
South-East Asia Japan Cable System (SJC)

Hong Kong Segment

**Environmental Impact Monitoring and Site
Audit Report**


Week 12

3 September 2012 to 9 September 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 Twelfth 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 twelfth week of works and covers the reporting period 3 September 2012 to 9 September 2012.

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:

- Water quality monitoring was conducted on 4, 6 and 7 September 2012 during mid-ebb and mid-flood tide periods

According to the Contractor and based on the site inspection on 23 August 2012. Shore based construction and reinstatements were completed and no more shore-based site activities are anticipated. Therefore, no site inspection during the reporting period was undertaken.

Exceedance of Action and Limit Levels

No exceedance of action and limit level was recorded during the reporting period.

Complaint Log

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

Site Inspection and Audit

According to the Contractor and based on the site inspection on 23 August 2012. Shore based construction and reinstatements were completed and no more shore-based site activities are anticipated. Therefore, no site inspection during the reporting period was undertaken.

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 and required under the Variation of Environmental Permit (No. EP-423/2011/A) issued to China Telecom (Hong Kong) International Limited in October 2011 for the Project of South-East Asia Japan Cable System (SJC) — Hong Kong Segment.
- 1.1.5 This is the Twelfth 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 3 September 2012 to 9 September 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 The cable laying & burial operation from Po Toi Island to HKSAR boundary was completed on 22 August 2012.
- 1.3.2 Continuous perform diver jet at C2C-SEG-2A crossing.

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
4 September 2012	Mid-Ebb	12:40-16:10
	Mid-Flood	6:37-10:07
6 September 2012	Mid-Ebb	13:42-17:12
	Mid-Flood	8:03-11:33
7 September 2012	Mid-Ebb	14:11-17:41
	Mid-Flood	8:57-12:27

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 2-1 as follows. These stations are applicable for works undertaken during installation of the cable in Stanley Bay.

Table 2-2 – Impact Water Quality Monitoring Stations

Monitoring Station	Co-ordinates		Station Purpose
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 Laboratory analysis of SS was carried out at ALS Laboratory Group, a recognised HOKLAS accredited laboratory.

Results

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

2.1.7 The impact monitoring data on 1 September 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 4 September 2012 – Mid-Ebb

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	28.5	27.4	7.5	113.2	1.2	4
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
D1*	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.6	28.3	6.9	104.4	2.2	3
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	28.7	27.5	7.7	116.2	2.1	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.8	27.4	7.5	113.3	4.0	4
D3	s	28.9	27.6	7.6	114.9	1.4	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.8	27.7	7.3	109.9	1.8	2
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.8	27.4	6.9	104.8	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

Table 2-4 – Summary of Water Quality Data on 6 September 2012 – Mid-Ebb

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	28.6	27.9	7.6	114.0	1.6	3
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
D1	s	N/A	N/A	N/A	N/A	N/A	N/A

Station	Depth	Data Results for Mid Ebb					
		Temperature (°C)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Suspended Solids (SS)
	m	28.6	27.6	7.5	113.5	1.8	2
	b	N/A	N/A	N/A	N/A	N/A	N/A
	s	28.7	27.6	7.7	116.2	2.5	4
D2	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.5	27.3	6.7	100.1	3.5	4
	s	28.8	27.7	7.7	116.7	2.1	<2
D3	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.4	27.5	6.8	102.5	2.0	<2
	s	N/A	N/A	N/A	N/A	N/A	N/A
D4*	m	28.7	27.6	7.8	117.4	2.2	4
	b	N/A	N/A	N/A	N/A	N/A	N/A
	s	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 2-5 – Summary of Water Quality Data on 7 September 2012 – Mid-Ebb

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	28.6	27.8	7.1	106.0	2.5	3
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
D1	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.7	27.9	7.7	116.7	3.0	3
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	28.7	27.7	7.8	118.2	3.8	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.7	27.6	6.7	101.7	3.8	5
D3	s	28.8	27.7	8.0	120.1	3.2	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.6	27.6	7.0	104.7	3.5	3
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.7	27.5	7.9	119.5	2.9	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-Ebb Results Summary

2.1.8 During mid-ebb survey, the range of DO level from 6.7mg/L to 8mg/L with a saturation level from 100.1% to 120.1%. The range of turbidity measurement was 1.4 to 4 NTU with SS content from 2 mg/L to 5 mg/L. The recorded temperature was within the expected range and values for these waters during the time of monitoring.

2.1.9 No DO and SS exceedance was found during the monitoring period.

Mid-Flood Results

Table 2-6 – Summary of Water Quality Data on 4 September 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	28.6	28.7	6.6	99.2	1.3	4
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
D1*	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.5	28.9	6.6	99.5	1.5	4
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	28.6	28.7	6.8	102.8	1.4	5
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.5	29.0	6.2	93.9	1.9	3
D3	s	28.6	28.7	6.7	101.2	1.3	7
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.4	29.1	6.0	91.2	2.0	5
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.5	28.7	6.6	100.4	1.3	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

Table 2-7 – Summary of Water Quality Data on 6 September 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	28.5	28.6	6.4	97.3	1.6	6
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
D1	s	N/A	N/A	N/A	N/A	N/A	N/A

Station	Depth	Data Results for Mid Ebb					
		Temperature (oC)	Salinity (ppt)	DO (mg/L)	DOS (%)	Turbidity (NTU)	Suspended Solids (SS)
	m	28.4	28.9	6.6	99.8	1.7	5
	b	N/A	N/A	N/A	N/A	N/A	N/A
	s	28.4	28.6	6.4	96.4	1.6	3
D2	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.5	28.7	6.3	94.7	1.5	2
	s	28.5	28.8	6.7	101.4	1.8	2
D3	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.4	29.2	6.2	93.8	1.6	3
	s	N/A	N/A	N/A	N/A	N/A	N/A
D4*	m	28.7	28.0	7.2	109.1	1.9	5
	b	N/A	N/A	N/A	N/A	N/A	N/A
	s	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 2-8 – Summary of Water Quality Data on 7 September 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	28.5	27.7	6.5	98.0	2.1	4
	b	N/A	N/A	N/A	N/A	N/A	N/A
Marine-based Stations							
D1	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.6	27.6	6.6	99.2	2.3	5
	b	N/A	N/A	N/A	N/A	N/A	N/A
D2	s	28.6	27.4	6.6	99.7	2.5	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.4	27.6	6.6	97.6	3.8	2
D3	s	28.7	27.5	6.5	100.1	2.5	3
	m	N/A	N/A	N/A	N/A	N/A	N/A
	b	28.6	27.7	6.5	97.6	3.1	2
D4	s	N/A	N/A	N/A	N/A	N/A	N/A
	m	28.6	27.6	6.6	99.7	2.9	2
	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

2.1.10 During mid-flood survey, the range of DO level from 6mg/L to 7.2mg/L with an saturation level form 91.2% to 109.1%. The range of turbidity measurement was 1.3 to 3.8 NTU with SS content from 2 mg/L to 7 mg/L. The recorded temperature was within the expected range and values for these waters during the time of monitoring.

2.1.11 No DO and SS exceedance was found during the monitoring period.

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 According to the Contractor and based on the site inspection on 23 August 2012. Shore-based construction and reinstatement were completed and no more shore-based site activities are anticipated. Therefore, no construction and demolition waste was generated during reporting period.

3. ENVIRONMENTAL NON-COMPLIANCE AND COMPLAINTS

3.1 Environmental Exceedances

Water Quality

3.1.1 Water quality monitoring was conducted on 4, 6 and 7 September 2012. No DO and SS exceedance was record in the reporting period.

3.2 Site Inspections

3.2.1 No shore-based works were undertaken during the reporting period. Therefore, no site inspection was undertaken during the reporting period.

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

- No marine work was undertaken under the EP condition.

4.2 Monitoring Schedule for the Coming Week

Water Quality Monitoring

- 4.2.1 No marine works would be carried out at Stanley Bay in coming week. Therefore, no water quality monitoring is scheduled for the coming week..

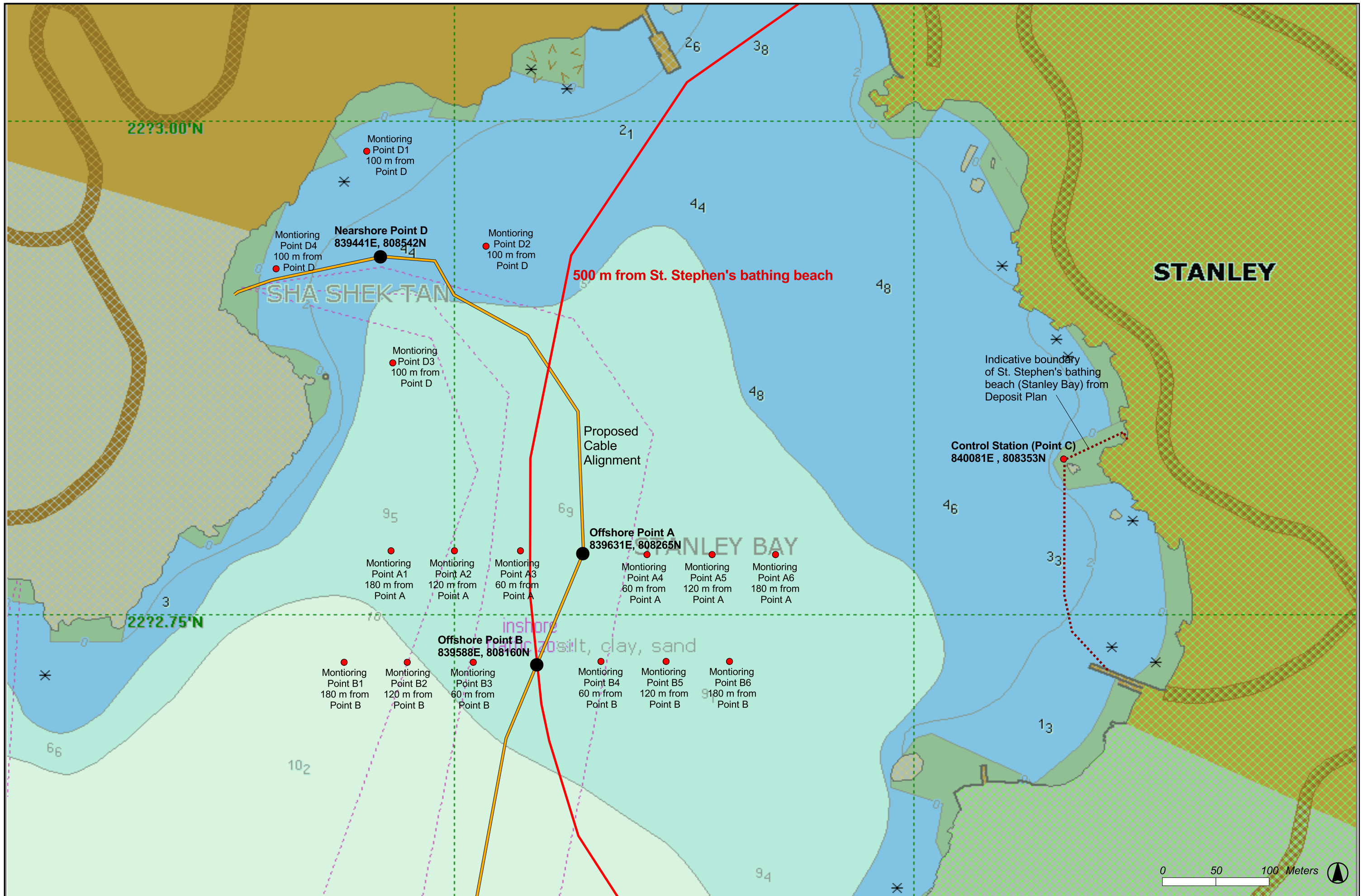
Marine Mammal Inspection

- 4.2.2 The marine work within marine mammals inspection area was completed on 21 July 2012. No marine mammal inspection is necessary for the coming week

5. CONCLUSION

- 5.1.1 This is the Twelfth 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 3 August 2012 to 9 September 2012.
- 5.1.2 Water quality monitoring was conducted on 4, 6 and 7 September 2012. No DO and SS exceedance was record in the reporting period.
- 5.1.3 No shore-based works were undertaken during the reporting period. Therefore, no site inspection was undertaken during the reporting period.
- 5.1.4 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

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HONG KONG

Phone: 852-2610 1044
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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

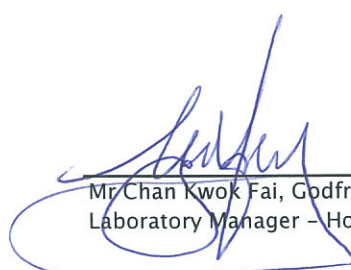
Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

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

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 04/09/2012

Weather : Cloudy

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	08:00	2.5						
			1.3	28.6	28.7	6.6	99.2	1.3
D1	08:10	2.6						
			1.3	28.5	28.8	6.6	99.7	1.5
D2	08:20	5.3	1.0	28.6	28.7	6.8	102.8	1.4
			4.3	28.5	29.0	6.2	93.9	1.9
D3	08:30	5.3	1.0	28.6	28.7	6.7	101.2	1.3
			4.3	28.4	29.1	6.0	91.2	2.0
D4	08:40	2.5						
			1.3	28.5	28.7	6.6	100.4	1.3

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 04/09/2012

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	14:00	2.4						
			1.2	28.5	27.4	7.5	113.2	1.2
D1	14:10	2.6						
			1.3	28.6	27.5	7.6	114.5	2.2
D2	14:20	5.2	1.0	28.7	27.5	7.7	116.2	2.1
			4.2	28.8	27.4	7.5	113.3	4.0
D3	14:30	5.4	1.0	28.9	27.6	7.6	114.9	1.4
			4.4	28.8	27.7	7.3	109.9	1.8
D4	14:40	2.5						
			1.3	28.8	27.4	6.9	104.8	1.8

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 06/09/2012

Weather : Sunny

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	09:15	2.4						
			1.2	28.5	28.6	6.4	97.3	1.6
D1	09:25	2.5						
			1.3	28.4	28.9	6.6	99.8	1.7
D2	09:35	5.3	1.0	28.4	28.6	6.4	96.4	1.6
			4.3	28.5	28.7	6.3	94.7	1.5
D3	09:45	5.4	1.0	28.5	28.8	6.7	101.4	1.8
			4.4	28.4	29.2	6.2	93.8	1.6
D4	09:55	2.2						
			1.1	28.6	28.5	6.6	100.5	1.4

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 06/09/2012

Weather : Sunny

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	15:00	2.4						
			1.2	28.6	27.9	7.6	114.0	1.6
D1	15:10	2.5						
			1.3	28.6	27.6	7.5	113.5	1.8
D2	15:20	5.4	1.0	28.7	27.6	7.7	116.2	2.5
			4.4	28.5	27.3	6.7	100.1	3.5
D3	15:30	5.5	1.0	28.8	27.7	7.7	116.7	2.1
			4.5	28.4	27.5	6.8	102.5	2.0
D4	15:40	2.5						
			1.3	28.7	27.6	7.8	117.2	2.1

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 07/09/2012

Weather : Sunny

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	10:15	2.6						
			1.3	28.4	27.6	6.5	97.8	2.0
D1	10:25	2.6						
			1.3	28.6	27.6	6.6	99.2	2.3
D2	10:35	5.3	1.0	28.6	27.4	6.6	99.7	2.5
			4.3	28.4	27.6	6.6	97.6	3.8
D3	10:45	5.2	1.0	28.7	27.5	6.5	100.1	2.5
			4.2	28.6	27.7	6.5	97.6	3.1
D4	10:55	2.6						
			1.3	28.6	27.6	6.6	99.7	2.9

Project Name: Stanley Bay marine water monitoring

Date of Monitoring: 07/09/2012

Weather : Sunny

Tide: Ebb

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	15:30	2.6						
			1.3	28.6	27.9	7.6	113.8	2.8
D1	15:40	2.8						
			1.4	28.7	27.9	7.7	116.7	3.0
D2	15:50	5.2	1.0	28.7	27.7	7.8	118.2	3.8
			4.2	28.7	27.6	6.7	101.7	3.8
D3	16:00	5.3	1.0	28.8	27.7	8.0	120.1	3.2
			4.3	28.6	27.6	7.0	104.7	3.5
D4	16:10	2.4						
			1.2	28.7	27.5	7.9	119.5	2.9



CERTIFICATE OF ANALYSIS

<i>Client</i>	: ATKINS CHINA LTD	<i>Laboratory</i>	: ALS Technichem HK Pty Ltd	<i>Page</i>	: 1 of 3
<i>Contact</i>	: MS ENID YUNG	<i>Contact</i>	: Chan Kwok Fai, Godfrey	<i>Work Order</i>	: HK1223147
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<i>Telephone</i>	: +852 2972 1802	<i>Telephone</i>	: +852 2610 1044		
<i>Facsimile</i>	: +852 2890 6343	<i>Facsimile</i>	: +852 2610 2021		
<i>Project</i>	: QUOTATION OF WATER TEST - STANLEY	<i>Quote number</i>	: ---	<i>Date received</i>	: 05-SEP-2012
<i>Order number</i>	: ---			<i>Date of issue</i>	: 13-SEP-2012
<i>C-O-C number</i>	: ---			<i>No. of samples</i>	- <i>Received</i> : 16
<i>Site</i>	: STANLEY BAY				- <i>Analysed</i> : 16

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1223147 supersedes any previous reports with this reference. The completion date of analysis is 07-SEP-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 HK1223147 :
Water sample(s) analysed and reported on an as received basis.
Sample(s) were collected by ALS Technichem (HK) staff on 4 September, 2012
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

ALS Laboratory Group

Trading Name: **ALS Technichem (HK) Pty Ltd**

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A Campbell Brothers Limited Company



Analytical Results

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
C-M MID-EBB	04-SEP-2012 14:00	HK1223147-001		4	28.5	27.4	1	7.5
D1-M MID-EBB	04-SEP-2012 14:10	HK1223147-002		2	28.6	27.5	2	7.6
D2-S MID-EBB	04-SEP-2012 14:20	HK1223147-003		3	28.7	27.5	2	7.7
D2-B MID-EBB	04-SEP-2012 14:20	HK1223147-004		4	28.8	27.4	4	7.5
D3-S MID-EBB	04-SEP-2012 14:30	HK1223147-005		3	28.9	27.6	1	7.6
D3-B MID-EBB	04-SEP-2012 14:30	HK1223147-006		2	28.8	27.7	2	7.3
D4-M MID-EBB	04-SEP-2012 14:40	HK1223147-007		5	28.8	27.4	2	6.9
C-M MID-FLOOD	04-SEP-2012 08:00	HK1223147-008		4	28.6	28.7	1	6.6
D1-M MID-FLOOD	04-SEP-2012 08:10	HK1223147-009		3	28.5	28.8	2	6.6
D2-S MID-FLOOD	04-SEP-2012 08:20	HK1223147-010		5	28.6	28.7	1	6.8
D2-B MID-FLOOD	04-SEP-2012 08:20	HK1223147-011		3	28.5	29.0	2	6.2
D3-S MID-FLOOD	04-SEP-2012 08:30	HK1223147-012		7	28.6	28.7	1	6.7
D3-B MID-FLOOD	04-SEP-2012 08:30	HK1223147-013		5	28.4	29.1	2	6.0
D4-M MID-FLOOD	04-SEP-2012 08:40	HK1223147-014		5	28.5	28.7	1	6.6
D1-M-E FIELD DUPLICATE	[04-SEP-2012]	HK1223147-015		4	28.5	29.0	2	6.2
D1-M-F FIELD DUPLICATE	[04-SEP-2012]	HK1223147-016		4	28.5	28.9	2	6.6



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: 2487801)								
HK1223147-001	C-M MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	4	3	0.0
HK1223147-011	D2-B MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	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: 2487801)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	106	----	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 3
<i>Contact</i>	: MS ENID YUNG	<i>Contact</i>	: Chan Kwok Fai, Godfrey	<i>Work Order</i>	: HK1223221
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<i>Facsimile</i>	: +852 2890 6343	<i>Facsimile</i>	: +852 2610 2021		
<i>Project</i>	: QUOTATION OF WATER TEST - STANLEY	<i>Quote number</i>	: ---	<i>Date received</i>	: 06-SEP-2012
<i>Order number</i>	: ---			<i>Date of issue</i>	: 14-SEP-2012
<i>C-O-C number</i>	: ---			<i>No. of samples</i>	- <i>Received</i> : 16
<i>Site</i>	: STANLEY BAY				- <i>Analysed</i> : 16

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1223221 supersedes any previous reports with this reference. The completion date of analysis is 13-SEP-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 HK1223221 :
Sample(s) were collected by ALS Technichem (HK) staff on 06 September, 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	OS: On-Site Measurement
C-M MID-EBB	06-SEP-2012 15:00	HK1223221-001		3	28.6	27.9	2	7.6
D1-M MID-EBB	06-SEP-2012 15:10	HK1223221-002		2	28.6	27.6	2	7.5
D2-S MID-EBB	06-SEP-2012 15:20	HK1223221-003		4	28.7	27.6	2	7.7
D2-B MID-EBB	06-SEP-2012 15:20	HK1223221-004		4	28.5	27.3	4	6.7
D3-S MID-EBB	06-SEP-2012 15:30	HK1223221-005		<2	28.8	27.7	2	7.7
D3-B MID-EBB	06-SEP-2012 15:30	HK1223221-006		<2	28.4	27.5	2	6.8
D4-M MID-EBB	06-SEP-2012 15:40	HK1223221-007		2	28.7	27.6	2	7.8
C-M MID-FLOOD	06-SEP-2012 09:15	HK1223221-008		6	28.5	28.6	2	6.4
D1-M MID-FLOOD	06-SEP-2012 09:25	HK1223221-009		5	28.4	28.9	2	6.6
D2-S MID-FLOOD	06-SEP-2012 09:35	HK1223221-010		3	28.4	28.6	2	6.4
D2-B MID-FLOOD	06-SEP-2012 09:35	HK1223221-011		2	28.5	28.7	2	6.3
D3-S MID-FLOOD	06-SEP-2012 09:45	HK1223221-012		2	28.5	28.8	2	6.7
D3-B MID-FLOOD	06-SEP-2012 09:45	HK1223221-013		3	28.4	29.2	2	6.2
D4-M MID-FLOOD	06-SEP-2012 09:55	HK1223221-014		4	28.6	28.5	1	6.6
D4-M-F FIELD DUPLICATE	[06-SEP-2012]	HK1223221-015		6	28.7	27.5	2	7.8
D4-M-F FIELD DUPLICATE	[06-SEP-2012]	HK1223221-016		5	28.5	28.5	2	6.6



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: 2489393)								
HK1223221-001	C-M MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
HK1223221-011	D2-B MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	2	4	50.7

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: 2489393)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	100	----	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 3
<i>Contact</i>	: MS ENID YUNG	<i>Contact</i>	: Chan Kwok Fai, Godfrey	<i>Work Order</i>	: HK1223222
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<i>E-mail</i>	: enid.yung@atkinsglobal.com	<i>E-mail</i>	: Godfrey.Chan@alsglobal.com		
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<i>Facsimile</i>	: +852 2890 6343	<i>Facsimile</i>	: +852 2610 2021		
<i>Project</i>	: QUOTATION OF WATER TEST - STANLEY	<i>Quote number</i>	: ---	<i>Date received</i>	: 07-SEP-2012
<i>Order number</i>	: ---			<i>Date of issue</i>	: 17-SEP-2012
<i>C-O-C number</i>	: ---			<i>No. of samples</i>	- Received : 16
<i>Site</i>	: STANLEY BAY				- Analysed : 16

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1223222 supersedes any previous reports with this reference. The completion date of analysis is 13-SEP-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 HK1223222 :
Sample(s) were collected by ALS Technichem (HK) staff on 07 September, 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

			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
C-M MID-EBB	07-SEP-2012 15:30	HK1223222-001		2	28.6	27.9	3	7.6
D1-M MID-EBB	07-SEP-2012 15:40	HK1223222-002		3	28.7	27.9	3	7.7
D2-S MID-EBB	07-SEP-2012 15:50	HK1223222-003		3	28.7	27.7	4	7.8
D2-B MID-EBB	07-SEP-2012 15:50	HK1223222-004		5	28.7	27.6	4	6.7
D3-S MID-EBB	07-SEP-2012 16:00	HK1223222-005		3	28.8	27.7	3	8.0
D3-B MID-EBB	07-SEP-2012 16:00	HK1223222-006		3	28.6	27.6	4	7.0
D4-M MID-EBB	07-SEP-2012 16:10	HK1223222-007		5	28.7	27.5	3	7.9
C-M MID-FLOOD	07-SEP-2012 10:15	HK1223222-008		3	28.4	27.6	2	6.5
D1-M MID-FLOOD	07-SEP-2012 10:25	HK1223222-009		5	529	27.6	2	6.6
D2-S MID-FLOOD	07-SEP-2012 10:35	HK1223222-010		3	28.6	27.4	2	6.6
D2-B MID-FLOOD	07-SEP-2012 10:35	HK1223222-011		2	28.4	27.6	4	6.6
D3-S MID-FLOOD	07-SEP-2012 10:45	HK1223222-012		3	28.7	27.5	2	6.5
D3-B MID-FLOOD	07-SEP-2012 10:45	HK1223222-013		2	28.6	27.7	3	6.5
D4-M MID-FLOOD	07-SEP-2012 10:55	HK1223222-014		2	28.6	27.6	3	6.6
C-M-F FIELD DUPLICATE	[07-SEP-2012]	HK1223222-015		3	28.5	27.7	2	6.5
C-M-E FIELD DUPLICATE	[07-SEP-2012]	HK1223222-016		4	28.5	27.9	3	7.6



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: 2492347)								
HK1223222-001	C-M MID-EBB	EA025: Suspended Solids (SS)	----	2	mg/L	2	4	42.7
HK1223222-011	D2-B MID-FLOOD	EA025: Suspended Solids (SS)	----	2	mg/L	2	3	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: 2492347)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	20 mg/L	98.0	----	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.