Airport Management Services Limited

SkyCity Golf Course EM&A

Monthly Impact Report

September 2006

11 October 2006

Report no: 01332R0081



Airport Management Services Limited

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Monthly Impact Report

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Report no:

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1 Executive Summary

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 is 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 August 2006 in accordance with the approved EM&A Manual. Monitoring was carried out on 1, 5, 9, 12, 16, 19, 23, 26 and 30 September. 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 September 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.



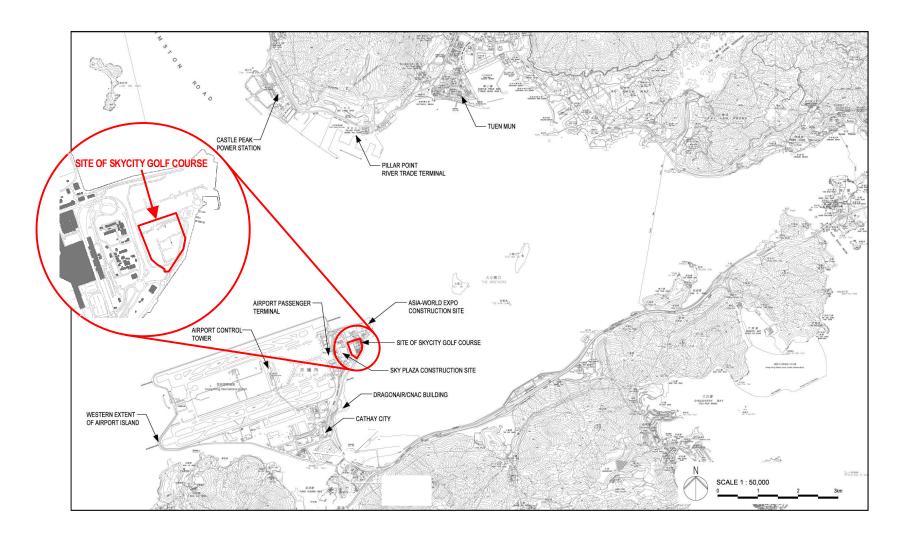


Figure 1-1 Location of SkyCity Golf Course on the Airport Island



2 Site Audit

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

Appendix 1 contains the site audit checklist for September 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. However, the Contractor was reminded to the silt accumulated in the wheel washing bay frequently. The remaining perimeter U-channel of some 20m along the southern part of the site is being constructed.

As indicated by the Contractor, no water has been discharged from the site during the reporting month. Only little rainfall occurred during the reporting month. Rainwater was collected in the excavated lake bowls. During the site audit, it was observed that the placement of the impermeable liner for the artificial lakes was completed. Rainwater was found containing in the lakes.

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. The Contractor is 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 adverse air quality caused by the construction activities as observed. However, the Contractor was reminded to provide water spray to the unpaved haul roads and areas frequently.

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.



However, the Contractor was reminded to provide drip trays for the oil drums standing on bare ground near the site office.

2.5 Landscape and Visual

The site is completely surrounded by a hoarding except a section where the construction of outfall no. 8 was being undertaken 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 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)
	Mean	27.2	26.5	80.7	5.7	4	5
C1	Maximum	30.3	32.0	95.6	7.0	7	9
	Minimum	24.9	12.1	52.8	3.7	3	2
				T	T		
	Mean	27.0	26.6	79.5	5.7	3	5
C2	Maximum	30.2	32.0	96.4	7.0	5	8
	Minimum	24.7	12.4	53.4	3.8	2	2
	Mean	27.0	26.5	80.0	5.7	4	5
M1	Maximum	30.1	32.1	95.5	7.0	6	9
	Minimum	24.8	12.3	52.7	3.8	2	2
	Mean	27.1	26.6	80.3	5.7	4	5
M2	Maximum	30.2	32.1	95.4	7.0	6	8
	Minimum	24.8	12.3	53.0	3.8	3	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*, 19th 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:

Doromotor		YSI Model 6820 CE-C-M-Y					
Parameter	Range	Resolution	Accuracy				
DO Concentration	0 to 50 mg/ l	0.01 mg/ℓ	0 to 20 mg/ ℓ : \pm 2% of reading or 0.2 mg/ ℓ , whichever is greater; 20 to 50 mg/ ℓ : \pm 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	$\pm2\%$ 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 ware 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
1/9/06	04:43 to 07:43	06:13	17:11 to 20:11	18:41
5/9/06	09:30 to 12:30	11:00	17:02 to 20:02	18:32
9/9/06	12:30 to 15:30	14:00	06:04 to 09:04	07:34
12/9/06	14:27 to 17:27	15:57	08:43 to 11.46	10:16
16/9/06	06:46 to 09:43	08:16	19:37 to 22:37	21:07
19/9/06	09:52 to 12:52	11:22	16:55 to 19:55	18:25
23/9/06	12:03 to 15:03	13:33	05:45 to 08:45	07:15
26/9/06	13:25 to 16:25	14:55	07:36 to 10:36	09:06
30/9/06	04:03 to 07:03	05:33	16:30 to 19:30	18:00

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 th 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 th percentile of baseline data = 9.6 NTU, or 120% of the upstream control station	99th percentile of baseline data = 10.5 NTU, or 130% of the upstream control station
SS	95th percentile of baseline data = 9.4 mg/ ℓ , or 120% of the upstream control station	99th 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	Ac	tion			
	ET	Works Contractor			
Exceedance of Action Level	 Identify the source(s) of impact. If not from the Project then provide justification and document this If exceedance is caused by the Project then inform Contractor Check monitoring data and Contractor's working methods Discuss possible mitigation measures with Contractor Repeat measurement on next day of exceedance 	 Confirm notification of the exceedance in writing Rectify any unacceptable practice Check all plant and equipment Amend working methods if appropriate Discuss possible mitigation measures with ET Implement the agreed mitigation measures 			
Exceedance of Limit Level	Identify the source(s) of impact. If not from the Project then provide justification and document this in the EM&A Report If exceedance is caused by the Project then inform Contractor Check monitoring data and Contractor's working methods Agree mitigation measures with Contractor Ensure mitigation measures are implemented immediately Increase the monitoring frequency to daily until no further exceedance of Limit Level	Confirm notification of the exceedance in writing Rectify any unacceptable practice Check all plant and equipment Amend working methods if appropriate Agree possible mitigation measures with ET Implement the agreed mitigation measures immediately			

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 September 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.



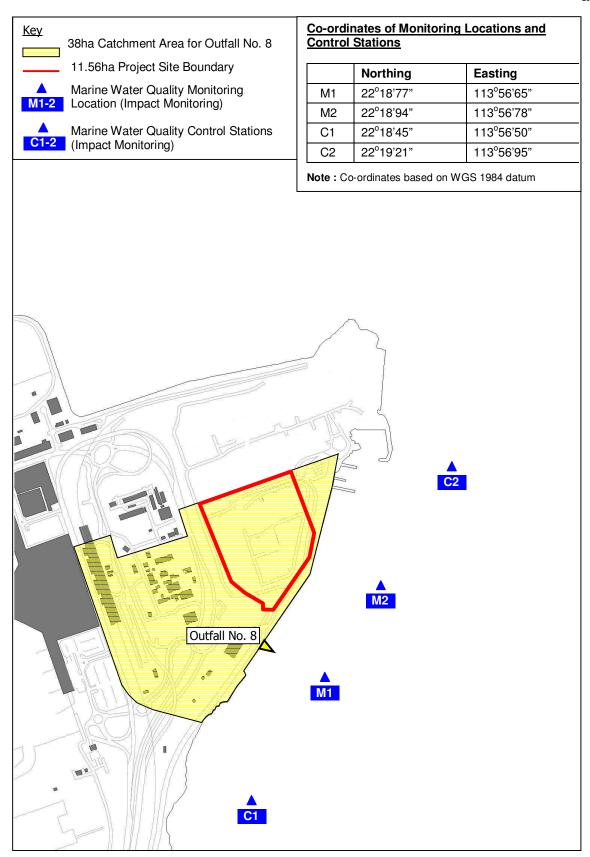


Figure 3-2 Location of Impact Monitoring Stations



4 Comments, Recommendations and Conclusions

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 September 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

Site Audit Checklist



		Inspection No.	
Inspection Site	Skyling Golflowice Contractor Wing Fat	Inspected By	Client: Contractor: K, f ET: Att Lel
Weather			
Conditio	Sunny Fine Overcast Drizzle	Rain	Storm Hazy
Tempera	ture 30 °C Humidity High	Moderate	Low
Wind	Calm Light Breeze Strong	Direction	
	N/A or not ob	served Yes	No Photo/Remarks
1 Wa	ater Quality Perimeter cut off drains direct off-site water around the site?		
1.2	Is all surface runoff directed to silt removal facilities prior to discharge?		
1.3	Channels, earth bunds or sandbags direct surface runoff to silt removal facilities?		
1.4	Is groundwater pumped out from tunnelling and excavations discharged via silt removal facilities?		
1.5	Are there silt removal facilities for settling surface runoff prior to discharge?		
	1.5.1 Constructed from pre-formed individual cells or silt traps / basins?		
	1.5.2 Adequate capacity?		
	1.5.3 Free from silt and sand?		
	1.5.4 Inspected and maintained after rain storm?		
1.6	Is drainage system well maintained to prevent flooding and overflow?		
1.7	Is exposed earth stabilized after earthworks have been completed?		
1.8	Are exposed slope surfaces covered (by tarpaulin or other means)?		
1.9	Are open stockpiles of excavated and construction materials covered during rainstorms?		
1.10	Any measures to prevent the washing away of excavated and construction materials e.g. sand/silt to drains?		
1.11	Are manholes covered and sealed?		
1.12	Are vehicles and plant cleaned of earth, mud and debris before leaving the site?		
1.13	Are vehicle washing facilities provided at every site exit?		



				N/A or	r not obse	rved	Yes	No	Photo/Remarks
		1.13.1	Wastewater treated in sil facility emptied of silt reg	t removal facility? Silt removularly?	/al				
		1.13.2	Washing area and road e	exiting from washing facility p	paved?				
		1.13.3	Access road has sufficient bunded to prevent of until	nt backfall toward washing fa reated wastewater?	cility or				
	1.14		ent oil and lubrication replac ance area?	cements performed only in b	unded [
	1.15	Drainage	e from maintenance area d	ischarged via an oil intercept	tor?				
		1.15.1	Oil and grease removed	regularly?	[
	1.16	Toilets th	nat connect to foul sewer o	r chemical toilets provided?					
	1.17	Is debris	and rubbish prevented from	m entering drains?	[
	1.18	ls Effluer	nt Discharge Licence availa	able for inspection?	[
2	Alf	R QUALIT	Υ						
	2.1	Are hoar public ac		I provided beside roads or a	reas with				
	2.2	Are the regeneration		vatered regularly to avoid dus	st [V		see Noti (4)
	2.3	Are stock	xpiles of excavated materia	l covered or regularly watere	ed? [
	2.4	ls stockp barriers,	ile of dusty materials kept t fencing or traffic cones?	to not extend beyond the peo	destrian				
	2.5	Is the pul dust?	blic road around the site er	ntrance kept clean and free f	rom				
	2.6	Do the si	te vehicles use the vehicle	wash facility at the site exits	? [
	2.7	Are mate	rials transported on trucks	covered?					
	2.8	Are dusty	materials sprayed prior to	loading?					
	2.9	Are all tru	uck loads to a level within t	he side and tail boards?					
	2.10	Are areas watered?		arance/breaking take place r	egularly	V			
	2.11	Is every s by imper the three	ious sheeting or placed in	of cement or day covered e an area sheltered on the top	ntirely and				
	2.12		ntially dusty demolished ite ed shelter?	ms/debris covered or placed	in a				
		2.12.1	Is the debris sprayed with keep wet before it is dump	water/dust suppression che ped onto a debris chute?	mical to				
	2.13	Odorous site?	materials immediately cove	ered and promptly removed f	from				
	2.14	Are there	enclosures around the ma	in dust-generating activities′	?^				



	N/A or not obs	served	Yes	No	Photo/Remarks
2.15	Is open burning prohibited?				
2.16	Are completed earthworks sealed and hydroseeded and planted as soon as practicable?				
2.17	Are vehicles and equipment switched off while not in use?				
2.18	Do vehicles and equipment maintained that no excessive smoke or visible vapour emitted?				
Observal	ble dust sources Wind erosion	Vehicle/	equipment :	movement	s
	Loading/unloading of materials	Others_			
3 No	ise				
3 140	1130				
3.1	Are the construction works scheduled to minimise noise nuisance?				· · · · · · · · · · · · · · · · · · ·
3.2	Are the works or equipment sited to minimize noise nuisance? Mobile plant sited away from NSRs? Noisy plant oriented away from NSRs?				
3.3	Are all plant and equipment well maintained and in good operating condition?				***************************************
3.4	Is idle equipment turned off or throttled down?				
3.5	Are powered mechanical equipment covered or shielded by appropriate acoustic materials?				
3.6	Are quiet plant used as required?	V			
3.7	Are silencers/mufflers fitted and maintained?				
3.8	Are mobile/temporary noise barriers used where specified?				
3.9	Do air compressors (≥500kPa of supplying compressed air) and hand held percussive breakers (>10kg in weight) have valid noise labels?				
3.10	Do compressors and generators operate with doors closed?				
3.11	Are Construction Noise Permits available for inspection?				
Major noi	se source(s) Traffic	Constru	ıction activi	ties inside	of site
	Construction activities outside of site	Others_			
4 Wa	ste/Chemical Management				
4.1	General refuse				
	4.1.1 Accumulation on-site avoided?		V		· · · · · · · · · · · · · · · · · · ·
	4.1.2 Receptacles (e.g. rubbish bins) available?				
	4.1.3 Disposed of regularly and properly?				
	4.1.4 Records of quantities generated/recycled/disposed maintained?				



		N/A or not ob	served	Yes	No	Photo/Remarks
4.2	Chem	ical waste				
	4.2.1	Stored properly in designated area?				
	4.2.2	Storage in accordance with Code of Practice?		V		
	4.2.3	Disposed of properly?				
	4.2.4	Trip tickets available for inspection?				
4.3	Chem	ical/fuel storage				
	4.3.1	Is storage area bunded?				
	4.3.2	Adequate bund capacity? (>110% of the largest tank)				-
	4.3.3	Area storage area provided with locks and located on sealed areas?				
	4.3.4	Are oil/fuel drums and plant/equipment provided with drip trays to prevent soil contamination?				See Note &
4.4	C&D N	Material				
	4.4.1	Reused/recycled where practicable?		V		
	4.4.2	Inert/non inert materials segregated?				
	4.4.3	Disposed of properly?				
	4.4.4	Records of quantities generated/recycled/disposed maintained?				
4.5	Excav	ated Material				
	4.5.1	Reused where practicable?				***************************************
	4.5.2	Records of quantities generated/reused/disposed maintained?				
4.6	Are sp	ent bentonite slurries or grouts collected, reconditioned and d?				
4.7	Is foar nearby	n, oil, grease, litter or other objectionable matters in water to varian/sewer avoided?				
La	ndscap	e and Visual				
5.1	Are re	tained trees protected by fencing?				
5.2	Is the	work site confined within site boundaries?				
5.3	Is dam	age to surrounding areas avoided?				

5



Remark

- 6 As the ground profile of the golf course is almost completed, no stockpile of dusty muterials was observed.
- 3 Scattered rubbishes observed last audit were removed.
- 3) Some oil drams without drip tray standing on bare ground near the site office were observed. Drip trays should be provided.
- 4 The contractor was reminded to spray water on unpused hard roads and areas trequently as it becomes dry.

Signatures:

ET Inspector

AMS Site Representative

Contractor's Representative

Name: Dat 1 et

Date: 79 Sep 2006

Name: Alan Sheang Koun

Date: 29 Sep Look

Name: Alan Sheng Kun

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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)
01-Sep-06	(mid-ebb)	M1	3	6	29.8	12.5	84	6.0	3	3
01-Sep-06	(mid-ebb)	M2	3	6	29.8	12.3	83	6.0	3	4
01-Sep-06	(mid-ebb)	C1	2	3	29.9	12.1	83	6.1	4	4
01-Sep-06	(mid-ebb)	C2	3	6	29.8	12.4	82	6.0	2	3
01-Sep-06	(mid-flood)	M1	3	6	30.1	12.3	84	6.1	2	3
01-Sep-06	(mid-flood)	M2	3	6	30.2	12.3	86	6.2	3	3
01-Sep-06	(mid-flood)	C1	2	3	30.3	12.2	87	6.3	3	3
01-Sep-06	(mid-flood)	C2	3	6	30.2	12.4	85	6.2	3	2
05-Sep-06	(mid-ebb)	M1	3	6	29.6	15.9	94	6.9	4	3
05-Sep-06	(mid-ebb)	M2	3	6	29.7	16.0	95	7.0	4	4
05-Sep-06	(mid-ebb)	C1	2	3	29.8	15.8	96	7.0	4	3
05-Sep-06	(mid-ebb)	C2	3	6	29.8	16.1	95	6.9	3	4
05-Sep-06	(mid-flood)	M1	3	6	29.3	15.8	96	7.0	3	4
05-Sep-06	(mid-flood)	M2	3	6	29.7	15.8	95	7.0	4	3
05-Sep-06	(mid-flood)	C1	2	3	29.6	15.7	95	6.9	5	5
05-Sep-06	(mid-flood)	C2	3	7	29.6	16.1	96	7.0	3	4
09-Sep-06	(mid-ebb)	M1	3	6	26.7	23.8	73	5.2	4	5
09-Sep-06	(mid-ebb)	M2	3	6	26.8	23.9	74	5.2	4	7
09-Sep-06	(mid-ebb)	C1	2	3	26.8	23.8	76	5.3	4	4
09-Sep-06	(mid-ebb)	C2	3	7	26.6	23.9	73	5.2	3	6
09-Sep-06	(mid-flood)	M1	3	6	26.6	23.7	72	5.1	4	5

11/10/06 10:30 41



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)
09-Sep-06	(mid-flood)	M2	3	6	26.6	23.8	71	5.1	5	5
09-Sep-06	(mid-flood)	C1	2	3	26.7	23.7	73	5.2	4	3
09-Sep-06	(mid-flood)	C2	3	6	26.5	23.8	70	5.0	4	8
12-Sep-06	(mid-ebb)	M1	3	6	24.8	31.1	55	3.9	5	7
12-Sep-06	(mid-ebb)	M2	3	6	24.8	31.0	54	3.8	4	8
12-Sep-06	(mid-ebb)	C1	2	3	25.0	30.9	56	4.0	5	8
12-Sep-06	(mid-ebb)	C2	3	7	24.9	30.9	53	3.8	4	8
12-Sep-06	(mid-flood)	M1	3	6	24.8	30.9	53	3.8	5	8
12-Sep-06	(mid-flood)	M2	3	6	24.8	31.0	53	3.8	6	8
12-Sep-06	(mid-flood)	C1	2	3	24.9	30.8	53	3.7	6	9
12-Sep-06	(mid-flood)	C2	3	7	24.7	30.1	54	3.8	5	8
16-Sep-06	(mid-ebb)	M1	3	6	25.7	29.8	70	5.0	4	2
16-Sep-06	(mid-ebb)	M2	3	6	25.8	29.9	71	5.1	4	2
16-Sep-06	(mid-ebb)	C1	2	3	25.8	29.8	72	5.2	4	3
16-Sep-06	(mid-ebb)	C2	3	7	25.6	29.9	70	5.0	3	2
16-Sep-06	(mid-flood)	M1	3	6	25.6	29.7	69	4.9	4	3
16-Sep-06	(mid-flood)	M2	3	6	25.6	29.8	68	4.9	4	2
16-Sep-06	(mid-flood)	C1	2	3	25.7	29.7	70	5.0	4	2
16-Sep-06	(mid-flood)	C2	3	7	25.5	29.8	66	4.8	4	2
19-Sep-06	(mid-ebb)	M1	3	6	26.2	32.0	80	5.7	3	4
19-Sep-06	(mid-ebb)	M2	3	6	26.1	32.0	79	5.6	4	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)
19-Sep-06	(mid-ebb)	C1	1	3	26.3	31.9	78	5.6	5	4
19-Sep-06	(mid-ebb)	C2	3	6	26.2	32.0	79	5.7	3	5
19-Sep-06	(mid-flood)	M1	3	6	26.4	32.1	81	5.8	4	6
19-Sep-06	(mid-flood)	M2	3	6	26.4	32.1	81	5.8	4	5
19-Sep-06	(mid-flood)	C1	2	3	26.4	31.9	81	5.7	4	5
19-Sep-06	(mid-flood)	C2	3	6	26.3	32.0	82	5.8	4	5
23-Sep-06	(mid-ebb)	M1	3	6	27.1	31.0	89	6.3	4	6
23-Sep-06	(mid-ebb)	M2	3	6	27.0	31.0	89	6.3	3	7
23-Sep-06	(mid-ebb)	C1	2	3	27.1	31.0	91	6.4	5	7
23-Sep-06	(mid-ebb)	C2	3	6	27.0	31.1	89	6.4	4	7
23-Sep-06	(mid-flood)	M1	3	6	27.2	31.0	90	6.4	3	7
23-Sep-06	(mid-flood)	M2	3	6	27.2	30.9	91	6.4	3	6
23-Sep-06	(mid-flood)	C1	2	3	27.3	30.8	91	6.5	4	7
23-Sep-06	(mid-flood)	C2	3	6	27.2	31.0	90	6.4	3	7
26-Sep-06	(mid-ebb)	M1	3	6	26.7	31.9	85	5.7	6	8
26-Sep-06	(mid-ebb)	M2	3	6	26.6	32.0	86	5.7	6	8
26-Sep-06	(mid-ebb)	C1	2	3	26.7	31.9	86	5.8	7	9
26-Sep-06	(mid-ebb)	C2	3	6	26.6	32.0	85	5.7	5	7
26-Sep-06	(mid-flood)	M1	3	6	26.5	32.0	88	5.9	5	9
26-Sep-06	(mid-flood)	M2	3	6	26.6	32.1	91	5.8	6	8
26-Sep-06	(mid-flood)	C1	2	3	26.6	32.0	89	5.9	7	6



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)
26-Sep-06	(mid-flood)	C2	3	7	26.6	32.0	87	5.8	4	6
30-Sep-06	(mid-ebb)	M1	3	6	26.8	31.2	89	6.2	3	4
30-Sep-06	(mid-ebb)	M2	3	6	26.9	31.1	90	6.3	3	4
30-Sep-06	(mid-ebb)	C1	1	3	26.9	31.1	89	6.2	4	3
30-Sep-06	(mid-ebb)	C2	3	6	26.8	31.2	88	6.2	3	4
30-Sep-06	(mid-flood)	M1	3	6	26.8	31.2	89	6.2	4	4
30-Sep-06	(mid-flood)	M2	3	6	26.8	31.1	88	6.2	3	3
30-Sep-06	(mid-flood)	C1	2	3	26.9	31.1	88	6.2	4	4
30-Sep-06	(mid-flood)	C2	3	6	26.8	31.2	88	6.2	3	4

Notes: "-" indicates no data is available

Bold indicates Action Level exceedance

Bold indicates Limit Level exceedance

Mean	27.1	26.5	80.1	5.7	3.9	5.0
Maximum	30.3	32.1	96.4	7.0	7.2	9.0
Minimum	24.7	12.1	52.7	3.7	2.0	2.0



Appendix 3

Equipment Calibration Details

11/F., Chung Shun Knitting Centre,

Telephorneg AS52576401 04waiF3csimide: +852 2610 2021 http://www.alsenviro.com/

N.T. Hong Kong

ALS

ALS Environmental

SUB-CONTRACT LABORATORY RESULTS COVERSHEET for ALS WORKORDER HK0602101

Client Details

Client

MAUNSELL ENVIRONMENTAL

MANAGEMENT CONSULTANTS LTD

Project
Order number
C-O-C Number

Site

Sampler

Not provided -Not provided -

Not provided -Not provided -

- Not provided -

Cr mments

• The attached report contains sub-contracted components of ALS Environmental work order HK0602101. This report has been electronically stored for ALS record purposes and has not been altered in any way.

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ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

STECHNICHEM (HK) Pty Ltd Environmental Division



CERTIFICATE OF ANALYSIS

CONTACT:

MR EDDIE YANG

MAUNSELL ENV MGT CNLT LTD

CLIENT: ADDRESS:

11TH FLOOR TOWER II

GRAND CENTRAL PLAZA

138 SHATIN RURAL COMMITTEE RD NT

ORDER No.:

PROJECT:

Batch:

HK0602101

Sub Batch:

LABORATORY:

HONG KONG

DATE RECEIVED: DATE OF ISSUE:

10/08/2006 21/08/2006

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

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Sydney Newcastle

Melbourne

AMERICAS

Amtofagasta

Lima

Vancouver Santiago

Abbreviations: % SPK REC denotes percentage spike recovery

CHK denotes duplicate check sample LOR denotes limit of reporting

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ALS Technichem பெடுந்து முறிவை Laboratory Control Sample percentage recovery Part of the ALS Laboratory Group

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A Campbell Brothers Limited Company

Page 1 of 6

HK0602101 Sub Batch: Batch:

21/08/2006 MAUNSELL ENV MGT CNLT LTD Date of Issue:

Client Reference:

Client:

Calibration of Tubidimeter

Item:

YSI SONDE Environmental Monitoring System

6820-C-M Model No.: 00013244 Serial No.:

W-026-29 Equipment No.: This meter was calibrated in accordance with standard method APHA (19th Ed.) 2130B Calibration Method:

10 August, 2006 Date of Calibration:

Testing Results:

Recording Reading	0.30 NTU 4.40 NTU 17.3 NTU 72.2 NTU 157 NTU	+10%
Expected Reading	0.00 NTU 4.00 NTU 16.0 NTU 80.0 NTU 160 NTU	Allowing Deviation

Laboratory Mahager - Hong Kong Ms Wong Wai Man, Alice

ALS Environmental

ALS Technichem (HK) Pty Ltd

HK0602101 Batch: Sub Batch: Date of Issue:

21/08/2006 MAUNSELL ENV MGT CNLT LTD Client:

Client Reference:

Calibration of Conductivity System

YSI SONDE Environmental Monitoring System Item:

6820-C-M Model No.:

00013244 Serial No.: W-026-29 Equipment No.: This meter was calibrated in accordance with standard method APHA (19th Ed.) 2510B Calibration Method:

10 August, 2006 Date of Calibration:

Testing Results:

Expected Reading	Recording Reading
1412 uS/cm 6667 uS/cm 58670 uS/cm	1482 uS/cm 6874 uS/cm 59900 uS/cm
Allowing Deviation	±10%

Ms Wong Wai Man, Alice Laboratory Manager - Hong Kong

HK0602101 Date of Issue: Sub Batch: Batch:

21/08/2006 MAUNSELL ENV MGT CNLT LTD

Client Reference:

Client:

Calibration of Salinity System

YSI SONDE Environmental Monitoring System Item:

6820-C-M Model No.: 00013244 Serial No.:

W-026-29 Equipment No.: This meter was calibrated in accordance with standard method APHA (19th Ed.) 2520 A and B Calibration Method:

10 August, 2006 Date of Calibration:

Testing Results:

ng Recording Reading	9.98 g/L 20.0 g/L 29.6 g/L	
Expected Reading	10.0 g/L 20.0 g/L 30.0 g/L	Allowing Deviation

Laboratory Manager - Hong Kong Ms Wong Wai Man, Alice



HK0602101

Batch:

21/08/2006 MAUNSELL ENV MGT CNLT LTD

Calibration of Thermometer

Client Reference:

Date of Issue: Sub Batch:

Client:

YSI SONDE Environmental Monitoring System Item:

6820-C-M Model No.: 00013244 Serial No.:

W-026-29 Equipment No.:

In-house Method Calibration Method:

10 August, 2006 Date of Calibration:

Testing Results:

Recorded Temperature (°C)	23.1 °C 36.1 °C	±2.0°C
Reference Temperature (°C)	21.4 °C 35.1 °C	Allowing Deviation

Laboratory Manager - Hong Kong



HK0602101 Sub Batch: Batch:

21/08/2006 MAUNSELL ENV MGT CNLT LTD Date of Issue: Client:

Client Reference:

Calibration of DO System

YSI SONDE Environmental Monitoring System Item:

6820-C-M Model No.: 00013244 Serial No.: W-026-29 Equipment No.: This meter was calibrated in accordance with standard method APHA (18th Ed.) 4500-0C & G Calibration Method:

10 August, 2006 Date of Calibration:

Testing Results:

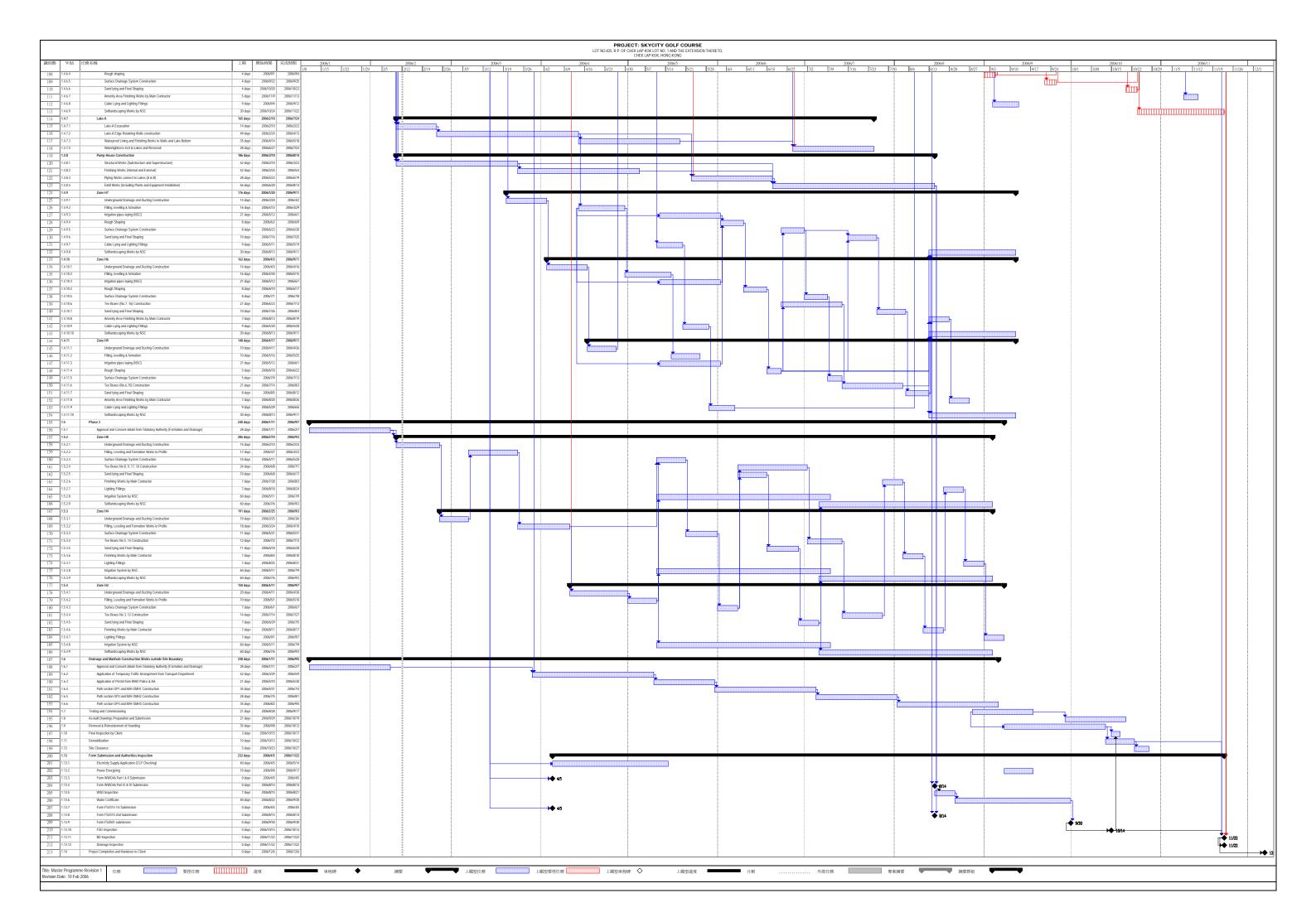
Expected Reading	Recording Reading
0.00 mg/L 1.84 mg/L 5.20 mg/L 7.81 mg/L	0.08 mg/L 2.01 mg/L 5.00 mg/L 7.61 mg/L
Allowing Deviation	±0.2 mg/L

Laboratory Manager - Hong Kong Ms Wong Wai Man, Alice



Appendix 4

Works Programme





Appendix 5

Marine Water Monitoring Schedule for Next Month

Sky City Golf Course EM&A Tentative Water Quality Monitoring Schedule for October 2006 (Rev.1)

Sunday	Monday	Tuesda		Wednesday	Thursday	Friday	Saturd	
01-Oct	02-Oct		03-Oct	04-Oct	05-Oct	06-Oct		07-Oct
		Mid-Ebb <i>05:25</i> Mid-Flood <i>13:41</i>	09:33 13:41 17:20 20:59			Mid-Ebb 12:10 08:50 15:30 Mid-Flood 18:36 15:30 21:43		
08-Oct	09-Oct		10-Oct	11-Oct	12-Oct	13-Oct		14-Oct
		Mid-Flood <i>06:09</i> Mid-Ebb <i>12:33</i>	09:21 12:33 14:55 17:18				Mid-Ebb 01:28 Mid-Flood 10:36	06:02 <i>10:36</i> 18:40 <i>02:44</i>
15-Oct	16-Oct		17-Oct	18-Oct	19-Oct	20-Oct		21-Oct
22-Oct		Mid-Ebb 06:16 Mid-Flood 13:38	09:57 13:38 17:14 20:50 24-Oct	25-Oct	26-Oct	27-Oct	Mid-Ebb 09:37 Mid-Flood 15:26	12:31 15:26 18:26 21:26 28-Oct
22-001		Mid-Flood 05:12 Mid-Ebb 11:38	08:25 11:38 14:02 16:27	25-001	20-001	27-001	Mid-Ebb 23:58 Mid-Flood 08:28	04:13 08:28 16:34 00:41
29-Oct	30-Oct		31-Oct	01-Nov	02-Nov	03-Nov		04-Nov
		Mid-Ebb <i>03:19</i> Mid-Flood <i>11:55</i>	07:37 11:55 15:54 19:54				Mid-Ebb 08:44 Mid-Flood 14:37	11:40 <i>14:37</i> 17:44 <i>20:52</i>