
South-East Asia Japan Cable System (SJC)

Hong Kong Segment

**Environmental Impact Monitoring and Site
Audit Report**

Week 4

9 July 2012 to 15 July 2012

ATKINS

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EXECUTIVE SUMMARY

The site preparation works for the SJC cable network system commenced on 21 June 2012. Atkins China Limited (ACL) has been appointed as the Environmental Team (ET) to undertake environmental management and monitoring work in accordance with the EM&A Manual.

This is the fourth weekly Environmental Impact Monitoring and Site Audit Report for the works specified in the Environmental Permit (EP-423/2011/A) and Environmental Monitoring and Audit (EM&A) Manual. This report summarises the findings and results of the EM&A during the reporting period of the fourth week of works and covers the reporting period 9 July 2012 to 15 July 2102.

Environmental Monitoring and Audit Progress

The EM&A programme have been undertaken in accordance with the approved EM&A Manual. A summary of the monitoring activities performed in the reporting period is summarised below:

- Weekly site environmental inspection was conducted on 13 July 2012
- Water quality monitoring was conducted on 12 and 14 July 2012 during mid-ebb and mid-flood tide periods.

Exceedance of Action and Limit Levels

Exceedance of Action and Limit Level of DO was recorded during mid-flood tide on 6 July 2012. No injection jetting by cable laying vessel was conducted on the sampling day. A moderate thermocline and halocline was observed for the exceeding stations, which would limit water exchange with the surface and thus result in depleted oxygen levels measures on the bottom. This is a natural phenomenon common during Summer time when surface temperatures are high and surface salinities low compared with bottom waters. Therefore, the exceedance of Limit Level of DO was considered that the exceedances were not related to the project works.

The Turbidity Action Level exceedance was found at the bottom level at B6 during mid-flood tide and SS Action Level exceedances were found on the surface and middle level during mid-ebb tide. According the site observation and contractor record, No injection jetting by cable laying vessel was conducted on the sampling day. Therefore, the exceedances of Limit Level of DO were considered non-project related.

Complaint Log

No complaints were received in relation to environmental impact during the reporting period.

Site Inspection and Audit

Site inspections for shore based works were carried out with EPD's representative on 13 July 2012 as appropriate. No non-compliances were recorded for the reporting period. A summary of findings conducted during the monitoring period is provided below.

5 July 2012

General refuses were found in the shore area but it is not project-related.

1. INTRODUCTION

1.1 Background of the Project

- 1.1.1 South-East Asia Japan Cable System (SJC) is a submarine cable system linking South-East Asia to Japan. SJC will provide direct access and diverse routing between Singapore, the Philippines, Hong Kong, China, Brunei and Japan. The cable system will span approx. 8,900km and will be mainly composed of a seven-fibre pair high capacity submarine cable system with a design capacity of 17.9 terabits per second. The project will increase the broadband capacity of Hong Kong.
- 1.1.2 The Project is classified as a Designated Project under Item C12 of Part I Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO): “A *dredging operation which is (a) less than 500 metres from the nearest boundary of an existing or planned (iii) bathing beach; and (vii) coastal protection area*”.
- 1.1.3 In accordance with the EIAO, an environmental assessment was undertaken and a Project Profile was submitted to the Environmental Protection Department (EPD) (PP-444/2011) for an Application for Permission to Apply Directly for Environmental Permit for the project (Application No. DIR-213/2011) (DIR). The DIR was granted by EPD on 1st August 2011 with conditions.
- 1.1.4 Atkins China Limited (ACL) has been appointed as the Environmental Team (ET) to undertake environmental management and monitoring work in accordance with the EM&A Manual.
- 1.1.5 This is the fourth Weekly Environmental Impact Monitoring and Site Audit Report for the works specified in the Environmental Monitoring and Audit (EM&A) Manual. This report summarises the results and findings of the EM&A during the reporting period 9 July 2012 to 15 July 2012.

1.2 Summary of Impact EM&A Requirements

- 1.2.1 The EM&A programme requires environmental monitoring for water quality, marine mammals and construction and demolition waste management, as specified in the EM&A Manual. This shall be conducted accordingly.

1.3 Works Undertaken

- 1.3.1 Cable landing works were commenced on 11 July 2012 and finished on 14 July 2012. All equipments on beach was commenced to clean up since 15 July 2012.
- 1.3.2 Cable laying work was commenced on 11 July 2012. Total distance of cable laid or buried is 1.753 km up to 15 July 2012.

2. MONITORING RESULTS

2.1 Water Quality

Programme

2.1.1 The water quality monitoring programme for this reporting period is presented in Table 2-1.

Table 2-1 – Water Quality Monitoring Programme

Date of Sampling	Tidal State	Time of Sampling
12 July 2012	Mid-Ebb	11:30 – 14:10
	Mid-Flood	06:40 – 09:20
14 July 2012	Mid-Ebb	08:30 – 11:10
	Mid-Flood	14:50 – 17:10

Monitoring Stations

2.1.2 Seventeen water quality monitoring stations were sampled during the impact water quality monitoring (see Figure 2-1) and listed in Table 2-2 as follows. These stations are applicable for works undertaken during installation of the cable.

Table 2-2 – Impact Water Quality Monitoring stations

Monitoring Station	Co-ordinates		Station Purpose
A1	839451	808265	180m from point A
A2	839511	808265	120m from point A
A3	839571	808265	60m from point A
A4	839691	808265	60m from point A
A5	839751	808265	120m from point A
A6	839811	808265	180m from point A
B1	839408	808160	180m from point B
B2	839468	808160	120m from point B
B3	839528	808160	60m from point B
B4	839648	808160	60m from point B
B5	839708	808160	120m from point B
B6	839768	808160	180m from point B
C	840081	808353	Control Station
D1	839429	808641	100m from point D
D2	839540	808552	100m from point D
D3	839453	808443	100m from point D
D4	839344	808531	100m from point D

Methodology

2.1.3 Water quality monitoring was conducted in accordance with the methodology described in the EM&A Manual.

2.1.4 The water quality parameters monitored included dissolved oxygen (DO) (% saturation and mg/L), temperature, turbidity (NTU), salinity and suspended solids

(SS). DO, temperature, turbidity and salinity were measured *in-situ* whereas SS was determined by laboratory analysis.

2.1.5 The equipment used during monitoring included an YSI SONDE Model no. YSI Sonde 6920 V2 Environmental Monitoring System to measure DO, temperature, turbidity and salinity. All monitoring equipment was checked and calibrated prior to use. The report on the calibration of the equipment is provided in **Annex A**

2.1.6 Laboratory analysis of SS was carried out at ALS Laboratory Group, a recognised HOKLAS accredited laboratory.

Results

2.1.7 The weather during the monitoring period is sunny. The impact monitoring results at each monitoring locations are provided in full in **Annex B**.

2.1.8 The impact monitoring data on 12 and 14 July 2012 and laboratory results at each monitoring location are provided in full in **Annex B**. The recorded field transcripts of the impact monitoring data were checked in hard copy with the electronic version of the results and were found to be accurate. The result of the impact monitoring data at each monitoring location are summarised in **Tables 2-3 to 2-6**.

Mid-Ebb Results

Table 2-3 – Summary of Water Quality Data on 12 July 2012 – Mid-Ebb

Station	Depth	Data Results for Mid Ebb					
		Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Suspended Solids (SS)
Control Stations							
C	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	29.4	20.2	8.0	117.2	3.1	3
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
A1	s*	29.5	20.6	10.0	146.6	2.2	4
	m	29.2	20.5	9.9	146.1	2.6	3
	b	28.4	24.1	8.3	122.5	5.3	6
A2	s	229.4	20.5	9.4	137.3	2.4	4
	m	29.0	21.1	8.8	128.3	2.5	4
	b*	27.9	24.7	8.3	121.3	2.6	4
A3	s	29.4	20.5	9.3	138.7	2.4	3
	m*	29.2	21.2	9.0	133.6	2.5	4
	b	29.0	20.8	8.6	126.2	2.5	3
A4	s*	29.5	20.5	9.9	146.6	2.2	4
	m	29.4	20.5	10.0	149.5	2.2	4
	b	29.2	20.7	10.1	148.2	2.1	3
A5	s	29.4	20.5	9.7	142.9	2.3	3
	m	29.1	20.8	9.6	140.4	2.4	3
	b	28.7	21.7	8.2	119.0	3.1	4
A6	s	29.4	20.4	9.3	135.1	1.9	3
	m	29.0	20.6	8.6	125.9	2.4	2
	b	28.9	21.5	8.3	122.0	2.5	4
B1	s	29.5	20.6	10.1	147.0	2.3	3
	m	29.0	21.1	9.2	135.5	1.7	5
	b	27.4	26.3	8.2	120.4	2.1	3
B2	s	29.4	20.8	9.4	137.8	2.5	4
	m	29.0	21.1	8.5	125.7	2.3	3
	b	28.4	24.6	8.1	119.3	2.1	3
B3	s	29.4	20.5	9.4	137.5	2.1	4
	m	28.9	21.1	9.2	135.2	2.0	3
	b	27.9	25.3	7.8	115.0	3.1	4
B4	s	29.3	20.4	9.2	133.6	1.9	4
	m	28.7	21.5	8.7	127.0	2.2	3
	b	27.7	25.1	7.3	106.8	2.4	3
B5	s	29.4	20.4	9.3	135.7	4.4	4
	m	28.8	21.1	9.3	135.6	1.4	5
	b	27.8	25.8	7.5	110.8	1.6	3
B6	s	29.3	20.3	9.0	131.3	2.5	4
	m	29.1	20.6	8.7	126.8	2.6	3
	b	28.0	25.1	8.0	117.4	5.9	4
D1	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	29.5	20.4	8.1	119.3	3.7	5
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	29.4	20.5	8.8	129.4	3.3	5
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	29.4	20.6	7.7	113.6	3.6	5
D3	s	29.2	20.7	9.0	130.8	3.8	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.9	21.1	8.1	118.2	3.6	3
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	29.3	20.5	8.3	121.1	2.4	4
	b	N/A	N/A	N/A	N/A	N/A	N/A

Notes: s – 1 m below the surface; m – mid depth; b – 1 m above the seabed
XX: Limit Level Exceedance; **XX**: Action Level Exceedance
 * – Average value of duplicate sample

Table 2-4 – Summary of Water Quality Data on 14 July 2012 – Mid-Ebb

Station	Depth	Data Results for Mid Ebb											
		Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Suspended Solids (SS)						
Control Stations													
C	s	N/A	N/A	N/A	N/A	N/A	N/A						
	m	30.5	19.7	7.7	114.2	2.1	4						
	b	N/A	N/A	N/A	N/A	N/A	N/A						
Marine-based Stations													
A1	s*	29.6	20.1	9.0	132.3	1.3	<2						
	m	29.4	20.3	8.9	130.2	1.4	<2						
	b	26.8	27.5	4.2	61.3	3.1	<2						
A2	s	30.1	19.9	8.5	125.8	1.4	<2						
	m	29.5	20.5	8.8	129.0	1.1	2						
	b*	28.9	21.6	8.2	118.4	6.1	<2						
A3	s	30.1	19.8	8.6	127.4	1.4	<2						
	m*	29.6	20.2	8.9	130.8	1.6	<2						
	b	26.6	27.7	5.5	79.8	3.9	4						
A4	s*	30.1	19.7	8.6	126.8	1.5	<2						
	m	29.8	19.9	8.8	129.9	1.5	<2						
	b	29.4	20.5	9.0	131.9	2.2	<2						
A5	s	30.3	19.6	8.5	125.2	1.7	<2						
	m	29.8	19.9	8.8	129.4	1.5	<2						
	b	29.4	20.6	8.8	129.6	1.9	7						
A6	s	30.2	19.6	8.4	123.9	1.4	<2						
	m	29.8	19.7	8.7	127.1	1.3	4						
	b	29.1	21.0	8.6	125.7	2.1	2						
B1	s	29.6	19.7	9.0	131.2	1.2	3						
	m	29.0	21.3	8.3	121.5	2.4	2						
	b	26.2	28.3	3.6	51.6	3.8	3						
B2	s	Blocked by barge, no monitoring and sampling can be done.											
	m												
	b												
B3	s												
	m												
	b												
B4	s							29.7	19.8	8.8	129.6	5.1	2
	m							29.6	20.2	8.8	129.6	2.2	3
	b							27.0	27.5	4.2	60.9	3.6	<2
B5	s	29.9	20.0	8.6	127.3	1.4	4						
	m	29.0	21.6	8.2	119.6	2.8	3						
	b	25.4	31.2	2.3	32.9	6.7	8						
B6	s	29.7	20.1	8.8	129.7	1.5	<2						
	m	29.2	21.0	8.6	126.0	2.4	4						
	b	25.7	30.8	3.1	45.6	6.9	<2						
D1	s	N/A	N/A	N/A	N/A	N/A	N/A						
	m	30.4	19.5	7.6	113.3	3.0	2						
	b	N/A	N/A	N/A	N/A	N/A	N/A						
D2	s	30.2	19.7	8.1	119.7	2.2	2						
	m	N/A	N/A	N/A	N/A	N/A	N/A						
	b	29.2	20.9	8.4	123.1	6.9	10						
D3	s	30.2	19.7	8.1	119.3	2.1	2						
	m	N/A	N/A	N/A	N/A	N/A	N/A						
	b	29.4	20.5	8.6	126.3	1.8	4						
D4	s	N/A	N/A	N/A	N/A	N/A	N/A						
	m	30.5	19.7	7.8	116.3	2.1	3						
	b	N/A	N/A	N/A	N/A	N/A	N/A						

Notes: s – 1 m below the surface; m – mid depth; b – 1 m above the seabed
XX: Limit Level Exceedance; **XX**: Action Level Exceedance
 * – Average value of duplicate sample

Mid-Ebb Results Summary

- 2.1.9 During mid-ebb survey, the range of DO level from 2.3mg/L to 10.1mg/L with an saturation level form 32.9% to 149.5%. The range of turbidity measurement was 1.1 to 6.9 NTU with SS content from <2 mg/L to 10 mg/L. The recorded temperature was within the expected range and values for these waters during the time of monitoring.
- 2.1.10 The DO Limit Level and Action Level exceedances were found on the middle and bottom level. A moderate thermocline and halocline was observed for the exceeding stations, which would limit water exchange with the surface and thus result in depleted oxygen levels measures on the bottom. This is a natural phenomenon common during the summer when surface temperatures are high and surface salinities low compared with bottom waters. Therefore, the exceedances of Limit Level of DO were considered non-project related.
- 2.1.11 The SS Action Level exceedance was found at the bottom of D2. According the site observation and contractor record, No cable laying vessel and marine works by diver was conducted near the monitoring location on the sampling day. Therefore, the exceedances of Action Level of SS were considered non-project related.

Mid-Flood Results

Table 2-5 – Summary of Water Quality Data on 12 July 2012 – Mid-Flood

Station	Depth	Data Results for Mid Ebb					
		Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Suspended Solids (SS)
Control Stations							
C	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.7	20.3	7.4	107.0	2.2	
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
A1	s	28.8	20.5	8.0	117.2	3.5	5
	m	28.6	23.6	7.8	113.8	4.0	3
	b	26.8	28.5	5.9	86.6	5.4	2
A2	s	28.8	20.5	8.5	123.7	2.9	3
	m	28.8	20.6	8.2	118.6	3.1	3
	b	28.2	24.6	7.7	113.6	3.5	3
A3	s	28.8	20.4	8.4	121.7	2.6	3
	m	28.9	20.5	8.0	117.8	3.2	2
	b	28.6	24.3	7.9	114.8	3.3	3
A4	s	28.9	20.4	8.7	126.6	2.3	4
	m	28.9	20.5	8.6	125.1	2.4	5
	b	28.9	20.5	8.6	124.6	2.4	3
A5	s	28.9	20.3	8.5	123.3	3.0	4
	m	28.9	20.4	8.4	121.2	3.3	3
	b	28.9	20.5	8.0	116.2	4.1	5
A6	s	28.9	20.4	8.5	123.5	2.5	4
	m	28.9	20.4	8.1	117.6	3.1	4
	b	29.0	22.3	6.6	97.0	4.3	2
B1	s*	28.9	20.7	8.4	121.5	2.2	5
	m	28.5	22.9	8.2	119.5	2.4	4
	b	25.2	31.4	3.2	52.4	2.7	4
B2	s	28.8	20.6	7.8	116.1	2.4	4
	m*	28.7	25.9	7.9	114.6	2.6	3
	b	25.3	31.4	5.6	80.8	3.1	4
B3	s	28.7	20.5	8.5	122.8	2.7	3
	m	28.9	20.7	8.0	116.3	2.8	5
	b*	26.2	29.1	5.5	79.6	3.4	4
B4	s*	28.8	20.4	8.3	120.3	2.2	3
	m	29.0	20.8	7.4	107.3	2.7	4
	b	26.9	27.9	7.0	102.7	2.8	4
B5	s	28.6	20.6	8.2	119.7	2.2	4
	m	28.9	20.6	7.2	104.1	2.3	3
	b	27.2	27.4	6.9	100.5	2.8	3
B6	s	28.9	20.5	8.2	119.7	2.5	3
	m	28.9	20.5	7.7	111.6	2.8	2
	b	28.0	27.2	5.4	79.0	5.9	2
D1	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.8	20.4	8.4	122.4	3.4	3
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	28.8	20.4	8.4	122.2	2.0	4
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.9	20.4	8.1	116.9	2.2	2
D3	s	28.8	20.5	8.4	121.5	3.0	2
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.9	20.6	7.7	112.1	3.3	3
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.8	20.5	7.7	111.1	2.3	3
	b	N/A	N/A	N/A	N/A	N/A	N/A

Notes: s – 1 m below the surface; m – mid depth; b – 1 m above the seabed
XX: Limit Level Exceedance; **XX**: Action Level Exceedance
 * – Average value of duplicate sample

Table 2-6 – Summary of Water Quality Data on 14 July 2012 – Mid-Flood

Station	Depth	Data Results for Mid Ebb					
		Temperature (°C)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Suspended Solids (SS)
Control Stations							
C	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	29.4	19.5	7.7	112.6	1.6	6
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
A1	s	29.3	19.9	8.4	122.8	1.2	3
	m	29.0	20.5	8.6	125.0	1.5	<2
	b	26.3	28.6	4.5	65.5	5.4	2
A2	s	29.4	19.9	8.4	121.9	1.2	3
	m	29.2	20.1	8.7	126.6	1.2	3
	b	27.5	24.5	5.5	79.6	6.3	4
A3	s	29.3	19.9	8.4	122.5	1.2	2
	m	29.2	19.9	8.6	124.8	1.2	6
	b	28.5	21.7	6.7	97.3	5.5	<2
A4	s	29.4	19.7	8.4	121.9	1.7	<2
	m	29.4	19.8	8.4	122.4	1.5	<2
	b	28.9	21.1	7.8	114.4	2.5	<2
A5	s	29.4	19.7	8.4	122.4	1.5	3
	m	29.3	19.7	8.5	123.5	1.3	<2
	b	29.0	21.0	7.2	105.5	3.4	3
A6	s	29.3	19.7	8.4	121.9	1.3	<2
	m	29.3	19.7	8.5	123.2	1.4	3
	b	29.0	20.9	7.7	112.6	2.3	5
B1	s*	29.2	19.8	8.4	121.8	1.4	5
	m	27.3	26.1	4.7	68.7	2.7	5
	b	25.2	30.9	2.3	32.9	6.3	6
B2	s	29.2	19.8	8.2	119.8	3.0	2
	m*	28.5	22.5	6.5	94.2	3.2	4
	b	25.0	31.4	3.3	48.2	5.6	11
B3	s	29.2	19.9	8.4	122.2	1.5	6
	m	28.6	21.4	6.4	92.8	2.9	4
	b*	24.5	32.1	2.8	40.4	6.1	8
B4	s*	29.2	20.0	8.5	123.8	1.3	3
	m	28.9	20.9	8.0	117.0	1.7	3
	b	25.0	31.4	2.8	40.3	4.5	6
B5	s	29.2	19.9	8.5	123.6	1.3	2
	m	28.6	21.9	7.4	107.8	2.1	6
	b	26.3	28.4	3.6	52.7	6.4	3
B6	s	29.3	19.9	8.5	123.3	1.3	3
	m	28.9	20.9	8.0	117.1	1.9	4
	b	26.7	27.5	4.0	58.1	7.0	4
D1	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	29.5	19.4	7.6	110.4	1.6	4
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	29.5	19.4	7.6	111.4	2.1	6
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	29.2	20.0	8.3	120.4	2.1	5
D3	s	29.5	19.6	8.2	119.0	2.0	6
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	29.2	20.1	8.7	126.2	1.6	4
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	29.4	19.7	8.2	118.9	1.8	5
	b	N/A	N/A	N/A	N/A	N/A	N/A

Notes: s – 1 m below the surface; m – mid depth; b – 1 m above the seabed

XX: Limit Level Exceedance; **XX**: Action Level Exceedance

* – Average value of duplicate sample

Mid-Flood Results Summary

- 2.1.12 During mid-flood survey, the range of DO level from 2.3mg/L to 8.7mg/L with an saturation level form 32.9% to 126.6%. The range of turbidity measurement was 1.2 to 7 NTU with SS content from <2 mg/L to 11 mg/L. The recorded temperature was within the expected range and values for these waters during the time of monitoring.
- 2.1.13 The DO Limit Level and Action Level exceedances were found on the middle and bottom level. A moderate thermocline and halocline was observed for the exceeding stations, which would limit water exchange with the surface and thus result in depleted oxygen levels measures on the bottom. This is a natural phenomenon common during the summer when surface temperatures are high and surface salinities low compared with bottom waters. Therefore, the exceedances of Limit Level of DO were considered non-project related.
- 2.1.14 The SS Action Level exceedance was found at the bottom of D2 and B2. According the site observation and contractor record, no cable laying vessel was conducted near the monitoring location on the monitoring period. Therefore, the exceedances of Action Level of SS were considered non-project related.

2.2 Marine Mammals

- 2.2.1 No marine works within marine mammals inspection area in accordance with the EM&A manual were undertaken during the reporting period. Therefore, no marine mammal inspection was conducted during reporting period.

2.3 Construction and Demolition Waste Management

- 2.3.1 Weekly environmental site inspection was undertaken on 13 July 2012.

3. ENVIRONMENTAL NON-COMPLIANCE AND COMPLAINTS

3.1 Environmental Exceedances

Water Quality

- 3.1.1 Water quality monitoring was conducted on 12 and 14 July 2012. The DO Limit Level and Action Level exceedances were found during mid-ebb tide (14 July 2012) and mid-flood tide (12 and 14 July 2012). A moderate thermocline and halocline was observed for the exceeding stations, which would limit water exchange with the surface and thus result in depleted oxygen levels measures on the bottom. This is a natural phenomenon common during the summer when surface temperatures are high and surface salinities low compared with bottom waters. Therefore, the exceedances of Limit Level of DO were considered non-project related.
- 3.1.2 The SS Action Level exceedance was found at the bottom of D2 (mid-ebb tide) and B2 (mid-flood tide) on 14 July 2012. According the site observation and contractor record, no cable laying vessel was conducted near the monitoring location on the monitoring period. Therefore, the exceedances of Action Level of SS were considered non-project related.

3.2 Site Inspections

- 3.2.1 Site inspections for shore based works were carried out on 13 July 2012 as appropriate. No non-compliances were recorded for the reporting period. A summary of findings conducted during the monitoring period is provided in Table 3-1.

Table 3-1 – Summary of Environmental Site Inspections

Date of Inspection	Observation	Action
13 July 2012	General refuses were found in the shore area but it is not project-related.	Nil.

Photo 1: General refuses were found in the shore area but it is not project-related.



3.3 Environmental Complaint

- 3.3.1 No complaints were received in relation to environmental impact during the reporting period.

4. FORECAST AND SCHEDULE

4.1 Key Engineering Works for the Coming Week

- Cable lay and burial operation.

4.2 Monitoring Schedule for the Coming Week

Water Quality Monitoring

4.2.1 The proposed water quality monitoring schedule for the coming week is provided in Table 4-1 below.

Table 4-1 – Water Quality Monitoring Programme

Date	Day	Sampling Time	Date
		Mid-Flood	Mid-Ebb
17 July 2012	Tuesday	~ 16:53-20:23	~ 9:37-13:07
19 July 2012	Thursday	~ 17:47-21:17	~ 10:48-14:18

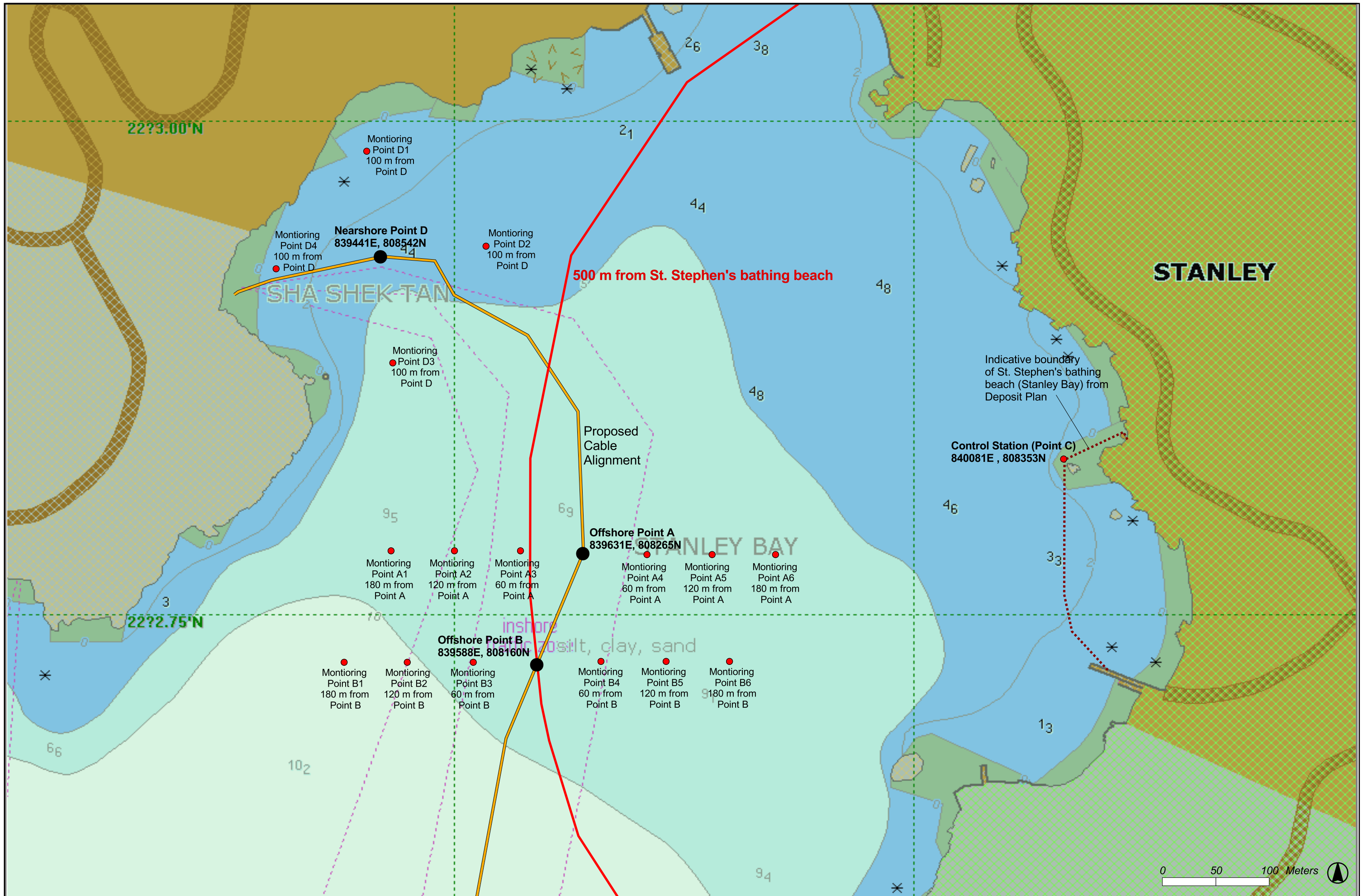
Marine Mammal Inspection

4.2.2 Marine mammal inspections shall be carried out during cable installation by injection jetting works.

5. CONCLUSION

- 5.1.1 This is the fourth weekly Environmental Impact Monitoring and Site Audit Report prepared by Atkins China Limited (ACL), for the consultancy services for the south-East Asia Japan Cable System (SJC) Project. This report been prepared in compliance with the Environmental Permit (EP-423 / 2011 /A) and associated EM&A Manual, and covers the reporting period 9 July 2012 to 15 July 2012.
- 5.1.2 Water quality monitoring was conducted on 12 and 14 July 2012 during reporting period.
- 5.1.3 Site inspection was carried out as appropriate with no non-compliances recorded for the reporting period. During site inspection on 13 July 2012, general refuses were found in the shore area but it is not project-related..
- 5.1.4 Water quality monitoring was conducted on 12 and 14 July 2012. The DO Limit Level and Action Level exceedances were found during mid-ebb tide (14 July 2012) and mid-flood tide (12 and 14 July 2012). A moderate thermocline and halocline was observed for the exceeding stations, which would limit water exchange with the surface and thus result in depleted oxygen levels measures on the bottom. This is a natural phenomenon common during the summer when surface temperatures are high and surface salinities low compared with bottom waters. Therefore, the exceedances of Limit Level of DO were considered non-project related.
- 5.1.5 The SS Action Level exceedance was found at the bottom of D2 (mid-ebb tide) and B2 (mid-flood tide) on 14 July 2012. According the site observation and contractor record, no cable laying vessel was conducted near the monitoring location on the monitoring period. Therefore, the exceedances of Action Level of SS were considered non-project related.
- 5.1.6 Overall, environmental impacts arising from the project activities have been controlled and properly rectified.

Figures



Annex A

Calibration Certificates for Water Quality Monitoring Equipment



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR IVAN LEUNG
CLIENT: ALS TECHNICHEM (HK) PTY LTD
ADDRESS: 11/F., CHUNG SHUN KNITTING CENTRE,
1-3 WING YIP STREET,
KWAI CHUNG,
N.T., HONG KONG

WORK ORDER: HK1210017
LABORATORY: HONG KONG
DATE RECEIVED: 17/04/2012
DATE OF ISSUE: 20/04/2012

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Salinity, Temperature and Turbidity
Description: YSI Sonde
Brand Name: YSI
Model No.: 6920 V2
Serial No.: 11F100014
Equipment No.: --
Date of Calibration: 18 April, 2012

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@alsglobal.com


Mr Chan Kwok Fai, Godfrey
Laboratory Manager - Hong Kong

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Page 1 of 2

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1210017
Date of Issue: 20/04/2012
Client: ALS TECHNICHEM (HK) PTY LTD



Description: YSI Sonde
Brand Name: YSI
Model No.: 6920 V2
Serial No.: 11F100014
Equipment No.: --

Date of Calibration: 18 April, 2012 **Date of next Calibration:** 18 July, 2012

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (mS/cm)	Displayed Reading (mS/cm)	Tolerance (%)
0.1469	0.143	-2.7
6.667	6.478	-2.8
12.890	12.72	-1.3
58.670	56.04	-4.5
Tolerance Limit (%)		10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
5.35	5.26	-0.09
6.29	6.33	0.04
8.25	8.39	0.14
Tolerance Limit (\pm mg/L)		0.20

pH Value

Method Ref: APHA 21st Ed. 4500H:B

Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.01	0.01
7.0	7.10	0.10
10.0	10.10	0.10
Tolerance Limit (\pm unit)		0.2

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0	--
10	10.26	2.6
20	20.59	3.0
30	31.10	3.7
Tolerance Limit (\pm %)		10.0


 Mr. Chan Kwok Fai, Godfrey
 Laboratory Manager - Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1210017
Date of Issue: 20/04/2012
Client: ALS TECHNICHEM (HK) PTY LTD

Description: YSI Sonde
Brand Name: YSI
Model No.: 6920 V2
Serial No.: 11F100014
Equipment No.: --

Date of Calibration: 18 April, 2012 **Date of next Calibration:** 18 July, 2012

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical

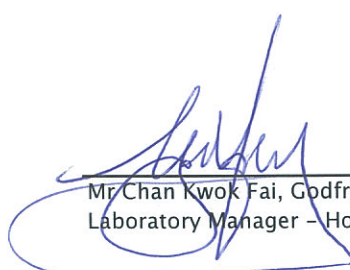
Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
13.5	13.11	-0.4
22.5	21.96	-0.5
39.0	38.78	-0.2
	Tolerance Limit (°C)	2.0

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.6	--
4	4.2	5.0
10	10.6	6.0
20	20.4	2.0
50	51.7	3.4
100	101.2	1.2
	Tolerance Limit (±%)	10.0


 Mr Chan Kwok Fai, Godfrey
 Laboratory Manager - Hong Kong

Annex B

Water Quality Monitoring Data and Result

Marine Water Quality Monitoring - Data Record Sheet

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 12/07/2012

Weather : Fine

Tide: Ebb

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
A1	13:30	10.0	1.0	29.5	20.6	10.1	147.0	2.3
			5.0	29.2	20.5	9.9	146.1	2.6
			9.0	28.4	24.1	8.3	122.5	5.3
A2	13:20	9.0	1.0	229.4	20.5	9.4	137.3	2.4
			4.5	29.0	21.1	8.8	128.3	2.5
			8.0	27.9	25.0	7.9	116.3	2.8
A3	13:10	6.9	1.0	29.4	20.5	9.3	138.7	2.4
			3.5	29.5	20.5	9.0	135.3	2.4
			5.9	29.0	20.8	8.6	126.2	2.5
A4	13:00	6.5	1.0	29.5	20.5	9.9	146.6	2.1
			3.3	29.4	20.5	10.0	149.5	2.2
			5.5	29.2	20.7	10.1	148.2	2.1
A5	12:50	6.0	1.0	29.4	20.5	9.7	142.9	2.3
			3.0	29.1	20.8	9.6	140.4	2.4
			5.0	28.7	21.7	8.2	119.0	3.1
A6	12:40	6.7	1.0	29.4	20.4	9.3	135.1	1.9
			3.4	29.0	20.6	8.6	125.9	2.4
			5.7	28.9	21.5	8.3	122.0	2.5

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 12/07/2012

Weather : Fine

Tide: Ebb

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
B1	11:30	11.4	1.0	29.8	21.0	9.7	141.6	1.5
			5.7	29.0	21.1	9.2	135.5	1.7
			10.4	27.4	26.3	8.2	120.4	2.1
B2	11:40	11.1	1.0	29.4	20.8	9.4	137.8	2.5
			5.6	29.0	21.1	8.5	125.7	2.3
			10.1	28.4	24.6	8.1	119.3	2.1
B3	11:50	11.1	1.0	29.4	20.5	9.4	137.5	2.1
			5.6	28.9	21.1	9.2	135.2	2.0
			10.1	27.9	25.3	7.8	115.0	3.1
B4	12:00	10.8	1.0	29.3	20.4	9.2	133.6	1.9
			5.4	28.7	21.5	8.7	127.0	2.2
			9.8	27.7	25.1	7.3	106.8	2.4
B5	12:10	10.3	1.0	29.4	20.4	9.3	135.7	4.4
			5.2	28.8	21.1	9.3	135.6	1.4
			9.3	27.8	25.8	7.5	110.8	1.6
B6	12:20	10.5	1.0	29.3	20.3	9.0	131.3	2.5
			5.3	29.1	20.6	8.7	126.8	2.6
			9.5	28.0	25.1	8.0	117.4	5.9

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 12/07/2012

Weather : Fine

Tide: Ebb

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
C	12:30	2.3						
			1.2	29.4	20.2	8.0	117.2	3.1
D1	14:10	2.6						
			1.3	29.5	20.4	8.1	119.3	3.7
D2	14:00	4.7	1.0	29.4	20.5	8.8	129.4	3.3
			3.7	29.4	20.6	7.7	113.6	3.6
D3	13:40	5.3	1.0	29.2	20.7	9.0	130.8	3.8
			4.3	28.9	21.1	8.1	118.2	3.6
D4	13:50	2.6						
			1.3	29.3	20.5	8.3	121.1	2.4

Marine Water Quality Monitoring - Data Record Sheet

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 12/07/2012

Weather : Fine

Tide: Flood

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
A1	08:40	10.3	1.0	28.8	20.5	8.0	117.2	3.5
			5.2	28.6	23.6	7.8	113.8	4.0
			9.3	26.8	28.5	5.9	86.6	5.4
A2	08:30	8.7	1.0	28.8	20.5	8.5	123.7	2.9
			4.4	28.8	20.6	8.2	118.6	3.1
			7.7	28.2	24.6	7.7	113.6	3.5
A3	08:20	7.8	1.0	28.8	20.4	8.4	121.7	2.6
			3.9	28.9	20.5	8.0	117.8	3.2
			6.8	28.6	24.3	7.9	114.8	3.3
A4	08:10	8.5	1.0	28.9	20.4	8.7	126.6	2.3
			4.3	28.9	20.5	8.6	125.1	2.4
			7.5	28.9	20.5	8.6	124.6	2.4
A5	08:00	8.9	1.0	28.9	20.3	8.5	123.3	3.0
			4.5	28.9	20.4	8.4	121.2	3.3
			7.9	28.9	20.5	8.0	116.2	4.1
A6	07:50	8.8	1.0	28.9	20.4	8.5	123.5	2.5
			4.4	28.9	20.4	8.1	117.6	3.1
			7.8	29.0	22.3	6.6	97.0	4.3

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 12/07/2012

Weather : Fine

Tide: Flood

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
B1	06:40	12.0	1.0	28.8	20.7	8.4	121.5	2.2
			6.0	28.5	22.9	8.2	119.5	2.4
			11.0	25.2	31.4	3.2	52.4	2.7
B2	06:50	11.1	1.0	28.8	20.6	7.8	116.1	2.4
			5.6	28.5	26.0	7.7	112.3	2.7
			10.1	25.3	31.4	5.6	80.8	3.1
B3	07:00	12.0	1.0	28.7	20.5	8.5	122.8	2.7
			6.0	28.9	20.7	8.0	116.3	2.8
			11.0	26.1	29.1	5.4	77.9	3.4
B4	07:10	10.8	1.0	28.8	20.4	8.3	120.3	2.2
			5.4	29.0	20.8	7.4	107.3	2.7
			9.8	26.9	27.9	7.0	102.7	2.8
B5	07:20	10.3	1.0	28.6	20.6	8.2	119.7	2.2
			5.2	28.9	20.6	7.2	104.1	2.3
			9.3	27.2	27.4	6.9	100.5	2.8
B6	07:30	10.5	1.0	28.9	20.5	8.2	119.7	2.5
			5.3	28.9	20.5	7.7	111.6	2.8
			9.5	28.0	27.2	5.4	79.0	5.9

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 12/07/2012

Weather : Fine

Tide: Flood

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
C	07:40	2.2						
			1.1	28.7	20.3	7.4	107.0	2.2
D1	09:20	2.4						
			1.2	28.8	20.4	8.4	122.4	3.4
D2	09:10	5.3	1.0	28.8	20.4	8.4	122.2	2.0
			4.3	28.9	20.4	8.1	116.9	2.2
D3	08:50	5.2	1.0	28.8	20.5	8.4	121.5	3.0
			4.2	28.9	20.6	7.7	112.1	3.3
D4	09:00	2.7						
			1.4	28.8	20.5	7.7	111.1	2.3

Marine Water Quality Monitoring - Data Record Sheet

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 14/07/2012

Weather : Fine

Tide: Flood

Sea Condition: Moderate

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
A1	10:30	9.0	1.0	29.3	19.9	8.4	122.8	1.2
			4.5	29.0	20.5	8.6	125.0	1.5
			8.0	26.3	28.6	4.5	65.5	5.4
A2	10:20	8.7	1.0	29.4	19.9	8.4	121.9	1.2
			4.4	29.2	20.1	8.7	126.6	1.2
			7.7	27.5	24.5	5.5	79.6	6.3
A3	10:10	7.4	1.0	29.3	19.9	8.4	122.5	1.2
			3.7	29.2	19.9	8.6	124.8	1.2
			6.4	28.5	21.7	6.7	97.3	5.5
A4	10:00	6.6	1.0	29.4	19.7	8.4	121.9	1.7
			3.3	29.4	19.8	8.4	122.4	1.5
			5.6	28.9	21.1	7.8	114.4	2.5
A5	09:50	6.5	1.0	29.4	19.7	8.4	122.4	1.5
			3.3	29.3	19.7	8.5	123.5	1.3
			5.5	29.0	21.0	7.2	105.5	3.4
A6	09:40	6.1	1.0	29.3	19.7	8.4	121.9	1.3
			3.1	29.3	19.7	8.5	123.2	1.4
			5.1	29.0	20.9	7.7	112.6	2.3

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 14/07/2012

Weather : Fine

Tide: Flood

Sea Condition: Moderate

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
B1	08:30	11.2	1.0	29.2	19.8	8.4	121.8	1.4
			5.6	27.3	26.1	4.7	68.7	2.7
			10.2	25.2	30.9	2.3	32.9	6.3
B2	08:40	11.6	1.0	29.2	19.8	8.2	119.8	3.0
			5.8	28.5	22.5	6.5	94.2	3.2
			10.6	25.0	31.4	3.3	48.2	5.6
B3	08:50	11.2	1.0	29.2	19.9	8.4	122.2	1.5
			5.6	28.6	21.4	6.4	92.8	2.9
			10.2	24.5	32.1	2.8	40.4	6.1
B4	09:00	9.6	1.0	29.2	20.0	8.5	123.8	1.3
			4.8	28.9	20.9	8.0	117.0	1.7
			8.6	25.0	31.4	2.8	40.3	4.5
B5	09:10	11.0	1.0	29.2	19.9	8.5	123.6	1.3
			5.5	28.6	21.9	7.4	107.8	2.1
			10.0	26.3	28.4	3.6	52.7	6.4
B6	09:20	9.4	1.0	29.3	19.9	8.5	123.3	1.3
			4.7	28.9	20.9	8.0	117.1	1.9
			8.4	26.7	27.5	4.0	58.1	7.0

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 14/07/2012

Weather : Fine

Tide: Flood

Sea Condition: Moderate

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
C	09:30	2.2						
			1.1	29.4	19.5	7.7	112.6	1.6
D1	11:10	2.3						
			1.2	29.5	19.4	7.6	110.4	1.6
D2	11:00	5.2	1.0	29.5	19.4	7.6	111.4	2.1
			4.2	29.2	20.0	8.3	120.4	2.1
D3	10:40	4.8	1.0	29.5	19.6	8.2	119.0	2.0
			3.8	29.2	20.1	8.7	126.2	1.6
D4	10:50	2.4						
			1.2	29.4	19.7	8.2	118.9	1.8

Marine Water Quality Monitoring - Data Record Sheet

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 14/07/2012

Weather : Cloudy

Tide: Ebb

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
A1	16:30	9.5	1.0	29.6	20.1	9.0	131.4	1.2
			4.8	29.4	20.3	8.9	130.2	1.4
			8.5	26.8	27.5	4.2	61.3	3.1
A2	16:20	8.8	1.0	30.1	19.9	8.5	125.8	1.4
			4.4	29.5	20.5	8.8	129.0	1.1
			7.8	28.9	21.6	8.2	119.2	6.2
A3	16:10	7.6	1.0	30.1	19.8	8.6	127.4	1.4
			3.8	29.6	20.2	8.9	130.4	1.7
			6.6	26.6	27.7	5.5	79.8	3.9
A4	16:00	6.6	1.0	30.1	19.7	8.6	126.6	1.4
			3.3	29.8	19.9	8.8	129.9	1.5
			5.6	29.4	20.5	9.0	131.9	2.2
A5	15:50	6.2	1.0	30.3	19.6	8.5	125.2	1.7
			3.1	29.8	19.9	8.8	129.4	1.5
			5.2	29.4	20.6	8.8	129.6	1.9
A6	15:40	6.2	1.0	30.2	19.6	8.4	123.9	1.4
			3.1	29.8	19.7	8.7	127.1	1.3
			5.2	29.1	21.0	8.6	125.7	2.1

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 14/07/2012

Weather : Cloudy

Tide: Ebb

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
B1	14:50	11.0	1.0	29.6	19.7	9.0	131.2	1.2
			5.5	29.0	21.3	8.3	121.5	2.4
			10.0	26.2	28.3	3.6	51.6	3.8
B2	Blocked by barge, no monitoring and sampling can be done.							
B3								
B4	15:00	8.8	1.0	29.7	19.8	8.8	129.6	5.1
			4.4	29.6	20.2	8.8	129.6	2.2
			7.8	27.0	27.5	4.2	60.9	3.6
B5	15:10	11.4	1.0	29.9	20.0	8.6	127.3	1.4
			5.7	29.0	21.6	8.2	119.6	2.8
			10.4	25.4	31.2	2.3	32.9	6.7
B6	15:20	9.6	1.0	29.7	20.1	8.8	129.7	1.5
			4.8	29.2	21.0	8.6	126.0	2.4
			8.6	25.7	30.8	3.1	45.6	6.9

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 14/07/2012

Weather : Cloudy

Tide: Ebb

Sea Condition: Calm

Monitoring Equipment	Equipment No.
YSI Sonde 6920 V2	

Monitoring Location	Time	Water Depth (m)	Sampling Depth (m)	Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)
C	15:30	2.4						
			1.2	30.5	19.7	7.7	114.2	2.1
D1	17:10	2.5						
			1.3	30.4	19.5	7.6	113.3	3.0
D2	17:00	5.3	1.0	30.2	19.7	8.1	119.7	2.2
			4.3	29.2	20.9	8.4	123.1	6.9
D3	16:40	5.0	1.0	30.2	19.7	8.1	119.3	2.1
			4.0	29.4	20.5	8.6	126.3	1.8
D4	16:50	2.5						
			1.3	30.5	19.7	7.8	116.3	2.1



CERTIFICATE OF ANALYSIS

<i>Client</i>	: ATKINS CHINA LTD	<i>Laboratory</i>	: ALS Technichem HK Pty Ltd	<i>Page</i>	: 1 of 5
<i>Contact</i>	: MS ENID YUNG	<i>Contact</i>	: Chan Kwok Fai, Godfrey	<i>Work Order</i>	: HK1218383
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<i>Project</i>	: QUOTATION OF WATER TEST - STANLEY	<i>Quote number</i>	: ---	<i>Date received</i>	: 12-JUL-2012
<i>Order number</i>	: ---			<i>Date of issue</i>	: 20-JUL-2012
<i>C-O-C number</i>	: ---			<i>No. of samples</i>	- Received : 94
<i>Site</i>	: STANLEY BAY				- Analysed : 94

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1218383 supersedes any previous reports with this reference. The completion date of analysis is 20-JUL-2012. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1218383 :
Sample(s) were collected by ALS Technichem (HK) staff on 12 July, 2012.
Water sample(s) analysed and reported on an as received basis.
Temperature, Salinity, Dissolved Oxygen and Turbidity were measured on-site by ALS Technichem (HK) staff.

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<i>Signatory</i>	<i>Position</i>	<i>Authorised results for:-</i>
Fung Lim Chee, Richard	General Manager	Inorganics
Fung Lim Chee, Richard	General Manager	Sampling



Analytical Results

Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	EA012-SAMP: Temperature	EA020-SAMP: Salinity	EA045-SAMP: Turbidity	EP025-SAMP: Dissolved Oxygen
			LOR Unit	2 mg/L	0.1 °C	0.1 g/L	1 NTU	0.1 mg/L
				EA/ED: Physical and Aggregate Properties	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement
A1-S MID-EBB	12-JUL-2012 13:30	HK1218383-001		3	29.5	20.6	2	10.1
A1-M MID-EBB	12-JUL-2012 13:30	HK1218383-002		3	29.2	20.5	3	9.9
A1-B MID-EBB	12-JUL-2012 13:30	HK1218383-003		6	28.4	24.1	5	8.3
A2-S MID-EBB	12-JUL-2012 13:20	HK1218383-004		4	29.4	20.5	2	9.4
A2-M MID-EBB	12-JUL-2012 13:20	HK1218383-005		4	29.0	21.1	2	8.8
A2-B MID-EBB	12-JUL-2012 13:20	HK1218383-006		4	27.9	25.0	3	7.9
A3-S MID-EBB	12-JUL-2012 13:10	HK1218383-007		3	29.4	20.5	2	9.3
A3-M MID-EBB	12-JUL-2012 13:10	HK1218383-008		3	29.5	20.5	2	9.0
A3-B MID-EBB	12-JUL-2012 13:10	HK1218383-009		3	29.0	20.8	2	8.6
A4-S MID-EBB	12-JUL-2012 13:00	HK1218383-010		4	29.5	20.5	2	9.9
A4-M MID-EBB	12-JUL-2012 13:00	HK1218383-011		4	29.4	20.5	2	10.0
A4-B MID-EBB	12-JUL-2012 13:00	HK1218383-012		3	29.2	20.7	2	10.1
A5-S MID-EBB	12-JUL-2012 12:50	HK1218383-013		3	29.4	20.5	2	9.7
A5-M MID-EBB	12-JUL-2012 12:50	HK1218383-014		3	29.1	20.8	2	9.6
A5-B MID-EBB	12-JUL-2012 12:50	HK1218383-015		4	28.7	21.7	3	8.2
A6-S MID-EBB	12-JUL-2012 12:40	HK1218383-016		3	29.4	20.4	2	9.3
A6-M MID-EBB	12-JUL-2012 12:40	HK1218383-017		2	29.0	20.6	2	8.6
A6-B MID-EBB	12-JUL-2012 12:40	HK1218383-018		4	28.9	21.5	2	8.3
B1-S MID-EBB	12-JUL-2012 11:30	HK1218383-019		3	29.8	21.0	2	9.7
B1-M MID-EBB	12-JUL-2012 11:30	HK1218383-020		5	29.0	21.1	2	9.2
B1-B MID-EBB	12-JUL-2012 11:30	HK1218383-021		3	27.4	26.3	2	8.2
B2-S MID-EBB	12-JUL-2012 11:40	HK1218383-022		4	29.4	20.8	2	9.4
B2-M MID-EBB	12-JUL-2012 11:40	HK1218383-023		3	29.0	21.1	2	8.5
B2-B MID-EBB	12-JUL-2012 11:40	HK1218383-024		3	28.4	24.6	2	8.1
B3-S MID-EBB	12-JUL-2012 11:50	HK1218383-025		4	29.4	20.5	2	9.4
B3-M MID-EBB	12-JUL-2012 11:50	HK1218383-026		3	28.9	21.1	2	9.2
B3-B MID-EBB	12-JUL-2012 11:50	HK1218383-027		4	27.9	25.3	3	7.8
B4-S MID-EBB	12-JUL-2012 12:00	HK1218383-028		4	29.3	20.4	2	9.2
B4-M MID-EBB	12-JUL-2012 12:00	HK1218383-029		3	28.7	21.5	2	8.7
B4-B MID-EBB	12-JUL-2012 12:00	HK1218383-030		3	27.7	25.1	2	7.3
B5-S MID-EBB	12-JUL-2012 12:10	HK1218383-031		4	29.4	20.4	4	9.3
B5-M MID-EBB	12-JUL-2012 12:10	HK1218383-032		5	28.8	21.1	1	9.3
B5-B MID-EBB	12-JUL-2012 12:10	HK1218383-033		3	27.8	25.8	2	7.5
B6-S MID-EBB	12-JUL-2012 12:20	HK1218383-034		4	29.3	20.3	2	9.0
B6-M MID-EBB	12-JUL-2012 12:20	HK1218383-035		3	29.1	20.6	3	8.7



Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	EA012-SAMP: Temperature	EA020-SAMP: Salinity	EA045-SAMP: Turbidity	EP025-SAMP: Dissolved Oxygen
			LOR Unit	2 mg/L	0.1 °C	0.1 g/L	1 NTU	0.1 mg/L
				EA/ED: Physical and Aggregate Properties	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement
B6-B MID-EBB	12-JUL-2012 12:20	HK1218383-036		4	28.0	25.1	6	8.0
CM MID-EBB	12-JUL-2012 12:30	HK1218383-037		3	29.4	20.2	3	8.0
D1-M MID-EBB	12-JUL-2012 14:10	HK1218383-038		5	29.5	20.4	4	8.1
D2-S MID-EBB	12-JUL-2012 14:00	HK1218383-039		5	29.4	20.5	3	8.8
D2-B MID-EBB	12-JUL-2012 14:00	HK1218383-040		5	29.4	20.6	4	7.7
D3-S MID-EBB	12-JUL-2012 13:40	HK1218383-041		3	29.2	20.7	4	9.0
D3-B MID-EBB	12-JUL-2012 13:40	HK1218383-042		3	28.9	21.1	4	8.1
D4-M MID-EBB	12-JUL-2012 13:50	HK1218383-043		4	29.3	20.5	2	8.3
A1-S MID-FLOOD	12-JUL-2012 08:40	HK1218383-044		5	28.8	20.5	4	8.0
A1-M MID-FLOOD	12-JUL-2012 08:40	HK1218383-045		3	28.6	23.6	4	7.8
A1-B MID-FLOOD	12-JUL-2012 08:40	HK1218383-046		2	26.8	28.5	5	5.9
A2-S MID-FLOOD	12-JUL-2012 08:30	HK1218383-047		3	28.8	20.5	3	8.5
A2-M MID-FLOOD	12-JUL-2012 08:30	HK1218383-048		3	28.8	20.6	3	8.2
A2-B MID-FLOOD	12-JUL-2012 08:30	HK1218383-049		3	28.2	24.6	4	7.7
A3-S MID-FLOOD	12-JUL-2012 08:20	HK1218383-050		3	28.8	20.4	3	8.4
A3-M MID-FLOOD	12-JUL-2012 08:20	HK1218383-051		2	28.9	20.5	3	8.0
A3-B MID-FLOOD	12-JUL-2012 08:20	HK1218383-052		3	28.6	24.3	3	7.9
A4-S MID-FLOOD	12-JUL-2012 08:10	HK1218383-053		4	28.9	20.4	2	8.7
A4-M MID-FLOOD	12-JUL-2012 08:10	HK1218383-054		5	28.9	20.5	2	8.6
A4-B MID-FLOOD	12-JUL-2012 08:10	HK1218383-055		3	28.9	20.5	2	8.6
A5-S MID-FLOOD	12-JUL-2012 08:00	HK1218383-056		4	28.9	20.3	3	8.5
A5-M MID-FLOOD	12-JUL-2012 08:00	HK1218383-057		3	28.9	20.4	3	8.4
A5-B MID-FLOOD	12-JUL-2012 08:00	HK1218383-058		5	28.9	20.5	4	8.0
A6-S MID-FLOOD	12-JUL-2012 07:50	HK1218383-059		4	28.9	20.4	2	8.5
A6-M MID-FLOOD	12-JUL-2012 07:50	HK1218383-060		4	28.9	20.4	3	8.1
A6-B MID-FLOOD	12-JUL-2012 07:50	HK1218383-061		3	29.0	22.3	4	6.6
B1-S MID-FLOOD	12-JUL-2012 06:40	HK1218383-062		4	28.8	20.7	22	8.4
B1-M MID-FLOOD	12-JUL-2012 06:40	HK1218383-063		4	28.5	22.9	2	8.2
B1-B MID-FLOOD	12-JUL-2012 06:40	HK1218383-064		4	25.2	31.4	3	3.2
B2-S MID-FLOOD	12-JUL-2012 06:50	HK1218383-065		4	28.8	20.6	2	7.8
B2-M MID-FLOOD	12-JUL-2012 06:50	HK1218383-066		4	28.5	26.0	3	7.7
B2-B MID-FLOOD	12-JUL-2012 06:50	HK1218383-067		4	25.3	31.4	3	5.6
B3-S MID-FLOOD	12-JUL-2012 07:00	HK1218383-068		3	28.7	20.5	3	8.5
B3-M MID-FLOOD	12-JUL-2012 07:00	HK1218383-069		5	28.9	20.7	3	8.0
B3-B MID-FLOOD	12-JUL-2012 07:00	HK1218383-070		4	26.1	29.1	3	5.4



Sub-Matrix: MARINE WATER

Compound

LOR Unit

			EA025: Suspended Solids (SS)	EA012-SAMP: Temperature	EA020-SAMP: Salinity	EA045-SAMP: Turbidity	EP025-SAMP: Dissolved Oxygen
			2 mg/L	0.1 °C	0.1 g/L	1 NTU	0.1 mg/L
Client sample ID	Client sampling date / time	Laboratory sample ID	EA/ED: Physical and Aggregate Properties	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement
B4-S MID-FLOOD	12-JUL-2012 07:10	HK1218383-071	3	28.8	20.4	2	8.3
B4-M MID-FLOOD	12-JUL-2012 07:10	HK1218383-072	4	29.0	20.8	3	7.4
B4-B MID-FLOOD	12-JUL-2012 07:10	HK1218383-073	4	26.9	27.9	3	7.0
B5-S MID-FLOOD	12-JUL-2012 07:20	HK1218383-074	4	28.6	20.6	2	8.2
B5-M MID-FLOOD	12-JUL-2012 07:20	HK1218383-075	3	28.9	20.6	2	7.2
B5-B MID-FLOOD	12-JUL-2012 07:20	HK1218383-076	3	27.2	27.4	3	6.9
B6-S MID-FLOOD	12-JUL-2012 07:30	HK1218383-077	3	28.9	20.5	2	8.2
B6-M MID-FLOOD	12-JUL-2012 07:30	HK1218383-078	2	28.9	20.5	3	7.7
B6-B MID-FLOOD	12-JUL-2012 07:30	HK1218383-079	2	28.0	27.2	6	5.4
CM MID-FLOOD	12-JUL-2012 07:40	HK1218383-080	2	28.7	20.3	2	7.4
D1-M MID-FLOOD	12-JUL-2012 09:20	HK1218383-081	3	28.8	20.4	3	8.4
D2-S MID-FLOOD	12-JUL-2012 09:10	HK1218383-082	4	28.8	20.4	2	8.4
D2-B MID-FLOOD	12-JUL-2012 09:10	HK1218383-083	2	28.9	20.4	2	8.1
D3-S MID-FLOOD	12-JUL-2012 08:50	HK1218383-084	2	28.8	20.5	3	8.4
D3-B MID-FLOOD	12-JUL-2012 08:50	HK1218383-085	3	28.9	20.6	3	7.7
D4-M MID-FLOOD	12-JUL-2012 09:00	HK1218383-086	3	28.8	20.5	2	7.7
B1-S-F FIELD DUPLICATE	[12-JUL-2012]	HK1218383-087	5	28.9	20.7	2	8.4
B2-M-F FIELD DUPLICATE	[12-JUL-2012]	HK1218383-088	2	28.8	25.8	2	8.0
B3-B-F FIELD DUPLICATE	[12-JUL-2012]	HK1218383-089	3	26.2	29.1	3	5.6
B4-S-F FIELD DUPLICATE	[12-JUL-2012]	HK1218383-090	3	28.9	20.4	2	8.3
A4-S-E FIELD DUPLICATE	[12-JUL-2012]	HK1218383-091	3	29.5	20.5	2	10.0
A3-M-E FIELD DUPLICATE	[12-JUL-2012]	HK1218383-092	4	28.8	21.9	2	9.0
A2-B-E FIELD DUPLICATE	[12-JUL-2012]	HK1218383-093	3	27.9	24.3	2	8.6
A1-S-E FIELD DUPLICATE	[12-JUL-2012]	HK1218383-094	4	29.5	20.6	2	9.9



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2412327)								
HK1218383-001	A1-S MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1218383-011	A4-M MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	4	3	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2412328)								
HK1218383-021	B1-B MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1218383-031	B5-S MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	4	5	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2412329)								
HK1218383-041	D3-S MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1218383-051	A3-M MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	2	3	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2412330)								
HK1218383-061	A6-B MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	34.4
HK1218383-071	B4-S MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	35.9
EA/ED: Physical and Aggregate Properties (QC Lot: 2412331)								
HK1218383-081	D1-M MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	0.0
HK1218383-091	A4-S-E FIELD DUPLICATE	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 2412327)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	101	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2412328)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	102	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2412329)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	101	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2412330)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	99.0	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2412331)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	101	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



CERTIFICATE OF ANALYSIS

<i>Client</i>	: ATKINS CHINA LTD	<i>Laboratory</i>	: ALS Technichem HK Pty Ltd	<i>Page</i>	: 1 of 5
<i>Contact</i>	: MS ENID YUNG	<i>Contact</i>	: Chan Kwok Fai, Godfrey	<i>Work Order</i>	: HK1218386
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<i>Project</i>	: QUOTATION OF WATER TEST - STANLEY	<i>Quote number</i>	: ---	<i>Date received</i>	: 16-JUL-2012
<i>Order number</i>	: ---			<i>Date of issue</i>	: 25-JUL-2012
<i>C-O-C number</i>	: ---			<i>No. of samples</i>	- Received : 88
<i>Site</i>	: STANLEY BAY				- Analysed : 88

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1218386 supersedes any previous reports with this reference. The completion date of analysis is 23-JUL-2012. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1218386 :
Sample(s) were collected by ALS Technichem (HK) staff on 14 July, 2012.
Water sample(s) analysed and reported on an as received basis.
Temperature, Salinity, Dissolved Oxygen and Turbidity were measured on-site by ALS Technichem (HK) staff.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the 'Electronic Transactions Ordinance' of Hong Kong. Chapter 553. Section 6.

<i>Signatory</i>	<i>Position</i>	<i>Authorised results for:-</i>
Fung Lim Chee, Richard	General Manager	Inorganics
Fung Lim Chee, Richard	General Manager	Sampling



Analytical Results

Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	EA012-SAMP: Temperature	EA020-SAMP: Salinity	EA045-SAMP: Turbidity	EP025-SAMP: Dissolved Oxygen
			LOR Unit	2 mg/L	0.1 °C	0.1 g/L	1 NTU	0.1 mg/L
				EA/ED: Physical and Aggregate Properties	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement
A1-S MID-EBB	14-JUL-2012 16:30	HK1218386-001		<2	29.6	20.1	1	9.0
A1-M MID-EBB	14-JUL-2012 16:30	HK1218386-002		<2	29.4	20.3	1	8.9
A1-B MID-EBB	14-JUL-2012 16:30	HK1218386-003		<2	26.8	27.5	3	4.2
A2-S MID-EBB	14-JUL-2012 16:20	HK1218386-004		<2	30.1	19.9	1	8.5
A2-M MID-EBB	14-JUL-2012 16:20	HK1218386-005		2	29.5	20.5	1	8.8
A2-B MID-EBB	14-JUL-2012 16:20	HK1218386-006		<2	28.9	21.6	6	8.2
A3-S MID-EBB	14-JUL-2012 16:10	HK1218386-007		<2	30.1	19.8	1	8.6
A3-M MID-EBB	14-JUL-2012 16:10	HK1218386-008		<2	29.6	20.2	2	8.9
A3-B MID-EBB	14-JUL-2012 16:10	HK1218386-009		4	26.6	27.7	4	5.5
A4-S MID-EBB	14-JUL-2012 16:00	HK1218386-010		<2	30.1	19.7	1	8.6
A4-M MID-EBB	14-JUL-2012 16:00	HK1218386-011		<2	29.8	19.9	2	8.8
A4-B MID-EBB	14-JUL-2012 16:00	HK1218386-012		<2	29.4	20.5	2	9.0
A5-S MID-EBB	14-JUL-2012 15:50	HK1218386-013		<2	30.3	19.6	2	8.5
A5-M MID-EBB	14-JUL-2012 15:50	HK1218386-014		<2	29.8	19.9	2	8.8
A5-B MID-EBB	14-JUL-2012 15:50	HK1218386-015		7	29.4	20.6	2	8.8
A6-S MID-EBB	14-JUL-2012 15:40	HK1218386-016		<2	30.2	19.6	1	8.4
A6-M MID-EBB	14-JUL-2012 15:40	HK1218386-017		4	29.8	19.7	1	8.7
A6-B MID-EBB	14-JUL-2012 15:40	HK1218386-018		2	29.1	21.0	2	8.6
B1-S MID-EBB	14-JUL-2012 14:50	HK1218386-019		3	29.6	19.7	1	9.0
B1-M MID-EBB	14-JUL-2012 14:50	HK1218386-020		2	29.0	21.3	2	8.3
B1-B MID-EBB	14-JUL-2012 14:50	HK1218386-021		3	26.2	28.3	4	3.6
B4-S MID-EBB	14-JUL-2012 15:00	HK1218386-028		2	29.7	19.8	5	8.8
B4-M MID-EBB	14-JUL-2012 15:00	HK1218386-029		3	29.6	20.2	2	8.8
B4-B MID-EBB	14-JUL-2012 15:00	HK1218386-030		<2	27.0	27.5	4	4.2
B5-S MID-EBB	14-JUL-2012 15:10	HK1218386-031		4	29.9	20.0	1	8.6
B5-M MID-EBB	14-JUL-2012 15:10	HK1218386-032		3	29.0	21.6	3	8.2
B5-B MID-EBB	14-JUL-2012 15:10	HK1218386-033		8	25.4	31.2	7	2.3
B6-S MID-EBB	14-JUL-2012 15:20	HK1218386-034		<2	29.7	20.1	2	8.8
B6-M MID-EBB	14-JUL-2012 15:20	HK1218386-035		4	29.2	21.0	2	8.6
B6-B MID-EBB	14-JUL-2012 15:20	HK1218386-036		<2	25.7	30.8	7	3.1
CM MID-EBB	14-JUL-2012 15:30	HK1218386-037		4	30.5	19.7	2	7.7
D1-M MID-EBB	14-JUL-2012 17:10	HK1218386-038		2	30.4	19.5	3	7.6
D2-S MID-EBB	14-JUL-2012 17:00	HK1218386-039		2	30.2	19.7	2	8.1
D2-B MID-EBB	14-JUL-2012 17:00	HK1218386-040		10	29.2	20.9	7	8.4
D3-S MID-EBB	14-JUL-2012 16:40	HK1218386-041		2	30.2	19.7	2	8.1



Sub-Matrix: MARINE WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS)	EA012-SAMP: Temperature	EA020-SAMP: Salinity	EA045-SAMP: Turbidity	EP025-SAMP: Dissolved Oxygen
			LOR Unit	2 mg/L	0.1 °C	0.1 g/L	1 NTU	0.1 mg/L
				EA/ED: Physical and Aggregate Properties	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement
D3-B MID-EBB	14-JUL-2012 16:40	HK1218386-042		4	29.4	20.5	2	8.6
D4-M MID-EBB	14-JUL-2012 16:50	HK1218386-043		3	30.5	19.7	2	7.8
A1-S MID-FLOOD	14-JUL-2012 10:30	HK1218386-044		3	29.3	19.9	1	8.4
A1-M MID-FLOOD	14-JUL-2012 10:30	HK1218386-045		<2	29.0	20.5	2	8.6
A1-B MID-FLOOD	14-JUL-2012 10:30	HK1218386-046		2	26.3	28.6	5	4.5
A2-S MID-FLOOD	14-JUL-2012 10:20	HK1218386-047		3	29.4	19.9	1	8.4
A2-M MID-FLOOD	14-JUL-2012 10:20	HK1218386-048		3	29.2	20.1	1	8.7
A2-B MID-FLOOD	14-JUL-2012 10:20	HK1218386-049		4	27.5	24.5	6	5.5
A3-S MID-FLOOD	14-JUL-2012 10:10	HK1218386-050		2	29.3	19.9	1	8.4
A3-M MID-FLOOD	14-JUL-2012 10:10	HK1218386-051		6	29.2	19.9	1	8.6
A3-B MID-FLOOD	14-JUL-2012 10:10	HK1218386-052		<2	28.5	21.7	6	6.7
A4-S MID-FLOOD	14-JUL-2012 10:00	HK1218386-053		<2	29.4	19.7	2	8.4
A4-M MID-FLOOD	14-JUL-2012 10:00	HK1218386-054		<2	29.4	19.8	2	8.4
A4-B MID-FLOOD	14-JUL-2012 10:00	HK1218386-055		<2	28.9	21.1	2	7.8
A5-S MID-FLOOD	14-JUL-2012 09:50	HK1218386-056		3	29.4	19.7	2	8.4
A5-M MID-FLOOD	14-JUL-2012 09:50	HK1218386-057		<2	29.3	19.7	1	8.5
A5-B MID-FLOOD	14-JUL-2012 09:50	HK1218386-058		3	29.0	21.0	3	7.2
A6-S MID-FLOOD	14-JUL-2012 09:40	HK1218386-059		<2	29.3	19.7	1	8.4
A6-M MID-FLOOD	14-JUL-2012 09:40	HK1218386-060		3	29.3	19.7	1	8.5
A6-B MID-FLOOD	14-JUL-2012 09:40	HK1218386-061		5	29.0	20.9	2	7.7
B1-S MID-FLOOD	14-JUL-2012 08:30	HK1218386-062		5	29.2	19.8	1	8.4
B1-M MID-FLOOD	14-JUL-2012 08:30	HK1218386-063		5	27.3	26.1	3	4.7
B1-B MID-FLOOD	14-JUL-2012 08:30	HK1218386-064		6	25.2	30.9	6	2.3
B2-S MID-FLOOD	14-JUL-2012 08:40	HK1218386-065		2	29.2	19.8	3	8.2
B2-M MID-FLOOD	14-JUL-2012 08:40	HK1218386-066		3	28.5	22.5	3	6.5
B2-B MID-FLOOD	14-JUL-2012 08:40	HK1218386-067		11	25.0	31.4	6	3.3
B3-S MID-FLOOD	14-JUL-2012 08:50	HK1218386-068		6	29.2	19.9	2	8.4
B3-M MID-FLOOD	14-JUL-2012 08:50	HK1218386-069		4	28.6	21.4	3	6.4
B3-B MID-FLOOD	14-JUL-2012 08:50	HK1218386-070		7	24.5	32.1	6	2.8
B4-S MID-FLOOD	14-JUL-2012 09:00	HK1218386-071		3	29.2	20.0	1	8.5
B4-M MID-FLOOD	14-JUL-2012 09:00	HK1218386-072		3	28.9	20.9	2	8.0
B4-B MID-FLOOD	14-JUL-2012 09:00	HK1218386-073		6	25.0	31.4	4	2.8
B5-S MID-FLOOD	14-JUL-2012 09:10	HK1218386-074		2	29.2	19.9	1	8.5
B5-M MID-FLOOD	14-JUL-2012 09:10	HK1218386-075		6	28.6	21.9	2	7.4
B5-B MID-FLOOD	14-JUL-2012 09:10	HK1218386-076		3	26.3	28.4	6	3.6



Sub-Matrix: MARINE WATER

			Compound	EA025: Suspended Solids (SS)	EA012-SAMP: Temperature	EA020-SAMP: Salinity	EA045-SAMP: Turbidity	EP025-SAMP: Dissolved Oxygen
			LOR Unit	2 mg/L	0.1 °C	0.1 g/L	1 NTU	0.1 mg/L
Client sample ID	Client sampling date / time	Laboratory sample ID		EA/ED: Physical and Aggregate Properties	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement	OS: On-Site Measurement
B6-S MID-FLOOD	14-JUL-2012 09:20	HK1218386-077		3	29.3	19.9	1	8.5
B6-M MID-FLOOD	14-JUL-2012 09:20	HK1218386-078		4	28.9	20.9	2	8.0
B6-B MID-FLOOD	14-JUL-2012 09:20	HK1218386-079		4	26.7	27.5	7	4.0
CM MID-FLOOD	14-JUL-2012 09:30	HK1218386-080		6	29.4	19.5	2	7.7
D1-M MID-FLOOD	14-JUL-2012 11:10	HK1218386-081		4	29.5	19.4	2	7.6
D2-S MID-FLOOD	14-JUL-2012 11:00	HK1218386-082		6	29.5	19.4	2	7.6
D2-B MID-FLOOD	14-JUL-2012 11:00	HK1218386-083		5	29.2	20.0	2	8.3
D3-S MID-FLOOD	14-JUL-2012 10:40	HK1218386-084		6	29.5	19.6	2	8.2
D3-B MID-FLOOD	14-JUL-2012 10:40	HK1218386-085		4	29.2	20.1	2	8.7
D4-M MID-FLOOD	14-JUL-2012 10:50	HK1218386-086		5	29.4	19.7	2	8.2
B1-S-F FIELD DUPLICATE	[14-JUL-2012]	HK1218386-087		4	29.2	19.8	1	8.4
B2-M-F FIELD DUPLICATE	[14-JUL-2012]	HK1218386-088		4	28.5	22.5	3	6.5
B3-B-F FIELD DUPLICATE	[14-JUL-2012]	HK1218386-089		8	24.5	32.1	6	2.8
B4-S-F FIELD DUPLICATE	[14-JUL-2012]	HK1218386-090		2	29.2	20.0	1	8.5
A4-S-E FIELD DUPLICATE	[14-JUL-2012]	HK1218386-091		2	30.1	19.7	2	8.6
A3-M-E FIELD DUPLICATE	[14-JUL-2012]	HK1218386-092		2	29.6	20.2	2	8.9
A2-B-E FIELD DUPLICATE	[14-JUL-2012]	HK1218386-093		4	28.6	21.6	6	8.2
A1-S-E FIELD DUPLICATE	[14-JUL-2012]	HK1218386-094		3	29.6	20.1	1	9.0



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 2415184)								
HK1218386-001	A1-S MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1218386-011	A4-M MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2415185)								
HK1218386-021	B1-B MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1218386-037	CM MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2415186)								
HK1218386-047	A2-S MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	3	4	0.0
HK1218386-057	A5-M MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2415187)								
HK1218386-067	B2-B MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	11	12	0.0
HK1218386-077	B6-S MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 2415188)								
HK1218386-087	B1-S-F FIELD DUPLICATE	EA025: Suspended Solids (SS)	----	2	mg/L	4	5	26.7

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 2415184)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	94.5	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2415185)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	102	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2415186)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	100	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2415187)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	92.5	----	85	113	----	----
EA/ED: Physical and Aggregate Properties (QCLot: 2415188)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	93.0	----	85	113	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.