.4	11	11
04-Nov-06	(mid-ebb)	C1	2	3	26.9	33.2	76	5.5	11	12
04-Nov-06	(mid-ebb)	C2	4	7	26.6	33.3	73	5.4	11	12
04-Nov-06	(mid-flood)	M1	3	6	26.6	33.2	72	5.3	11	11
04-Nov-06	(mid-flood)	M2	3	6	26.6	33.2	71	5.2	11	10
04-Nov-06	(mid-flood)	C1	2	3	26.1	33.1	73	5.3	11	10
04-Nov-06	(mid-flood)	C2	3	7	26.4	33.3	70	5.1	10	8
07-Nov-06	(mid-ebb)	M1	3	6	26.3	31.9	89	6.2	6	9
07-Nov-06	(mid-ebb)	M2	3	6	26.4	31.9	90	6.3	6	7
07-Nov-06	(mid-ebb)	C1	2	3	26.4	31.7	90	6.3	6	6
07-Nov-06	(mid-ebb)	C2	3	6	26.4	31.8	90	6.3	6	8
07-Nov-06	(mid-flood)	M1	3	6	26.3	31.9	94	6.4	6	6
07-Nov-06	(mid-flood)	M2	3	6	26.2	31.8	93	6.4	6	7
07-Nov-06	(mid-flood)	C1	2	4	26.3	31.8	95	6.5	6	6
07-Nov-06	(mid-flood)	C2	3	6	26.2	31.8	91	6.3	6	7
11-Nov-06	(mid-ebb)	M1	3	6	25.3	31.2	77	5.5	12	5
11-Nov-06	(mid-ebb)	M2	3	7	25.4	31.3	78	5.6	12	4
11-Nov-06	(mid-ebb)	C1	2	4	25.5	31.1	79	5.7	12	3
11-Nov-06	(mid-ebb)	C2	4	7	25.3	31.2	77	5.5	11	3
11-Nov-06	(mid-flood)	M1	3	7	25.2	31.1	75	5.4	12	3

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)
11-Nov-06	(mid-flood)	M2	3	7	25.3	31.2	74	5.4	11	6
11-Nov-06	(mid-flood)	C1	2	4	24.8	31.0	76	5.5	12	4
11-Nov-06	(mid-flood)	C2	4	7	25.1	31.2	73	5.3	11	4
14-Nov-06	(mid-ebb)	M1	3	6	26.0	31.5	95	6.4	4	6
14-Nov-06	(mid-ebb)	M2	3	6	25.9	31.6	87	5.9	4	6
14-Nov-06	(mid-ebb)	C1	2	4	25.9	31.5	88	5.7	4	4
14-Nov-06	(mid-ebb)	C2	3	6	25.9	31.5	91	6.2	4	6
14-Nov-06	(mid-flood)	M1	3	6	25.9	31.5	96	6.5	4	6
14-Nov-06	(mid-flood)	M2	3	6	25.9	31.5	98	6.8	4	7
14-Nov-06	(mid-flood)	C1	2	4	25.9	31.5	84	5.7	4	6
14-Nov-06	(mid-flood)	C2	3	6	25.9	31.6	92	6.3	4	6
18-Nov-06	(mid-ebb)	M1	3	6	24.5	35.4	77	5.5	14	3
18-Nov-06	(mid-ebb)	M2	3	7	24.6	35.5	78	5.6	14	<2
18-Nov-06	(mid-ebb)	C1	2	4	24.7	35.3	79	5.7	14	<2
18-Nov-06	(mid-ebb)	C2	4	7	24.5	35.4	77	5.5	14	2
18-Nov-06	(mid-flood)	M1	3	7	24.5	35.2	75	5.4	14	2
18-Nov-06	(mid-flood)	M2	3	7	24.5	35.3	74	5.4	14	2
18-Nov-06	(mid-flood)	C1	2	4	24.0	35.2	76	5.5	14	3
18-Nov-06	(mid-flood)	C2	4	7	24.3	35.3	73	5.3	13	6
21-Nov-06	(mid-ebb)	M1	3	6	23.5	31.8	67	5.2	8	5
21-Nov-06	(mid-ebb)	M2	4	7	23.4	31.5	68	5.2	8	4



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-Nov-06	(mid-ebb)	C1	2	4	23.3	31.7	69	5.3	8	4
21-Nov-06	(mid-ebb)	C2	4	8	23.6	31.8	67	5.2	8	6
21-Nov-06	(mid-flood)	M1	4	7	23.4	31.6	66	5.1	7	4
21-Nov-06	(mid-flood)	M2	3	7	23.0	31.2	65	5.1	7	4
21-Nov-06	(mid-flood)	C1	2	4	23.7	31.9	67	5.2	8	5
21-Nov-06	(mid-flood)	C2	4	7	23.6	31.8	63	5.0	8	7
25-Nov-06	(mid-ebb)	M1	3	6	24.5	32.2	80	5.6	9	4
25-Nov-06	(mid-ebb)	M2	3	6	24.6	32.2	81	5.7	9	2
25-Nov-06	(mid-ebb)	C1	2	3	24.7	32.1	82	5.8	9	3
25-Nov-06	(mid-ebb)	C2	3	7	24.5	32.2	80	5.7	8	2
25-Nov-06	(mid-flood)	M1	3	6	24.5	32.0	79	5.6	9	3
25-Nov-06	(mid-flood)	M2	3	6	24.5	32.1	78	5.5	8	3
25-Nov-06	(mid-flood)	C1	2	3	24.0	31.9	80	5.6	9	3
25-Nov-06	(mid-flood)	C2	3	7	24.3	32.1	76	5.4	8	3
28-Nov-06	(mid-ebb)	M1	3	6	23.4	32.6	86	6.0	5	7
28-Nov-06	(mid-ebb)	M2	3	6	23.5	32.6	82	5.8	5	6
28-Nov-06	(mid-ebb)	C1	2	4	23.4	32.6	86	6.0	5	7
28-Nov-06	(mid-ebb)	C2	3	6	23.4	32.6	89	6.0	5	5
28-Nov-06	(mid-flood)	M1	3	6	23.3	32.7	79	5.4	4	6
28-Nov-06	(mid-flood)	M2	3	6	23.4	32.6	88	5.9	5	7
28-Nov-06	(mid-flood)	C1	2	4	23.4	32.7	76	5.2	5	8

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)
28-Nov-06	(mid-flood)	C2	3	6	23.4	32.6	81	5.5	4	6

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

**Bold** indicates Action Level exceedance

**Bold** indicates Limit Level exceedance

<b>Mean</b>	25.0	32.4	79.6	5.7	8.3	5.7
<b>Maximum</b>	26.9	35.5	97.6	6.8	14.4	13.0
<b>Minimum</b>	23.0	31.0	63.3	5.0	3.5	2.0

## Appendix 3

---

# Equipment Calibration Details



**CERTIFICATE OF ANALYSIS**

**CONTACT:** MR EDDIE YANG  
**CLIENT:** MAUNSELL ENV MGT CNLT LTD  
**ADDRESS:** 11TH FLOOR TOWER II  
GRAND CENTRAL PLAZA  
138 SHATIN RURAL COMMITTEE RD NT  
**ORDER No.:**  
**PROJECT:**

**Batch:** HK0605418  
**Sub Batch:** 0  
**LABORATORY:** HONG KONG  
**DATE RECEIVED:** 25/10/2006  
**DATE OF ISSUE:** 26/10/2006  
**SAMPLE TYPE:** EQUIPMENT  
**No. of SAMPLES:** 1

**COMMENTS**

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

**NOTES**

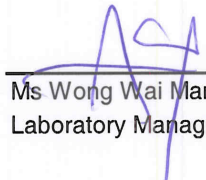
This is the Final Report and supersedes any preliminary report with this batch number.  
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

**ISSUING LABORATORY: HONG KONG**

**Address**

ALS Technichem (HK) Pty Ltd  
11/F  
Chung Shun Knitting Centre  
1-3 Wing Yip Street  
Kwai Chung  
HONG KONG

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

  
Ms Wong Wai Man, Alice  
Laboratory Manager - Hong Kong

**Other ALS Environmental Laboratories**

**AUSTRALIA**

Brisbane  
Melbourne  
Sydney  
Newcastle

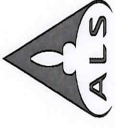
Hong Kong  
Singapore  
Kuala Lumpur  
Bogor

**AMERICAS**

Vancouver  
Santiago  
Amtofagasta  
Lima

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*Abbreviations: % SPK REC denotes percentage spike recovery  
CHK denotes duplicate check sample  
LOR denotes limit of reporting  
LCS % REC denotes Laboratory Control Sample percentage recovery*



# CERTIFICATE OF ANALYSIS

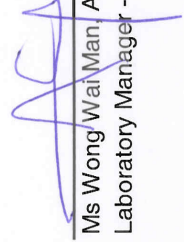
Batch: HK0605418  
 Sub Batch : 0  
 Date of Issue: 26/10/2006  
 Client: MAUNSELL ENV MGT CNLT LTD  
 Client Reference:

## Calibration of Turbidimeter

Item : YSI SONDE Environmental Monitoring System  
 Model No. : 6820-C-M  
 Serial No. : 00014C7E  
 Equipment No. : W-026-33  
 Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B  
 Date of Calibration : 26 October, 2006

### Testing Results :

Expected Reading	Recording Reading
0.00 NTU	0.30 NTU
4.00 NTU	3.70 NTU
16.0 NTU	15.8 NTU
80.0 NTU	79.4 NTU
160 NTU	154 NTU
Allowing Deviation	±10%

  
 Ms Wong Wai Man, Alice  
 Laboratory Manager - Hong Kong



# CERTIFICATE OF ANALYSIS


Batch: HK0605418  
 Sub Batch : 0  
 Date of Issue: 26/10/2006  
 Client: MAUNSELL ENV MGT CNLT LTD  
 Client Reference:

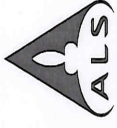
## Calibration of Conductivity System

Item : YSI SONDE Environmental Monitoring System  
 Model No. : 6820-C-M  
 Serial No. : 00014C7E  
 Equipment No. : W-026-33  
 Calibration Method : This meter was calibrated in accordance with standard method APHA (19th Ed.) 2510B  
 Date of Calibration : 26 October, 2006

### Testing Results :

Expected Reading	Recording Reading
1412 uS/cm 6667 uS/cm 58670 uS/cm Allowing Deviation	1434 uS/cm 6689 uS/cm 59680 uS/cm ±10%

  
 Ms Wong Wai Man, Alice  
 Laboratory Manager - Hong Kong



# CERTIFICATE OF ANALYSIS

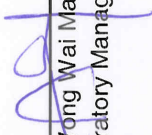
**Batch:** HK0605418  
**Sub Batch :** 0  
**Date of Issue:** 26/10/2006  
**Client:** MAUNSELL ENV MGT CNLT LTD  
**Client Reference:**

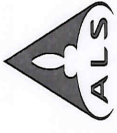
## Calibration of Salinity System

**Item :** YSI SONDE Environmental Monitoring System  
**Model No. :** 6820-C-M  
**Serial No. :** 00014C7E  
**Equipment No. :** W-026-33  
**Calibration Method :** This meter was calibrated in accordance with standard method APHA (19th Ed.) 2520 A and B  
**Date of Calibration :** 26 October, 2006

### Testing Results :

Expected Reading	Recording Reading
10.0 g/L	9.6 g/L
20.0 g/L	20.1 g/L
30.0 g/L	30.8 g/L
Allowing Deviation	±10%

  
 Ms. Wong Wai Man, Alice  
 Laboratory Manager - Hong Kong



# CERTIFICATE OF ANALYSIS

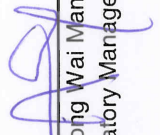
Batch: HK0605418  
 Sub Batch : 0  
 Date of Issue: 26/10/2006  
 Client: MAUNSELL ENV MGT CNLT LTD  
 Client Reference:

## Calibration of Thermometer

Item : YSI SONDE Environmental Monitoring System  
 Model No. : 6820-C-M  
 Serial No. : 00014C7E  
 Equipment No. : W-026-33  
 Calibration Method : In-house Method  
 Date of Calibration : 26 October, 2006

### Testing Results :

Reference Temperature (°C)	Recorded Temperature (°C)
25.1 °C	25.2 °C
36.8 °C	37.1 °C
Allowing Deviation	±2.0°C

  
 Ms Wong Wai Man, Alice  
 Laboratory Manager - Hong Kong

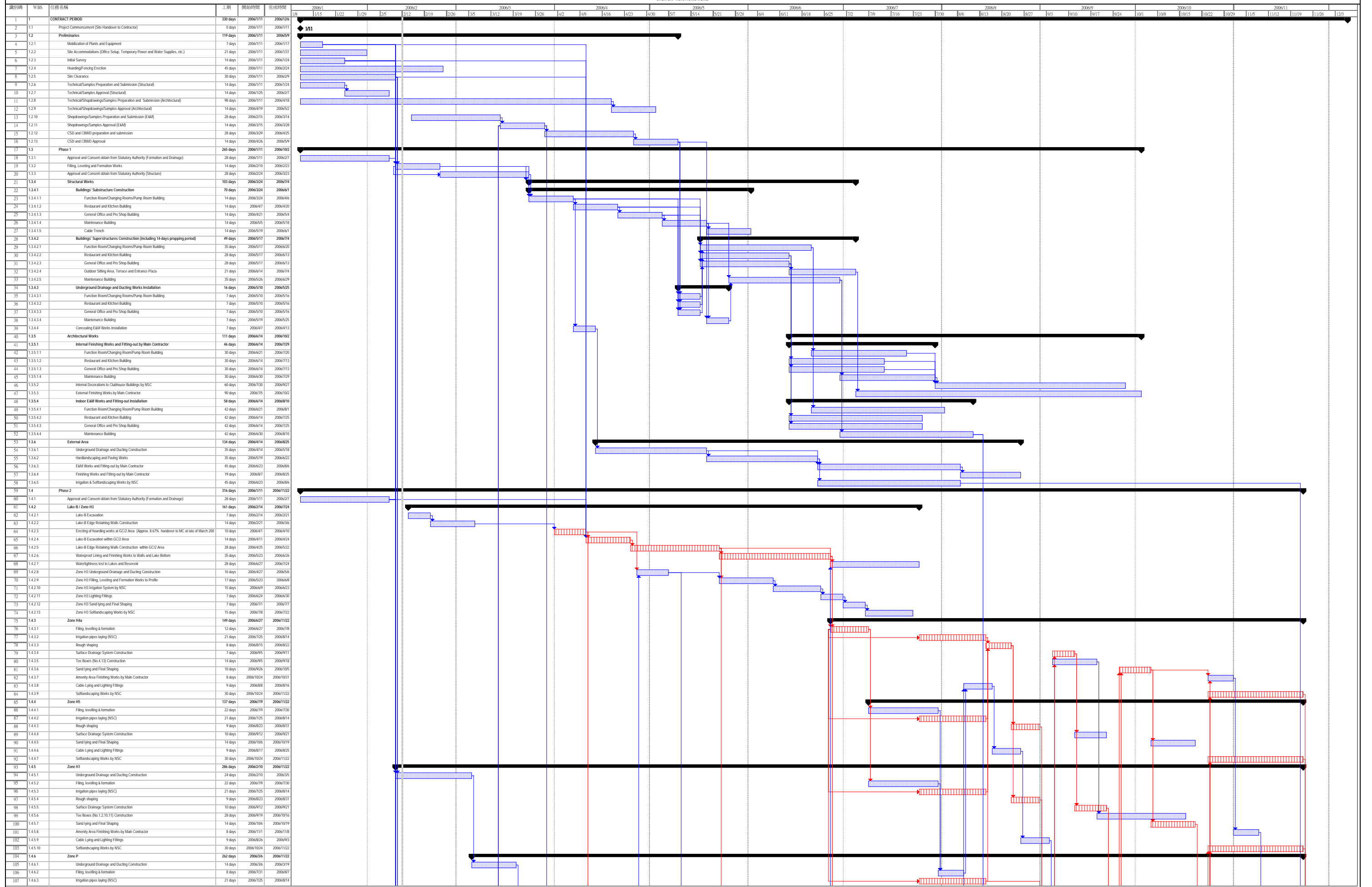


## Appendix 4

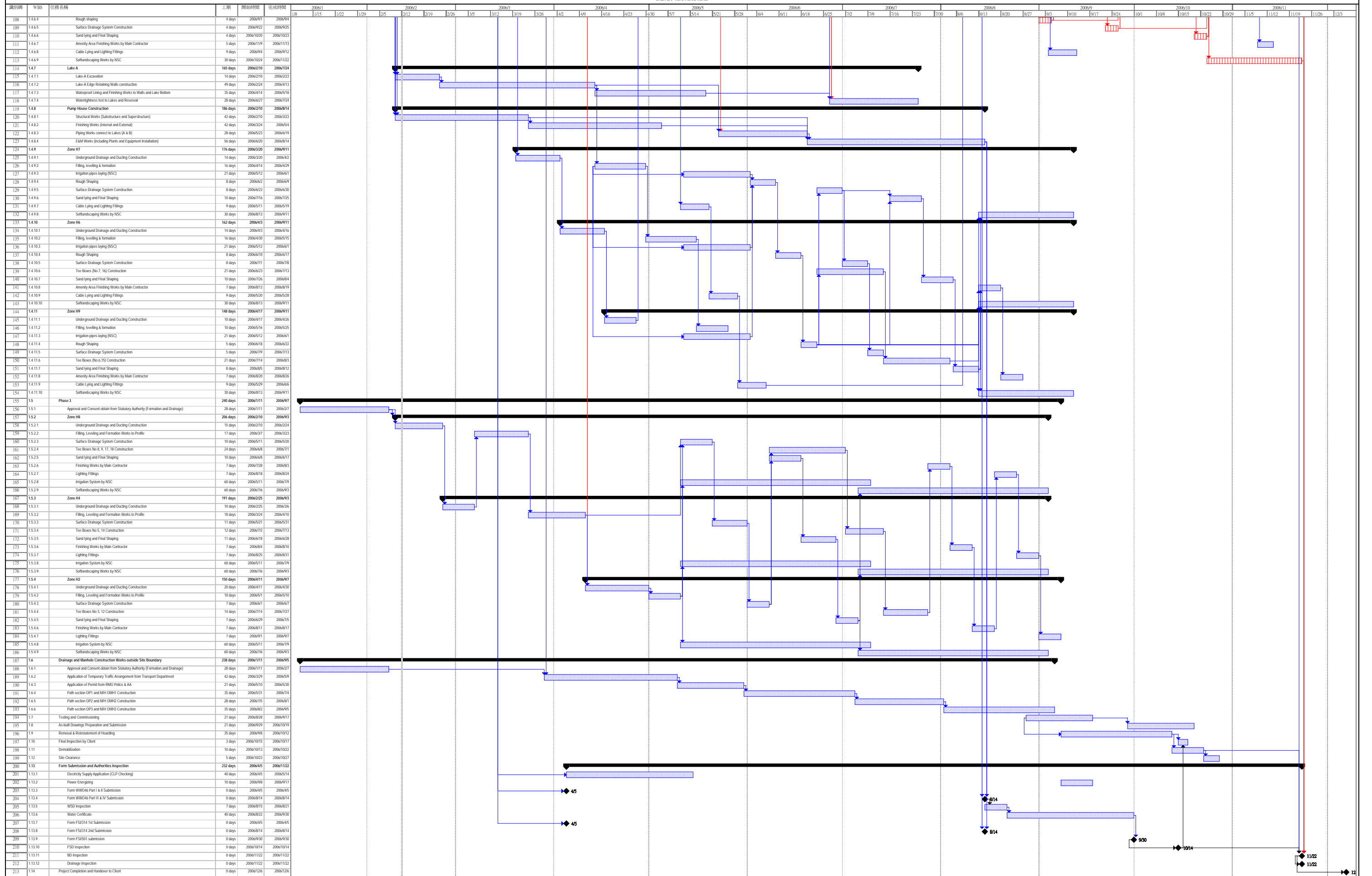
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# Works Programme

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



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



## 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 December 2006**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	01-Dec	02-Dec
		Mid-Flood 14:13 <i>10:07 18:19</i> Mid-Ebb 19:46 <i>18:19 21:14</i>				Mid-Ebb 10:23 <i>07:37 13:09</i> Mid-Flood 16:25 <i>13:09 19:41</i>
03-Dec	04-Dec	05-Dec	06-Dec	07-Dec	08-Dec	09-Dec
		Mid-Ebb 13:00 <i>11:08 14:52</i> Mid-Flood 18:06 <i>14:52 21:20</i>				Mid-Flood 11:01 <i>07:39 14:23</i> Mid-Ebb 15:22 <i>14:23 16:21</i>
10-Dec	11-Dec	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec
		Mid-Flood 13:42 <i>09:43 17:42</i> Mid-Ebb 19:01 <i>17:42 20:20</i>				Mid-Ebb 09:47 <i>07:28 12:06</i> Mid-Flood 15:32 <i>12:06 18:59</i>
17-Dec	18-Dec	19-Dec	20-Dec	21-Dec	22-Dec	23-Dec
		Mid-Ebb 12:11 <i>10:32 13:50</i> Mid-Flood 17:06 <i>13:50 20:23</i>				Mid-Flood 09:56 <i>06:33 13:19</i> Mid-Ebb 14:55 <i>13:19 16:31</i>
24-Dec	25-Dec	26-Dec	27-Dec	28-Dec	29-Dec	30-Dec
			Mid-Flood 12:50 <i>09:17 16:23</i> Mid-Ebb 18:48 <i>16:23 21:14</i>			Mid-Ebb 08:46 <i>06:14 11:19</i> Mid-Flood 14:51 <i>11:19 18:23</i>