

Your ref

Our ref 214487/(HY/2011/09)/M45/630/B 2 2 1 7 9

# ARUP

**BY HAND**

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For the attention of Ms HO Yuen Han, Marlene

17 October 2016

Dear Madam

**Contract No. HY/2011/09**

**Hong Kong-Zhuhai-Macao Bridge**

**Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill**

**Submission under Environmental Permit (EP-352/2009/D – Condition 4.4)**

**Monthly EM&A Report – September 2016**

On behalf of HyD/HZMB Project Management Office (the Permit Holder) of the captioned Environmental Permit (EP), I submit herewith three hard copies and one electronic copy (two hard copies and one electronic copy to EPD Wanchai, one hard copy to EPD Quarry Bay) of the Monthly EM&A Report for September 2016 as per Condition 4.4 of EP-352/2009/D.

I confirm that this submission package has been certified by Environmental Team Leader and verified by Independent Environmental Checker.

Yours faithfully

Michael Chan  
CRE / Supervising Officer's Representative

cc	HyD/HZMBHKPMO	- Mr K Y Yung	w/e – CD only
	EPD	- Mr Alfred Lo	w/e – One hard copy
	AFCD	- Mr C P Lam	w/e – One hard copy
	ENPO	- Mr Y H Hui	w/e – One hard copy and one CD
	IEC	- Mr Antony Wong	w/o – By fax only
	Arup	- Mr Eric Chan	w/e – CD only

Response required : No, thank you

Date required : -

Attachments : Yes

KHW/DS/JC/mw

17 October 2016

By Fax (3767 5922) and By Post

ARUP  
Level 5, Festival Walk  
80 Tat Chee Avenue  
Kowloon Tong, Kowloon

Attention: Mr. Colin Meadows / Mr. Michael Chan

Dear Sirs,

**Re: Agreement No. CE 48/2011 (EP)  
Environmental Project Office for the  
HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing  
Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation**

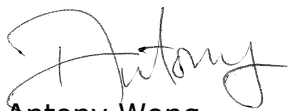
**Contract No. HY/2011/09 HZMB Hong Kong Link Road –  
Section between HKSAR Boundary and Scenic Hill  
Revised Monthly EM&A Report for September 2016 (EP-352/2009/D)**

Reference is made to the captioned Report (Version 2.0) certified by the Environmental Team Leader (ETL) received on 12 October 2016.

We have no adverse comments on the captioned Report and verify it in accordance with Condition 4.4 of EP-352/2009/D.

Thank you for your kind attention. Please do not hesitate to contact the undersigned or the ENPO Leader, Mr. Y H Hui, should you have any queries.

Yours sincerely,  
For and on behalf of  
Ramboll Environ Hong Kong Limited



Antony Wong  
Independent Environmental Checker  
Hong Kong Link Road

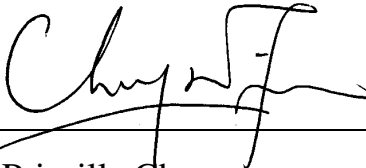
c.c.	HyD	Mr. Vico Cheung	(By Fax: 3188 6614)
	HyD	Mr. K Y Yung	(By Fax: 3188 6614)
	ARUP	Mr. Eric Chan	(By Fax: 2268 3970)
	Cinotech	Dr. Priscilla Choy	(By Fax: 3107 1388)
	DCVJV	Mr. Chu Chung Sing	(By Fax: 3121 6688)

Internal: DY, YH, ENPO Site

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**Dragages -China Harbour-VSL JV**

**Contract HY/2011/09**  
**Hong Kong-Zhuhai-Macao Bridge**  
**Hong Kong Link Road-Section between**  
**HKSAR Boundary and Scenic Hill**  
**Monthly EM&A Report**  
**September 2016**  
**(Version 2.0)**

Certified By   
Dr. Priscilla Choy  
Environmental Team Leader  
(Date: 12 October 2016)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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## EXECUTIVE SUMMARY

### Introduction

1. This is the 44<sup>th</sup> monthly Environmental Monitoring and Audit (EM&A) Report prepared by Cinotech Consultants Limited for the project “Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill” (hereinafter called the “Contract”). This report documents the findings of EM&A Works conducted in September 2016.

### Environmental Monitoring and Audit Progress

2. A summary of the monitoring activities in this reporting month is listed in **Table I** below:

**Table I Summary Table for Monitoring Activities in the Reporting Month**

Parameter(s)	Date(s)
1-hr TSP Monitoring	2 <sup>nd</sup> , 8 <sup>th</sup> , 14 <sup>th</sup> , 20 <sup>th</sup> , 26 <sup>th</sup> and 30 <sup>th</sup> September 2016
24-hr TSP Monitoring	2 <sup>nd</sup> , 8 <sup>th</sup> , 14 <sup>th</sup> , 20 <sup>th</sup> , 26 <sup>th</sup> and 30 <sup>th</sup> September 2016
Noise Monitoring	9 <sup>th</sup> , 15 <sup>th</sup> , 21 <sup>st</sup> and 27 <sup>th</sup> September 2016
Water Quality Monitoring	2 <sup>nd</sup> , 5 <sup>th</sup> , 7 <sup>th</sup> , 10 <sup>th</sup> , 12 <sup>th</sup> , 14 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> , 21 <sup>st</sup> , 24 <sup>th</sup> , 26 <sup>th</sup> , 28 <sup>th</sup> and 30 <sup>th</sup> September 2016
Dolphin Monitoring (Line-transect Vessel Surveys)	9 <sup>th</sup> and 20 <sup>th</sup> September 2016
Environmental Site Inspection	6 <sup>th</sup> , 13 <sup>th</sup> , 20 <sup>th</sup> and 27 <sup>th</sup> September 2016
Archaeological Site Inspection	20 <sup>th</sup> September 2016



**Breaches of Action and Limit Levels**

3. Summary of the environmental exceedances of the reporting month is tabulated in **Table II**.

**Table II Summary Table for Events Recorded in the Reporting Month**

Environmental Monitoring	Parameter	No. of Exceedance		Total No. of Exceedance	No. of Exceedance related to the Construction Activities of this Contract		Total No. of Exceedance related to the Construction Activities of this Contract
		Action Level	Limit Level		Action Level	Limit Level	
Air Quality	1-hr TSP	0	0	0	0	0	0
	24-hr TSP	0	0	0	0	0	0
Noise	Leq(30min)	0	0	0	0	0	0
Water Quality	Dissolved Oxygen (DO) (Surface & Middle)	0	0	0	0	0	0
	Dissolved Oxygen (DO) (Bottom)	0	0	0	0	0	0
	Turbidity	0	0	0	0	0	0
	Suspended Solids (SS)	3	5	8	0	0	0

*1-hour TSP Monitoring*

4. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*24-hour TSP Monitoring*

5. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

*Construction Noise*

6. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

### *Water Quality*

7. All water quality monitoring was conducted as scheduled in the reporting month. There are three Action Level and five Limit Level exceedances were recorded for suspended solids. No Action/Limit Level exceedance for dissolved oxygen and turbidity were recorded.
8. According to the investigation, the exceedances are considered not due to the Contract due to the following reasons:
  - 1) No pollution discharge was observed from the site;
  - 2) Control Station value already exceeded either the Baseline Action or Limit Levels;
  - 3) The exceeded results found at the monitoring station which is situated at the upstream of the construction sites;
  - 4) Localized sediment plume due to the rough water condition was observed; and
  - 5) The exceeded result was similar to the ranges baseline monitoring results.

### **Complaint Log**

9. No environmental complaint was received in the reporting month.

### **Notification of Summons and Successful Prosecutions**

10. No notification of summons and successful prosecution was received in the reporting month.

### **Reporting Changes**

11. This report has been developed in compliance with the reporting requirements for the subsequent monthly EM&A Report as required by the EM&A Manual for Hong Kong Link Road (EM&A Manual).

### **Future Key Issues**

12. Major site activities for the coming reporting month will include:

#### **WA4**

- Cross Beam Precast Shell construction

#### **Ancillary and Associated Facilities**

- E&M installation
- E&M ducting installation
- Construction of Load Centre (CL1)
- Installation of carrier drains
- Installation of precast parapet skins
- Erection of Radar Platform
- Construction of median and side barriers

- Construction of longitudinal stitching
- Erection of gantry posts for Sign gantry
- Reinstatement of slope area and drainage works

### **Marine Viaduct (P0 to P80)**

#### **Deck Erection**

- Segment erection
- Erection of SOP segments
- Dismantling of LG1
- Erection of cantilever
- Construction of cross beam precast shell
- In-situ RC works
- Erection of precast SOP unit to Turnaround

#### **External Prestressing Tendon Installation**

#### **Internal Prestressing Grouting**

## 1 INTRODUCTION

- 1.1 Cinotech Consultants Limited (Cinotech) was appointed by Dragages -China Harbour-VSL JV (hereinafter called “the Contractor”) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Contract No. HY/2011/09 – Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill” (hereinafter called the “Contract”) in accordance with EP Conditions 2.1.

### **Purpose of the report**

- 1.2 This is the 44<sup>th</sup> EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme in September 2016.

### **Structure of the report**

- 1.3 The structure of the report is as follows:

Section 1: **Introduction** - purpose and structure of the report.

Section 2: **Contract Information** - summarises background and scope of the Contract, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting month.

Section 3: **Air Quality Monitoring** - summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 4: **Noise Monitoring** - summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 5: **Water Quality Monitoring** - summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 6: **Dolphin-Related Monitoring** - summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations and monitoring results.

Section 7: **Environmental Site Inspection** - summarises the audit findings of the weekly site inspections undertaken within the reporting month.

Section 8: **Environmental Non-conformance** - summarises any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting month.

Section 9: **Future Key Issues** - summarises the impact forecast and monitoring schedule for the next three months.

## Section 10: **Conclusions and Recommendation**

## 2 CONTRACT INFORMATION

### Background

- 2.1 The proposed Hong Kong - Zhuhai - Macao Bridge Hong Kong Link Road (HKLR) is 12km long connecting the Hong Kong-Zhuhai-Macao Bridge (HZMB) at the HKSAR Boundary with the Hong Kong Boundary Crossing Facilities (HKBCF) situated at the north eastern waters of the Hong Kong International Airport, opening a new and direct connection route between Hong Kong, Macao and the Western Pearl River Delta.
- 2.2 The HKLR comprises a 9.4km long viaduct section from the HKSAR boundary to Scenic Hill on the Airport Island; a 1km tunnel section to the reclamation formed along the east coast of the Airport Island and a 1.6km long at-grade road section on the reclamation connecting to the HKBCF. The tunnel section of HKLR will pass under Scenic Hill, Airport Road and Airport Railway to minimize the environmental and visual impacts to Tung Chung residents.
- 2.3 An application (No ESB-110/2003) for an Environmental Impact Assessment (EIA) Study Brief under Section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by Highways Department (the Project Proponent) on 8 October 2003 with a Project Profile (No. No. PP-201/2003) for the Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection. The Hong Kong - Zhuhai - Macao Bridge Hong Kong Section and North Lantau Highway Connection has subsequently been renamed as HKLR. EPD issued an EIA Study Brief (No: ESB-110/2003) in November 2003 to the Project Proponent to carry out an EIA study.
- 2.4 An EIA Study (Reg. No. AEIAR-144/2009) has been undertaken to provide information on nature and extent of environmental impacts arising from the construction and operation of HKLR. The Environmental Permit was issued on 4 November 2009 (Permit No. EP-352/2009). Pursuant to Section 13 of the EIAO, the Director of Environmental Protection amends the Environmental Permit (No. EP-352/2009) based on the Application No. VEP-339/2011 and the environmental Permit (Permit No. EP-352/2009/A) was issued on 9 November 2011 for HKLR to the Highways Department as the Permit Holder. Subsequently, the Director of Environmental Protection amends the Environmental Permits (No. EP-352/2009/A, EP-352/2009/B, EP-352/2009/C) based on the Application No. VEP-409/2013, VEP-411/2013 and VEP-459/2014 respectively. The environmental Permit (Permit No. EP-352/2009/D) was then issued on 22 December 2014.
- 2.5 **Figure 1a-d** shows the layout of the Contract and the scope of the Contract works comprises the following major items:
  - a dual 3-lane carriageway in the form of viaduct from the HKSAR boundary (connecting with the HZMB Main Bridge) to the Scenic Hill (connecting with the tunnel under separate Contract No. HY/2011/03), of approximately 9.4km in length with a hard shoulder for each bound of carriageway and a utilities trough on the outer edge of each bound of viaducts;
  - a grade-separated turnaround facility located near San Shek Wan, composed of sliproads in the form of viaduct with single-lane carriageway bifurcated from the HKLR mainline with an elevated junction above the mainline;

- provision of ancillary facilities including, but not limited to, meteorological enhancement measures including the provisioning of anemometers and modification of the wind profiler station at hillside of Sha Lo Wan, provisioning of a compensatory marine radar, and provisioning of security systems; and
- associated civil, structural, geotechnical, marine, environmental protection, landscaping, drainage and highways electrical and mechanical (E&M) works, street lightings, traffic aids and sign gantries, marine navigational aids, ship impact protection system, water mains and fire hydrants, lightning protection system, structural health monitoring and maintenance management system (SHM&MMS), supervisory control and data acquisition (SCADA) system, as well as operation and maintenance provisions of viaducts, provisioning of facilities for installation of traffic control and surveillance system (TCSS), provisioning of facilities for installation of telecommunication cables/equipments and reprovisioning works of affected existing facilities/utilities.

**Contract Organisation**

2.6 Different parties with different levels of involvement in the Contract organization include:

- Supervising Officer’s Representative (SOR) – Ove Arup & Partners Hong Kong Limited (ARUP)
- Contractor –Dragages -China Harbour-VSL JV (DCVJV)
- Environmental Team (ET) – Cinotech Consultants Ltd. (Cinotech)

2.7 The proposed project organization and lines of communication with respect to the on-site environmental management structure are shown in **Figure 2**. The key personnel contact names and numbers are summarized in **Table 2.1**.

**Table 2.1 Key Contacts of the Contract**

Party	Position	Position	Phone No.	Fax No.
SOR (ARUP)	CRE	Mr. Michael Chan	3767 5803	3767 5922
		Mr. Colin Meadows	3767 5801	
ENPO/IEC (Ramboll Environ)	Environmental Project Office Leader	Mr. Y. H Hui	3465 2888	3465 2899
	Independent Environmental Checker	Mr. Antony Wong	3465 2888	3465 2899
Contractor (DCVJV)	Deputy Project Director	Mr. W.K Poon	3121 6638	3121 6688
	Environmental Officer	Mr. CHU Chung Sing	3121 6672	
	24-hour Hotline	--	6898 6161	--
ET (Cinotech)	Environmental Team Leader	Dr. Priscilla Choy	2151 2089	3107 1388

2.8 Ramboll Environ Hong Kong Limited (Ramboll Environ) is employed by the Highways Department as the Independent Environmental Checker (IEC) and Environmental Project Office (ENPO) for the Project.

**Construction Programme**

2.9 A copy of Contractor’s construction programme is provided in **Appendix A**.

**Summary of Construction Works Undertaken During Reporting Month**

2.10 The major site activities undertaken in the reporting month included:

**Ancillary and Associated Facilities**

- (a) P115 & P114 interface area - Reinstatement of slope area temporarily on-hold pending for drainage and reinstatement detailing;
- (b) Installation of precast parapet skins between P44 to P38 is in progress. The Progress is as follows:

Item	Number in this month	Cumulative No. of Precast Parapet Completed (up to end of month)
Parapet Casting	345	1522
Parapet Installation	68	688

- (c) Construction of side barriers from P103 to P113 is in progress, currently total 177m in-situ side barriers were cast and 51 m precast side barriers were installed;
- (d) Construction of median barriers from P112 to P99 is in progress, currently total 165m of in-situ median barriers were cast and 96m precast median barriers were installed;
- (e) Construction of longitudinal stitching between P99 to P102 (concrete planking) is in progress;
- (f) E&M installation at ML6 continues;
- (g) E&M ducting installation at ML15 to ML17;
- (h) Construction of Load Centre 1 (LC1) commence;
- (i) Installation of carrier drains from P113 to P106 is in progress;
- (j) Erection of Radar Platform at P20 is in progress.

**Deck Erection**

(a) Segment erection in September 2016:

Type	Location of Segments erected in this reporting period	Number of Segments erected in this reporting period	Cumulative No. of Segments erected (up to 28th of each month)
Launching Gantry 1 (LG1)*	All completed	0	1020
Launching Gantry 2 (LG2)	P13 and P12	120	1316
Lifting Frames 1 (LF1) and Hanger	P71, P73, P76, P77 and P79	52	622



Type	Location of Segments erected in this reporting period	Number of Segments erected in this reporting period	Cumulative No. of Segments erected (up to 28th of each month)
Beam (HB)			
Lifting Frames 3 (LF3) and Hanger Beam (HB)	P52, P60 & P76	33	686
Typical Span SOP	P08, P07, P06 and P05	16	224
Long Span SOP	P68 & P82	10	82
Movement Joint (MJ) SOP Airport Channel	N/A	0	8
Short Span (SS) SOP type B	P57 & P58	4	12

### **External Prestressing Tendon Installation**

Viaduct	Activities	Quantities	Unit	Done %
ML19C	Threading	47.55	T	100%
	Stressing	12	U	100%
	Grouting	9.42	M3	100%
ML19R	Threading	48.65	T	100%
	Stressing	12	U	100%
	Grouting	9.64	M3	100%
ML19L	Threading	46.91	T	100%
	Stressing	12	U	100%
	Grouting	9.29	M3	100%
ML18R	Threading	77.90	T	100%
	Stressing	18	U	100%
	Grouting	15.38	M3	100%
ML18L	Threading	76.40	T	100%
	Stressing	18	U	100%
	Grouting	15.08	M3	100%
ML17R	Threading	63.09	T	100%
	Stressing	16	U	100%
	Grouting	12.44	M3	100%
ML17L	Threading	62.86	T	100%
	Stressing	16	U	100%
	Grouting	12.39	M3	100%
ML16R	Threading	56.69	T	100%
	Stressing	15	U	100%
	Grouting	9.91	M3	78%
ML16L	Threading	87.34	T	100%
	Stressing	18	U	100%
	Grouting	17.2	M3	70%
ML07R	Threading	129.58	T	26%
	Stressing	32	U	17%
	Grouting	25.59	M3	0%
ML07L	Threading	140.43	T	24%
	Stressing	32	U	16%
	Grouting	27.76	M3	0%
ML06R	Threading	113.04	T	100%
	Stressing	24	U	100%
	Grouting	22.35	M3	100%
ML06L	Threading	113.04	T	100%
	Stressing	24	U	100%
	Grouting	22.35	M3	100%

Viaduct	Activities	Quantities	Unit	Done %
ML05R	Threading	113.68	T	100%
	Stressing	24	U	100%
	Grouting	22.48	M3	70%
ML05L	Threading	112.39	T	100%
	Stressing	24	U	100%
	Grouting	22.22	M3	70%
ML04R	Threading	113.04	T	30%
	Stressing	24	U	30%
	Grouting	22.35	M3	0%
ML04L	Threading	113.04	T	30%
	Stressing	24	U	30%
	Grouting	22.35	M3	0%
ML03R	Threading	199.65	T	72%
	Stressing	32	U	31%
	Grouting	39.615	M3	0%
ML03L	Threading	201.13	T	00%
	Stressing	32	U	00%
	Grouting	29.9	M3	0%
ML02R	Threading	113.72	T	5%
	Stressing	24	U	8%
	Grouting	22.49	M3	0%
ML02L	Threading	113.73	T	5%
	Stressing	24	U	8%
	Grouting	22.49	M3	0%

### **Internal Prestressing Grouting Progress**

Viaduct	Activities	Quantities	Unit	Done %
ML19C	Air test & Grouting	14.09	M3	100%
ML19R	Air test & Grouting	14.90	M3	100%
ML19L	Air test & Grouting	13.90	M3	100%
ML18R	Air test & Grouting	25.24	M3	100%
ML18L	Air test & Grouting	24.76	M3	96%
ML17R	Air test & Grouting	23.47	M3	100%
ML17L	Air test & Grouting	23.46	M3	100%
ML16R	Air test & Grouting	36.54	M3	99%
ML16L	Air test & Grouting	35.46	M3	99%
ML15R	Air test & Grouting	39.34	M3	45%
ML15L	Air test & Grouting	39.69	M3	44%
ML09R	Air test & Grouting	63.27	M3	24%
ML09L	Air test & Grouting	57.86	M3	32%
ML08R	Air test & Grouting	36.58	M3	31%
ML08L	Air test & Grouting	36.56	M3	31%
ML07R	Air test & Grouting	59.61	M3	46%
ML07L	Air test & Grouting	60.05	M3	55%
ML06R	Air test & Grouting	58.31	M3	100%
ML06L	Air test & Grouting	58.31	M3	100%
ML05R	Air test & Grouting	58.62	M3	55%
ML05L	Air test & Grouting	58.01	M3	91%
ML04R	Air test & Grouting	57.64	M3	32%
ML04L	Air test & Grouting	57.69	M3	41%

Viaduct	Activities	Quantities	Unit	Done %
ML03R	Air test & Grouting	126.65	M3	0%
ML03L	Air test & Grouting	127.63	M3	0%
ML02R	Air test & Grouting	62.74	M3	11%
ML02L	Air test & Grouting	62.74	M3	10%

### Precast Segment

#### (a) Segment Casting:

- Production affected by inclement weather: 2.5 days.
- All new moulds are under full operation.
- 16 nos. of new Type B\* segments were completed in early September 2016 for accommodating I-beam connection of turnaround facility.
- Mould no. 11 has been modifying from Type C production to Type A after casting P74. There are 10 nos moulds in operation for Type A segment production at the end of Sep 2016.
- All SOPs, type CH1 to 10 and type C casting were completed in mid-September 2016.

Item	Number in this reporting period	Cumulative No. of Precast Segment Completed (up to 28th of each month)
Segment Cast	306	5228

Remarks: Cumulative no. excludes the 7 nos. recast following damages to segments due to toppled incident at the casting yard.

#### (b) Off-site Storage:

Area	No. in Off-site Storage
A3	36

### Delivery for Precast Concrete Elements (by barge)

#### (a) Precast Deck Segments:

- Number of barges engaged in this period: 18.
- Number of deck segment deliveries in this period: 42 trips.
- Cumulative number of deck segment deliveries: 818 trips.

Segment Types	Segment Delivered in this reporting period	Cumulative No. of Precast Segment Delivered (up to 28th of each month)
A	117	2001
B	12	42
C	80	794
D	4	196
E	0	1014

**Status of Environmental Licences, Notification and Permits**

2.11 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Contract is presented in **Table 2.2**.

**Table 2.2 Status of Environmental Licences, Notification and Permits**

Permit / License No.	Valid Period		Status
	From	To	
<b>Environmental Permit (EP)</b>			
EP-352/2009/D	22/12/2014	N/A	Valid
<b>Construction Noise Permit (CNP)</b>			
<b>P101 – P114 &amp; Southeast Quay:</b> GW-RS0536-16	01/06/2016 (19:00)	30/11/2016 (05:30)	Valid
<b>P68 – P69 &amp; P79 – P83:</b> GW-RS0604-16	17/06/2016 (01:30)	16/09/2016 (07:00)	Expired
<b>P84 – P115:</b> GW-RS0627-16	17/06/2016 (19:00)	16/12/2016 (24:00)	Valid
<b>P69 – P83:</b> GW-RS0859-16	12/08/2016 (19:00)	11/02/2017 (24:00)	Valid
<b>P0 – P68:</b> GW-RS0866-16	13/08/2016 (19:00)	12/02/2017 (24:00)	Valid
<b>Portion A:</b> GW-RS0870-16	23/08/2016 (19:00)	21/02/2017 (23:00)	Valid
<b>P84 – P87:</b> GW-RS0922-16	07/09/2016 (01:30)	30/09/2016 (07:00)	Valid
<b>P68 – P69, P79 – P80:</b> GW-RS0945-16	17/09/2016 (01:30)	16/12/2016 (07:00)	Valid
<b>Notification pursuant to Air Pollution Control (Construction Dust) Regulation</b>			
345773	04/06/2012	N/A	Receipt acknowledged by EPD
<b>Billing Account for Construction Waste Disposal</b>			
A/C# 7015341 (Construction Site)	11/06/2012	N/A	Valid
<b>Registration of Chemical Waste Producer</b>			
WPN 5213-951-D2499-01	18/07/2012	N/A	Valid
<b>Effluent Discharge License under Water Pollution Control Ordinance</b>			
<b>WA6A(DCVJV site office):</b> WT00014053-2012	12/09/2012	30/09/2017	Valid
<b>WA6B (SOR site office):</b> WT00014447-2012	30/10/2012	31/10/2017	Valid
<b>WA3:</b> WT00015118-2013	30/01/2013	31/01/2018	Valid
<b>Portion C:</b> WT00023624-2016	17/02/2016	28/02/2018	Valid
<b>Portion A:</b> WT00016076-2013	21/05/2013	31/05/2018	Valid
<b>WA4B:</b> WT00014750-2012	12/08/2013	31/08/2018	Valid
<b>WA7:</b> WT00015722-2013	16/01/2013	31/01/2019	Valid
<b>P0 – P80:</b> WT00018203-2014	30/01/2013	31/01/2019	Valid
<b>P114:</b> WT00018631-2014	31/03/2014	31/03/2019	Valid
<b>P81-P83:</b> WT00023608-2016	01/04/2016	31/07/2020	Valid

### 3 AIR QUALITY MONITORING

#### Monitoring Requirements

- 3.1 In accordance with the EM&A Manual, impact 1-hour TSP and 24-hour TSP monitoring were conducted to monitor the air quality for the Contract. **Appendix B** shows the established Action/Limit Levels for the air quality monitoring works.
- 3.2 Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was conducted for at least once every 6 days at 2 air quality monitoring stations.

#### Monitoring Location

- 3.3 Impact air quality monitoring was conducted at the 2 monitoring stations under the Contract, as shown in **Figure 3**. **Table 3.1** describes the locations of the air quality monitoring stations.

**Table 3.1 Location for Air Quality Monitoring Locations**

Monitoring Stations	Location
AMS1	Sha Lo Wan
AMS4	San Tau

#### Monitoring Equipment

- 3.4 **Table 3.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix C**.

**Table 3.2 Air Quality Monitoring Equipment**

Equipment	Model and Make	Quantity
HVS Sampler	TISCH Model: TE-5170	2
Calibrator	TISCH Model: TE-5025A	1
Wind Anemometer	DAVIS Model: Vantage PRO2 6152CUK	1

#### Monitoring Parameters, Frequency and Duration

- 3.5 **Table 3.3** summarizes the monitoring parameters and frequencies of impact dust monitoring during the course of the Contract activities. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

**Table 3.3 Impact Dust Monitoring Parameters, Frequency and Duration**

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

## **Monitoring Methodology and QA/QC Procedure**

### **1-hour and 24-hour TSP Air Quality Monitoring**

#### ***Instrumentation***

- 3.6 High Volume Samplers (HVS) completed with appropriate sampling inlets were employed for air quality monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

#### ***HVS Installation***

- 3.7 The following guidelines were adopted during the installation of HVS:
- Sufficient support was provided to secure the sampler against gusty wind.
  - No two samplers were placed less than 2 meters apart.
  - The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
  - A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
  - A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
  - No furnaces or incineration flues were nearby.
  - Airflow around the sampler was unrestricted.
  - The samplers were more than 20 meters from the drip line.
  - Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
  - Permission must be obtained to set up the samples and to obtain access to the monitoring stations; and
  - A secured supply of electricity is needed to operate the samplers.

#### ***Filters Preparation***

- 3.8 Filter paper of size 8" X 10" was used. A HOKLAS accredited laboratory, ETS – Testconsult Limited (ETS), was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for Cinotech's monitoring team.
- 3.9 All filters, which were prepared by ETS, were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than  $\pm 3$  °C; the relative humidity (RH) was < 50% and not variable by more than  $\pm 5$ %. A convenient working RH was 40%.
- 3.10 ETS has comprehensive quality assurance and quality control programmes.

#### ***Operating/Analytical Procedures***

- 3.11 Operating/analytical procedures for the air quality monitoring were highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m<sup>3</sup>/min. and 1.4 m<sup>3</sup>/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and sent to the ETS for weighing. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned to Cinotech for further analysis of TSP concentrations collected by each filter.

#### *Maintenance/Calibration*

3.12 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- All HVS were calibrated (five point calibration) using Calibration Kit prior to the commencement of the baseline monitoring and thereafter at bi-monthly intervals.

#### **Results and Observations**

3.13 The monitoring results for 1-hour TSP and 24-hour TSP are summarized in **Table 3.4 and 3.5** respectively. Detailed monitoring results and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices E and F** respectively.

**Table 3.4 Summary Table of 1-hour TSP Monitoring Results during the Reporting Month**

Monitoring Station	Concentration (µg/m <sup>3</sup> )		Action Level, µg/m <sup>3</sup>	Limit Level, µg/m <sup>3</sup>
	Average	Range		
AMS1	64	5 – 172	381	500
AMS4	34	7 – 97	352	

**Table 3.5 Summary Table of 24-hour TSP Monitoring Results during the Reporting Month**

Monitoring Station	Concentration (µg/m <sup>3</sup> )		Action Level, µg/m <sup>3</sup>	Limit Level, µg/m <sup>3</sup>
	Average	Range		
AMS1	54	27 – 94	170	260
AMS4	34	13 – 97	171	

- 3.14 All 1-hour TSP monitoring was conducted as scheduled in the reporting. No Action/Limit Level exceedances were recorded.
- 3.15 All 24-hour TSP monitoring was conducted as scheduled in the reporting. No Action/Limit Level exceedances were recorded.
- 3.16 According to our field observations, the major dust source identified at the designated air quality monitoring stations in the reporting month are as follows:

**Table 3.6 Observation at Dust Monitoring Stations**

Monitoring Station	Major Dust Source
AMS1	Exhaust from marine traffic
AMS4	N/A

- 3.17 The wind speed and wind direction were recorded by the installed Wind Anemometer set at AMS4. The location is shown in **Figure 3**.
- 3.18 The wind data for the reporting month is summarized in **Appendix J**.

### Event and Action Plan

- 3.19 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix K** shall be carried out.



## 4 NOISE MONITORING

### Monitoring Requirements

- 4.1 In accordance with EM&A Manual, two noise monitoring stations, namely NMS1 and NMS4 were selected for impact monitoring for the Contract. Impact noise monitoring was conducted for at least once per week during the construction phase of the Contract. **Appendix B** shows the established Action and Limit Levels for the noise monitoring works.

### Monitoring Location

- 4.2 Impact noise monitoring was conducted at the 2 monitoring stations under the Contract, as shown in **Figure 3**. **Table 4.1** describes the locations of the noise monitoring stations.

**Table 4.1 Location for Noise Monitoring Stations**

Monitoring Stations	Location
NMS1	Sha Lo Wan
NMS4	San Tau

### Monitoring Equipment

- 4.3 **Table 4.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix C**.

**Table 4.2 Noise Monitoring Equipment**

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	BSWA 801	1
Calibrator	SV 30A	1

### Monitoring Parameters, Frequency and Duration

- 4.4 **Table 4.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

**Table 4.3 Noise Monitoring Parameters, Frequency and Duration**

Monitoring Stations	Parameter	Period	Frequency
NMS1 NMS4	L <sub>10</sub> (30 min.) dB(A) L <sub>90</sub> (30 min.) dB(A) L <sub>eq</sub> (30 min.) dB(A) (as six consecutive L <sub>eq, 5min</sub> readings)	0700-1900 hrs on normal weekdays	Once per week

## Monitoring Methodology and QA/QC Procedures

- The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement :  $L_{eq}(30 \text{ min.}) \text{ dB(A)}$  (as six consecutive  $L_{eq, 5\text{min}}$  readings) during non-restricted hours (i.e. 0700-1900 hrs on normal weekdays)
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- During the monitoring period, the  $L_{eq}$ ,  $L_{90}$  and  $L_{10}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

### *Maintenance and Calibration*

- 4.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- 4.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.
- 4.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

## Results and Observations

- 4.8 The noise monitoring results are summarized in **Table 4.4**. Detailed monitoring results and graphical presentations of noise monitoring are shown in **Appendices G**.

**Table 4.4 Summary Table of Noise Monitoring Results during the Reporting Month**

Monitoring Station	Noise Level, $L_{eq(30min)}$ dB(A)		Limit Level
	Average	Range	
NMS1	66	61 – 70	75 dB(A)
NMS4	58	57 – 59	

Remark: +3dB(A) Façade correction included

- 4.9 All noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 4.10 According to our field observations, the major noise source identified at the designated noise monitoring stations in the reporting month are as follows:

**Table 4.5 Observation at Noise Monitoring Stations**

Monitoring Station	Major Noise Source
NMS1	Air traffic & marine traffic noise
NMS4	Air traffic & marine traffic noise

#### Event and Action Plan

- 4.11 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix K** shall be carried out.

## 5 WATER QUALITY MONITORING

### Monitoring Requirements

- 5.1 According to EM&A Manual, impact water quality monitoring shall be carried out three days per week during the construction period. The interval between two sets of monitoring will not be less than 36 hours.
- 5.2 Replicate in-situ measurements and samples collected from each independent sampling event shall be collected to ensure a robust statistically interpretable database.
- 5.3 Impact water quality monitoring was conducted two times per monitoring day during mid ebb (within  $\pm 1.75$  hours of the predicted time) and mid flood tides (within  $\pm 1.75$  hours of the predicted time) at three depths (i.e. 1m below surface, mid-depth and 1m above seabed, except where the water depth less than 6m, mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station was monitored) Dissolved oxygen, Suspended solids (SS), turbidity, pH, salinity and temperature were monitored in accordance with the requirements set out in the EM&A Manual.
- 5.4 The proposal for changing Action and Limit Levels for water quality monitoring was submitted to EPD on 15 March 2013. No objection was received from EPD according to the letter (ref. (10) in Ax(3) to EP2/G/A/129pt.4) dated 25 March 2013. Therefore, the updated Action and Limit Levels for water quality monitoring was used for comparison starting from 25 March 2013.
- 5.5 **Appendix B** shows the established Action/Limit Levels for the water quality monitoring works.

### Monitoring Locations

- 5.6 Impact water quality monitoring was conducted at 14 monitoring stations under the Contract which are summarized in **Table 5.1**. The monitoring station is also shown in **Figure 4**.

**Table 5.1 Location for Marine Water Quality Monitoring Locations**

Monitoring Stations	Coordinates	
	Easting	Northing
IS1	803474	815060
IS2	804851	815715
IS3	806502	815743
IS4	807008	816986
CS1	801784	812711
CS2	805849	818780
SR1	803126	812379
SR2	807856	816953
SR3	810525	816456
SR6	805837	821818
ST1	802677	816006
ST2	804055	818840

Monitoring Stations	Coordinates	
	Easting	Northing
ST3	800667	810126
SRA	809872	817152

## Monitoring Equipment

### Instrumentation

- 5.7 A multi-parameter meters (Model YSI 6820-C-M) were used to measure DO, turbidity, salinity, pH and temperature.

### Dissolved Oxygen (DO) and Temperature Measuring Equipment

- 5.8 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
- a temperature of 0-45 degree Celsius.

- 5.9 It has a membrane electrode with automatic temperature compensation complete with a cable.

- 5.10 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.

- 5.11 Salinity compensation was built-in in the DO equipment.

### Turbidity

- 5.12 Turbidity was measured in situ by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity between 0-1000 NTU. The probe cable was not less than 25m in length. The meter was calibrated in order to establish the relationship between NTU units and the levels of suspended solids. The turbidity measurement was carried out on split water sample collected from the same depths of suspended solids samples.

### Sampler

- 5.13 A water sampler, consisting of a transparent PVC or glass cylinder of a capacity of not less than two litres which can be effectively sealed with cups at both ends was used. The water sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth.

### Water Depth Detector

- 5.14 A portable, battery-operated echo sounder was used for the determination of water depth

at each designated monitoring station.

### **pH**

- 5.15 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

### **Salinity**

- 5.16 A portable salinometer capable of recording salinity within the range of 0-40 ppt was used for salinity measurements.

### **Monitoring Position Equipment**

- 5.17 A hand held Differential Global Positioning System (DGPS) was used during water quality monitoring to ensure the monitoring vessel is at the correct location before taking measurements.

### **Sample Container and Storage**

- 5.18 Following collection, water samples for laboratory analysis were stored in high density polythene bottles (250ml/1L) with no preservatives added, packed in ice (cooled to 4°C without being frozen) and kept in dark during both on-site temporary storage and shipment to the testing laboratory. The samples were delivered to the laboratory as soon as possible and the laboratory determination works were started within 24 hours after collection of the water samples. Sufficient volume of samples was collected to achieve the detection limit.

### **Calibration of In Situ Instruments**

- 5.19 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.
- 5.20 For the on site calibration of field equipment (Multi-parameter Water Quality System), the BS 1427:2009, "Guide to on-site test methods for the analysis of waters" was observed.
- 5.21 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also being made available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.
- 5.22 The equipment used for impact water quality monitoring is shown in **Table 5.2** and copies of the calibration certificates are shown in **Appendix C**. All the monitoring

equipment complied with the requirements set out in the EM&A Manual.

**Table 5.2 Water Quality Monitoring Equipment**

Equipment	Model and Make	Qty
Sonar Water Depth Detector	Garmin Fishfinder 140	2
Monitoring Position Equipment	KODEN DGPS (KGP913MKIID, GA-08 & BA-03)	2
Multi-parameter Water Quality System	YSI 6820-C-M and YSI 6920-M	2
Water Sampler	Kahlsico Water-Bottle Model 135DW 150	2

**Monitoring Parameters, Frequency**

5.23 **Table 5.3** summarizes the monitoring parameters, monitoring period and frequencies of the water quality monitoring. The water quality monitoring schedule for the reporting month is shown in **Appendix D**.

**Table 5.3 Water Quality Monitoring Parameters and Frequency**

Monitoring Stations	Parameters, unit	Depth	Frequency
IS1, IS2, IS3 IS4, CS1, CS2, SR1, SR2, SR3, SR6, ST1, ST2, ST3, SRA	<ul style="list-style-type: none"> <li>Temperature(°C)</li> <li>pH(pH unit)</li> <li>turbidity (NTU)</li> <li>water depth (m)</li> <li>salinity (ppt)</li> <li>dissolved oxygen (DO) (mg/L and % of saturation)</li> <li>suspended solids (SS) (mg/L)</li> </ul>	<ul style="list-style-type: none"> <li>3 water depths: 1m below sea surface, mid-depth and 1m above sea bed.</li> <li>If the water depth is less than 3m, mid-depth sampling only.</li> <li>If water depth less than 6m, mid-depth may be omitted.</li> </ul>	<ul style="list-style-type: none"> <li>Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during the construction period of the Contract</li> </ul>

5.24 Monitoring location/position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby were recorded.

**Monitoring Methodology**

*Instrumentation*

5.25 A multi-parameter meters (Model YSI 6820-C-M) were used to measure DO, turbidity, salinity, pH and temperature.

*Operating/Analytical Procedures*

5.26 The monitoring stations were accessed by the guide of a hand-held Differential Global Positioning System (DGPS) during water quality monitoring in accordance with the EM&A Manual. The depth of the monitoring location was measured using depth meter

in order to determine the sampling depths. Afterwards, the probes of the in-situ measurement equipment were lowered to the predetermined depths (1 m below water surface, mid-depth and 1 m above seabed) and the measurements were carried out accordingly.

- 5.27 At each measurement, two consecutive measurements of DO concentration, DO saturation, salinity, turbidity, pH and temperature were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.
- 5.28 Water sampler was lowered into the water to the required depths of sampling. Upon reaching the pre-determined depth, a messenger to activate the sampler was then released to travel down the wire. The water sample was sealed within the sampler before retrieving. At each station, water samples at three depths (1 m below water surface, mid-depth and 1 m above seabed) were collected accordingly. Water samples were stored in a cool box and kept at less than 4°C but without frozen and sent to the laboratory as soon as possible. In addition, field information as described in Section 5.23 was also recorded.

#### ***Laboratory Analytical Methods***

- 5.29 The testing of all parameters was conducted by CMA Testing and Certification Laboratories (HOKLAS Registration No.004) and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The testing method, reporting limit and detection limit are provided in **Table 5.4**.

**Table 5.4 Methods for Laboratory Analysis for Water Samples**

Determinant	Instrumentation	Analytical Method	Detection Limit
Suspended Solid (SS)	Weighing	APHA 21e 2540D	0.5 mg/L

#### ***QA/QC Requirements***

##### Decontamination Procedures

- 5.30 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsed clean seawater/distilled water after each sampling event. All disposal equipment was discarded after sampling.

##### Sampling Management and Supervision

- 5.31 All sampling bottles were labelled with the sample I.D (including the indication of sampling station and tidal stage e.g. IS1\_me\_a), laboratory number and sampling date. Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.



5.32 The laboratory determination works were started within 24 hours after collection of the water samples.

Quality Control Measures for Sample Testing

5.33 The samples testing were performed by CMA Testing and Certification Laboratories.

5.34 The following quality control programme was performed by the CMA Testing and Certification Laboratories for every batch of 20 samples:

- ✧ One set of quality control (QC) samples.

*Maintenance and Calibration*

5.35 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme.

**Results and Observations**

5.36 The monitoring results and graphical presentation of water quality at the monitoring stations is shown in **Appendix H**.

5.37 The summary of exceedance record in reporting month is shown in **Appendix L** and summarized in the **Table 5.5**.

**Table 5.5 Summary of Water Quality Exceedances**

Station	Exceedance Level	DO (Surface & Middle)		DO(Bottom)		Turbidity		SS		Total Number of Exceedances	
		Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood	Mid-Ebb	Mid-Flood
IS1	Action Level									0	0
	Limit Level							02/09/2016		0	1
IS2	Action Level									0	0
	Limit Level							02/09/2016		0	1
IS3	Action Level									0	0
	Limit Level									0	0
IS4	Action Level							21/09/2016	02/09/2016	1	1
	Limit Level									0	0
SR1	Action Level									0	0
	Limit Level									0	0
SR2	Action Level									0	0
	Limit Level									0	0
SR3	Action Level									0	0
	Limit Level									0	0
SR6	Action Level							02/09/2016		1	0
	Limit Level							02/09/2016		0	1
ST1	Action Level									0	0
	Limit Level							02/09/2016		0	1
ST2	Action Level									0	0
	Limit Level							02/09/2016		0	1
ST3	Action Level									0	0
	Limit Level									0	0
SRA	Action Level									0	0
	Limit Level									0	0
Total	Action Level	0	0	0	0	0	0	2	1		3
	Limit Level	0	0	0	0	0	0	0	5		5

5.38 All water quality monitoring was conducted as scheduled in the reporting month. There are three Action Level and five Limit Level exceedances were recorded for suspended solids. No Action/Limit Level exceedance for dissolved oxygen and turbidity were recorded.

5.39 According to the investigation, the exceedances are considered not due to the Contract due to the following reasons:

- 1) No pollution discharge was observed from the site;
- 2) Control Station value already exceeded either the Baseline Action or Limit Levels;
- 3) The exceeded results found at the monitoring station which is situated at the upstream of the construction sites;
- 4) Localized sediment plume due to the rough water condition was observed; and
- 5) The exceeded result was similar to the ranges baseline monitoring results.

**Event and Action Plan**

5.40 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix K** shall be carried out.

## 6 DOLPHIN-RELATED MONITORING

### Monitoring Requirements

- 6.1 According to Section 10 of the EM&A Manual, four kinds of ecological monitoring works are required during the construction phase, namely dolphin monitoring, construction-phase underwater noise monitoring, dolphin behavior monitoring and land-based dolphin behavior and movement monitoring. The 30 days of construction-phase underwater noise monitoring, dolphin behavior monitoring and land-based dolphin behavior and movement monitoring were completed in July 2013.
- 6.2 The monitoring work shall be undertaken by suitably qualified specialist(s), (i.e. dolphin specialist and bio-acoustician), who shall have sufficient (at least 5-10 years) relevant post-graduate experience and publication in the respective aspects. They should be approved by Agriculture, Fisheries and Conservation Department (AFCD) and Environmental Protection Department (EPD).

### Dolphin Monitoring (Line-transect Vessel Survey)

#### Monitoring Requirements

- 6.3 According to EM&A Manual Section 10.3.2, a dolphin monitoring programme should be set up to verify the predictions of impacts and to ensure that there are no unforeseen impacts on the dolphin population during construction phase.
- 6.4 Following the requirement in the EM&A Manual Section 10.4.1, the dolphin monitoring should adopt line-transect vessel survey method, and cover the following line-transect survey areas as in AFCD annual marine mammal monitoring programme.

#### Monitoring Location

- 6.5 For this contract, dolphin monitoring will be carried out in the West Lantau (WL) along the line transect as depicted in **Figure 1** of **Appendix I**. The co-ordinates of all transect lines are shown in **Table 6.1**.

**Table 6.1 Co-ordinates of transect lines in WL survey area**

Line No.		Easting	Northing	Line No.		Easting	Northing
1	Start Point	803750	818500	7	Start Point	800200	810450
1	End Point	803750	815500	7	End Point	801400	810450
2	Start Point	803750	815500	8	Start Point	801300	809450
2	End Point	802940	815500	8	End Point	799750	809450
3	Start Point	802550	814500	9	Start Point	799400	808450
3	End Point	803700	814500	9	End Point	801430	808450
4	Start Point	803120	813600	10	Start Point	801500	807450
4	End Point	801640	813600	10	End Point	799600	807450

Line No.		Easting	Northing	Line No.		Easting	Northing
5	Start Point	801100	812450	11	Start Point	800300	806500
5	End Point	802900	812450	11	End Point	801750	806500
6	Start Point	802400	811500	12	Start Point	801760	805450
6	End Point	800660	811500	12	End Point	800700	805450

Monitoring Frequency

6.6 Dolphin transect survey was carried out at least twice a month (i.e. complete all the transect lines of West Lantau survey area twice per month) throughout the construction period.

Monitoring Day

6.7 Dolphin monitoring was carried out on 9<sup>th</sup> and 20<sup>th</sup> September 2016. The dolphin monitoring schedule for the reporting period is shown in **Appendix D**.

Monitoring Results

6.8 From these surveys, a total of 66.97 km of survey effort was collected, with 100% of the total survey effort being conducted under favorable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) Out of the 66.97 km of survey effort, the total survey effort conducted on primary lines (the horizontal lines perpendicular to the coastlines) was 44.14 km.

6.9 7 groups of 25 Chinese White Dolphins were sighted from primary lines. None of the dolphin groups was associated with an operating fishing vessel. Distribution of the 9 dolphin sightings made during September’s surveys is shown in **Figure 4 of Appendix I**. The sightings were evenly distributed from Tai O Peninsula to Fan Lau, with no particular concentration. As in the past monitoring months, dolphins were rarely sighted in the northern portion of the study area, especially in the area near the HKLR09 alignment (**Figure 4 of Appendix I**).

6.10 Dolphin encounter rates deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) are shown in **Table 6.2**.

**Table 6.2 Dolphin encounter rates (sightings per 100 km of survey effort) in September’s surveys**

		Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)	Encounter rate (ANI) (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		Primary Lines Only	Primary Lines Only
WL	Set 1: September 9 <sup>th</sup>	17.4	43.5
	Set 2: September 20 <sup>th</sup>	14.2	71.0

6.11 The average group size of Chinese White Dolphins was 3.8 individuals per group during September’s surveys, which was similar to the averages in previous months of monitoring surveys.

- 6.12 Five of the nine dolphin groups were small in size with 1-2 animals, while the other four were medium-sized groups with 5-9 animals per group.
- 6.13 During this month of dolphin monitoring, marine construction activities have continued under this contract. However, no adverse impact on Chinese white dolphins was noticeable from general observations.
- 6.14 Evaluation of impacts on dolphins due to construction work will be conducted in the quarterly EM&A report.
- 6.15 Detailed monitoring methodology and results can be found in **Appendix I**.

#### **Additional Land-based Dolphin Behaviour and Movement Monitoring**

- 6.16 A total of 64 days of additional monitoring according to the Proposal for Land-based Dolphin Behaviour and Movement Monitoring had been completed in August 2016.
- 6.17 Detailed monitoring methodology and results will be provided in a separate report.

## 7 ENVIRONMENTAL SITE INSPECTION

### Site Audits

- 7.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Contract site. The summaries of site audits are attached in **Appendix M**.
- 7.2 Site audits were conducted on 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup> and 27<sup>th</sup> September 2016 by ET after the commencement of construction works for the Contract. A joint site audit with the representative with IEC, SOR, the Contractor and the ET was carried out on 27<sup>th</sup> September 2016. The details of observations during site audit can refer to **Table 7.1**.
- 7.3 According to EP condition 4.7 and EM&A Manual, periodic monitoring (every three months) of construction works shall be conducted to ensure the avoidance of any impacts on Sha Lo Wan (West) Archaeological Site. Access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment is not allowed. The 15<sup>th</sup> inspection to the Sha Lo Wan (West) Archaeological Site was conducted on 20<sup>th</sup> September 2016 and next inspection will be conducted in December 2016.

### Implementation Status of Environmental Mitigation Measures

- 7.4 According to the EIA Study Report, Environmental Permit and the EM&A Manual, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the EMIS is provided in **Appendix N**.
- 7.5 Regular marine travel route for marine vessels were implemented properly in accordance with the submitted plan and relevant records were kept properly.
- 7.6 Acoustic decoupling measures for the stationary equipment (generators, winch generators and air compressors) mounted on boards were adopted according to EP Condition 3.7 and EM&A Manual, Section 10.2.18.
- 7.7 Dolphin exclusion zone and dolphin watching plan according to EM&A Manual, Section 10.2.12 and EP Condition 3.5 was implemented by DCVJV's trained dolphin watcher.
- 7.8 Spill kits and booms are ready on site for the event of accidental spillage of oil or other hazardous chemicals from construction activities including vessels operating for the Contract.
- 7.9 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 7.1**.

**Table 7.1 Observations and Recommendations of Site Audit**

Parameters	Date	Observations and Recommendations	Follow-up
<i>Water Quality</i>	20/09/2016	Silt curtain near P68 should be repaired properly.	Rectification/improvement was observed during the follow-up audit session on 27 September 2016.
	27/09/2016	Sandbag bunds should be provided before kicking plates to prevent leakage from grouting works for P53 to P58.	Rectification/improvement was observed during the follow-up audit session on 4 October 2016.
	27/09/2016	Stagnant water in the deck holes of the bridge should be cleared properly at P53 to P59.	Rectification/improvement was observed during the follow-up audit session on 4 October 2016.
<i>Ecology</i>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
<i>Air Quality</i>	06/09/2016	Cement bags should be covered properly near P107.	Rectification/improvement was observed during the follow-up audit session on 13 September 2016.
<i>Noise</i>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
<i>Waste / Chemical Management</i>	06/09/2016	To properly clear the oil leakage as chemical waste and provide drip trays for oil containers near P47, P34 and P30.	Rectification/improvement was observed during the follow-up audit session on 13 September 2016.
	06/09/2016	Waste water inside drip trays near P44 and P37 should be cleared as chemical waste.	Rectification/improvement was observed during the follow-up audit session on 13 September 2016.
	06/09/2016	Chemical material should be properly stored in chemical storage area at Portion C.	Rectification/improvement was observed during the follow-up audit session on 13 September 2016.
	13/09/2016	Drip trays should be provided to oil containers at P47 to prevent oil leakage.	Rectification/improvement was observed during the follow-up audit session on 20 September 2016.
	13/09/2016	General refuse near P82 should be cleared to avoid accumulation.	Rectification/improvement was observed during the follow-up audit session on 20 September 2016.
	27/09/2016	Drip trays for chemical containers should be plugged and suitable labels should be provided to chemical containers of P57.	Rectification/improvement was observed during the follow-up audit session on 4 October 2016.
	27/09/2016	House-keeping should be enhanced at P58 and P80.	Rectification/improvement was observed during the follow-up audit session on 4 October 2016.
<i>Landscape &amp; Visual Impact</i>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
<i>Permits/Licences</i>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
<i>Other</i>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>
<i>Cultural Heritage (Sha Lo Wan (West) Archaeological Site)</i>	20/09/2016	N/A <sup>(1)</sup>	N/A <sup>(1)</sup>

Remark: N/A<sup>(1)</sup> - No major environmental deficiency was identified during the site inspection in the reporting month.

**Advice on the Solid and Liquid Waste Management Status**

- 7.10 According to the Contractor, 1,889m<sup>3</sup> inert C&D materials were generated during the reporting month.
- 7.11 The Contractor was advised to minimize the wastes generated through the recycling or reusing. All mitigation measures stipulated in approved waste management plan shall be fully implemented.
- 7.12 The amount of wastes generated by the activities of the Contract during the reporting month is shown in **Appendix O**.



## **8 ENVIRONMENTAL NON-CONFORMANCE (EXCEEDANCES)**

### **Summary of Exceedances**

- 8.1 Summary of exceedance is provided in **Appendix L**.
- 8.2 No Action/Limit Level exceedance was recorded for air quality and construction noise.
- 8.3 There are three Action Level and five Limit Level exceedances for suspended solids were recorded. No Action/Limit Level exceedance for dissolved oxygen and turbidity were recorded.
- 8.4 According to the investigation, the exceedances are considered not due to the Contract due to the following reasons:
- 1) No pollution discharge was observed from the site;
  - 2) Localized sediment plume due to the rough water condition was observed; and
  - 3) The exceeded result was similar to the ranges baseline monitoring results.

### **Summary of Environmental Complaint**

- 8.5 No environmental related complaint was received in the reporting month. The Complaint Log is attached in **Appendix P**.

### **Summary of Notification of Summons and Successful Prosecution**

- 8.6 There was one prosecution or notification of summons received since the Contract commencement. Summary of successful prosecution as attached in **Appendix Q**.

## 9 FUTURE KEY ISSUES

### Key Issues in the Coming Month

9.1 Major site activities for the coming reporting month will include:

#### WA4

- Cross Beam Precast Shell construction

#### Ancillary and Associated Facilities

- E&M installation
- E&M ducting installation
- Construction of Load Centre (CL1)
- Installation of carrier drains
- Installation of precast parapet skins
- Erection of Radar Platform
- Construction of median and side barriers
- Construction of longitudinal stitching
- Erection of gantry posts for Sign gantry
- Reinstatement of slope area and drainage works

#### Marine Viaduct (P0 to P80)

##### Deck Erection

- Segment erection
- Erection of SOP segments
- Dismantling of LG1
- Erection of cantilever
- Construction of cross beam precast shell
- In-situ RC works
- Erection of precast SOP unit to Turnaround

##### External Prestressing Tendon Installation

##### Internal Prestressing Grouting

### Monitoring Schedule for the Next Month

9.2 The tentative environmental monitoring schedule for the next month is shown in **Appendix D**.

### Construction Programme for the Next Month

9.3 A tentative construction programme is provided in **Appendix A**.

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## 10 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

- 10.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken in September 2016 in accordance with EM&A Manual.
- 10.2 No Action/Limit Level exceedance was recorded for air quality and construction noise.
- 10.3 For water quality, there are three Action Level and five Limit Level exceedances for suspended solids were recorded. No Action/Limit Level exceedance for dissolved oxygen and turbidity were recorded.
- 10.4 Dolphin transect survey was carried out on 9<sup>th</sup> and 20<sup>th</sup> September 2016. No adverse impact on Chinese White Dolphins was noticeable from general observations.
- 10.5 Environmental site inspection was conducted on 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup> and 27<sup>th</sup> September 2016 by ET in the reporting month. All deficiencies identified during the site inspection have already rectified / improved during the follow-up audit session.
- 10.6 The inspection to the Sha Lo Wan (West) Archaeological Site was conducted on 20<sup>th</sup> September 2016. No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed.
- 10.7 There was no environmental complaint, no notification of summons and successful prosecution received in the reporting month.
- 10.8 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

## Recommendations

10.9 According to the environmental audit performed in the reporting month, the following recommendations were made:

### *Air Quality Impact*

- To regularly maintain the quality of machinery and vehicles on site.
- To implement dust suppression measures on all haul roads, stockpiles, dry surfaces and excavation works.
- To provide hoarding along the entire length of that portion of the site boundary.

### *Noise Impact*

- To inspect the noise sources inside the site.
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers, if necessary.

### *Water Impact*

- To prevent any surface runoff discharge into any stream course and sea.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To ensure properly maintenance for de-silting facilities.
- To clear the silt and sediment in the sedimentation tanks.
- To review the capacity of de-silting facilities for discharge.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To avoid accumulation of stagnant and ponding water on site.

### *Ecology Impact*

- To implement Spill Response Plan in the event of accidental spillage of or other hazardous chemicals.
- To implement Dolphin Exclusion Zone during the installation of bored pile casing located in the waters to the west of Airport.
- To implement Dolphin Watching Plan after the bored piling casing is installed.
- To ensure the acoustically-decoupled measures were implemented for air compressors and other noisy equipment mounted on construction vessels according

to acoustic decoupling measures plan.

*Waste/Chemical Management*

- To check for any accumulation of waste materials or rubbish on site.
- To ensure the performance of sorting of C&D materials at source (during generation);
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of oil drum on site.

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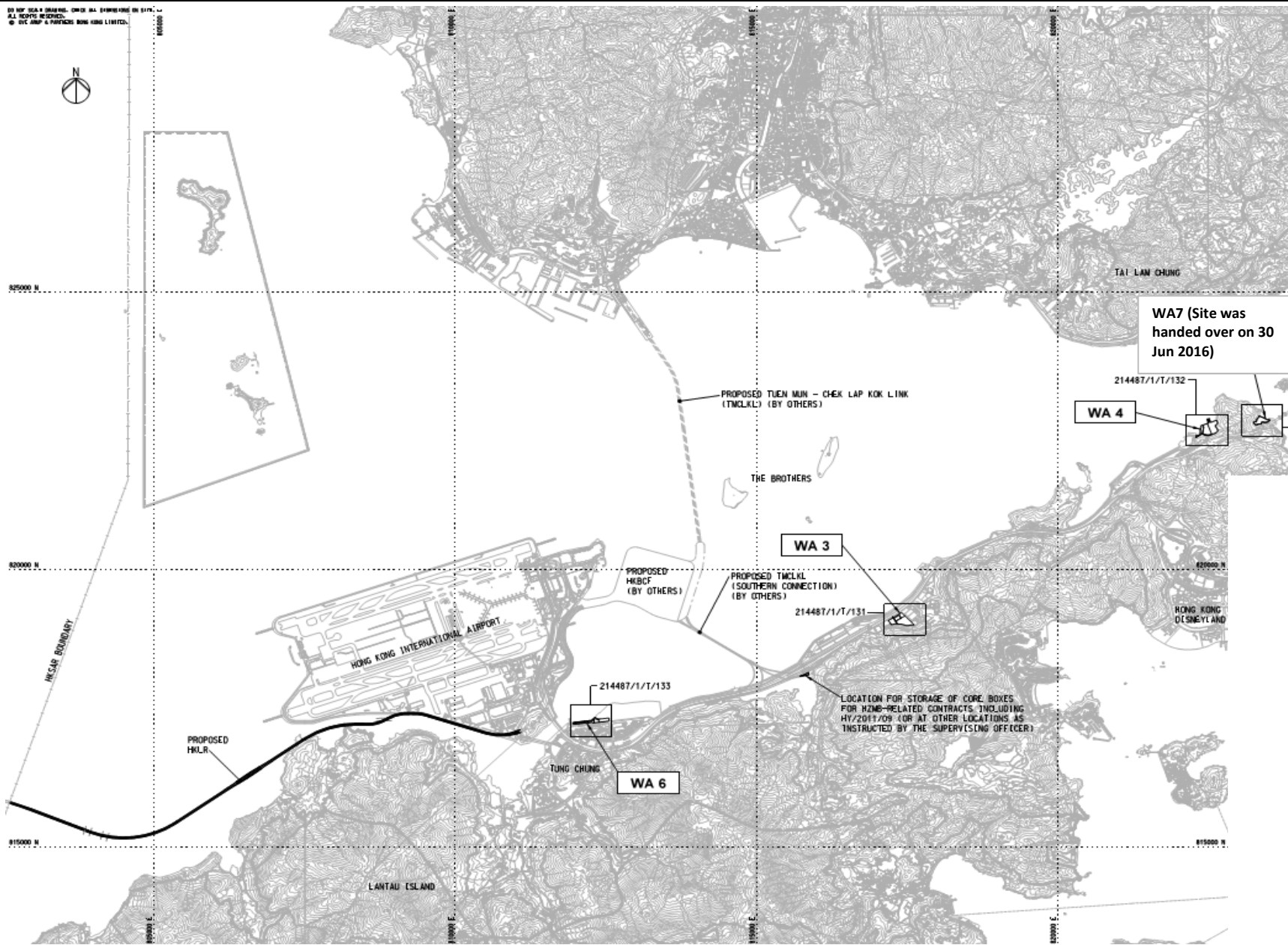
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**FIGURE(S)**

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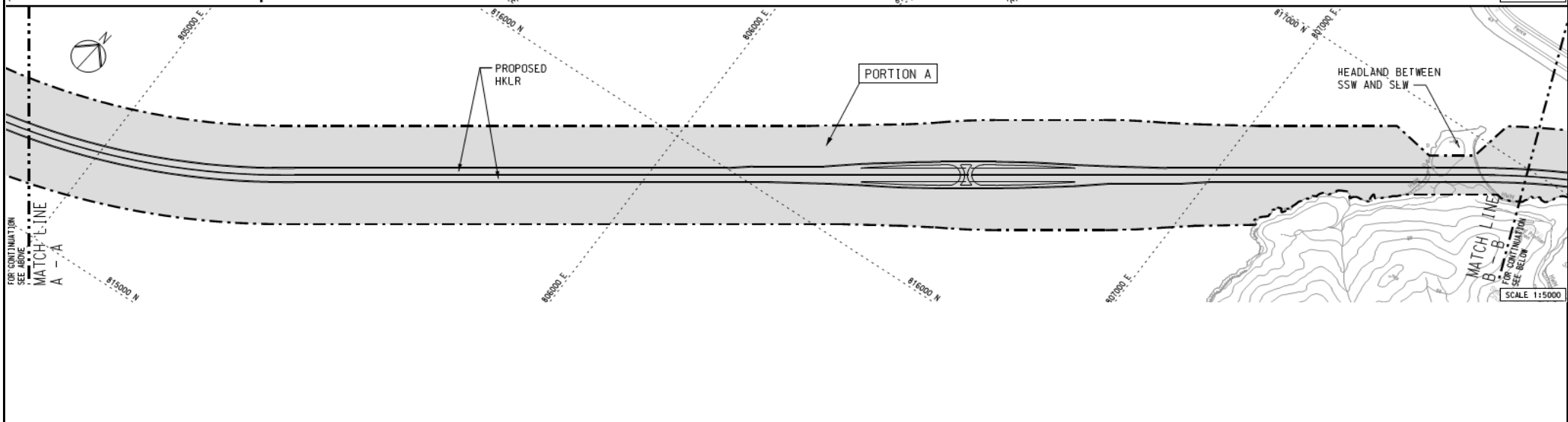
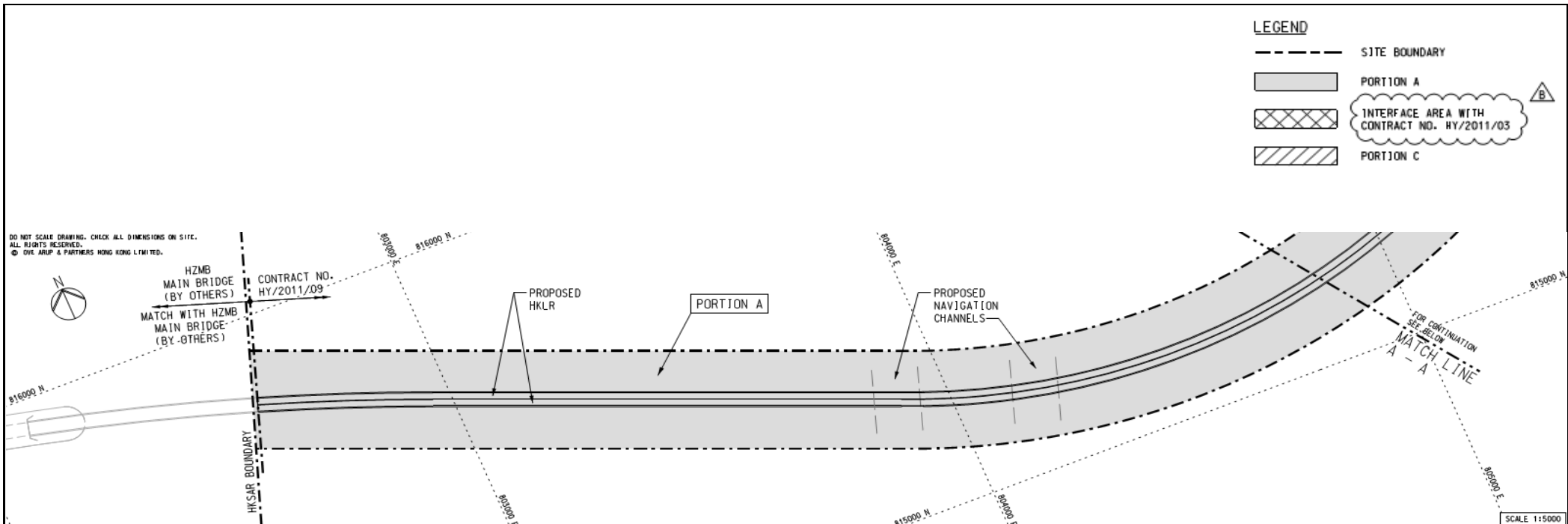


Title  
 Contract No. HY/2011/09  
 Hong Kong-Zhuhai-Macao Bridge  
 Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill  
 Site Layout Plan (WA3, WA4, WA6 and WA7)

Scale  
 N.T.S  
 Date  
 Oct-16

Propose  
 No. MA12014  
 Figure  
 1a

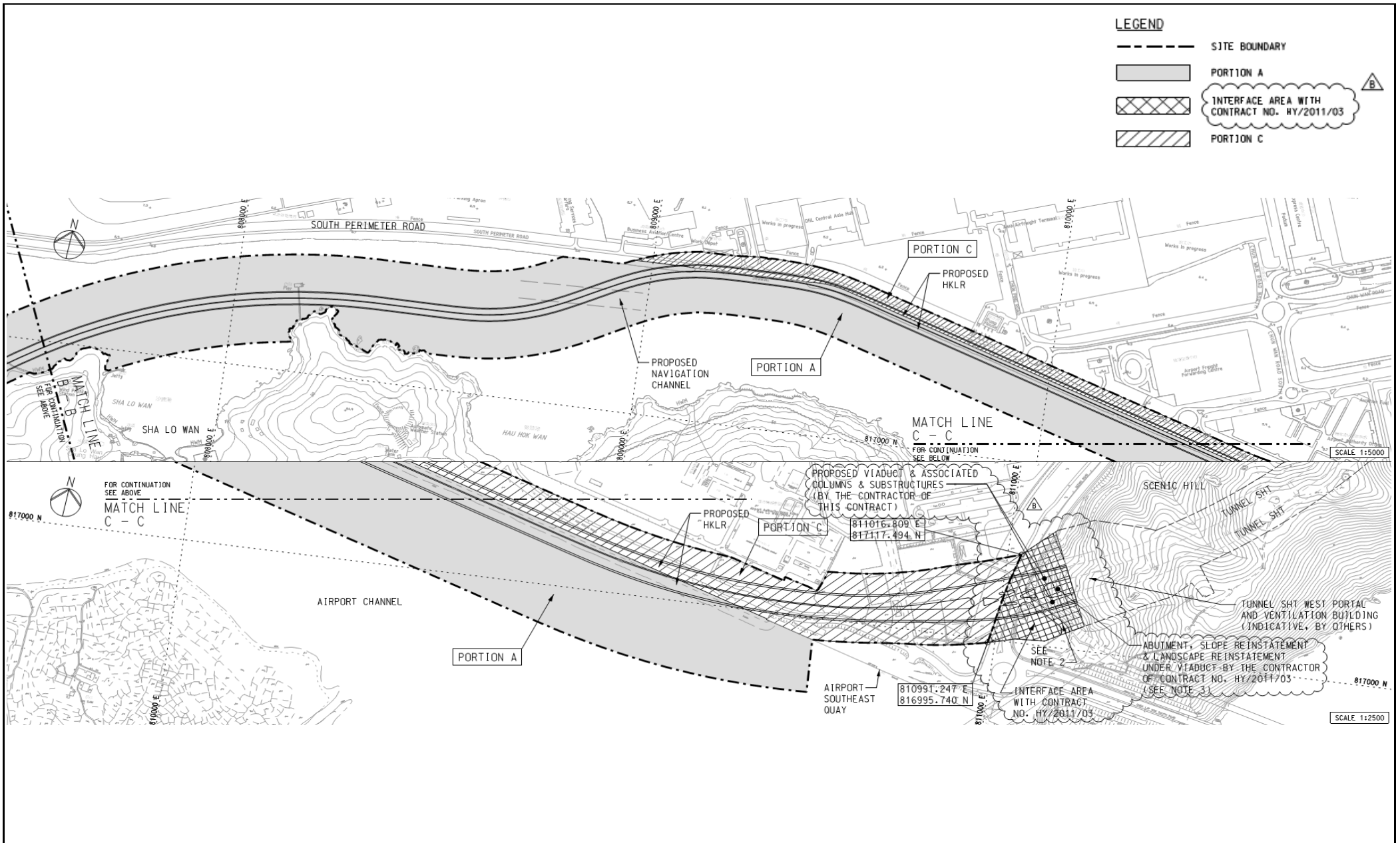




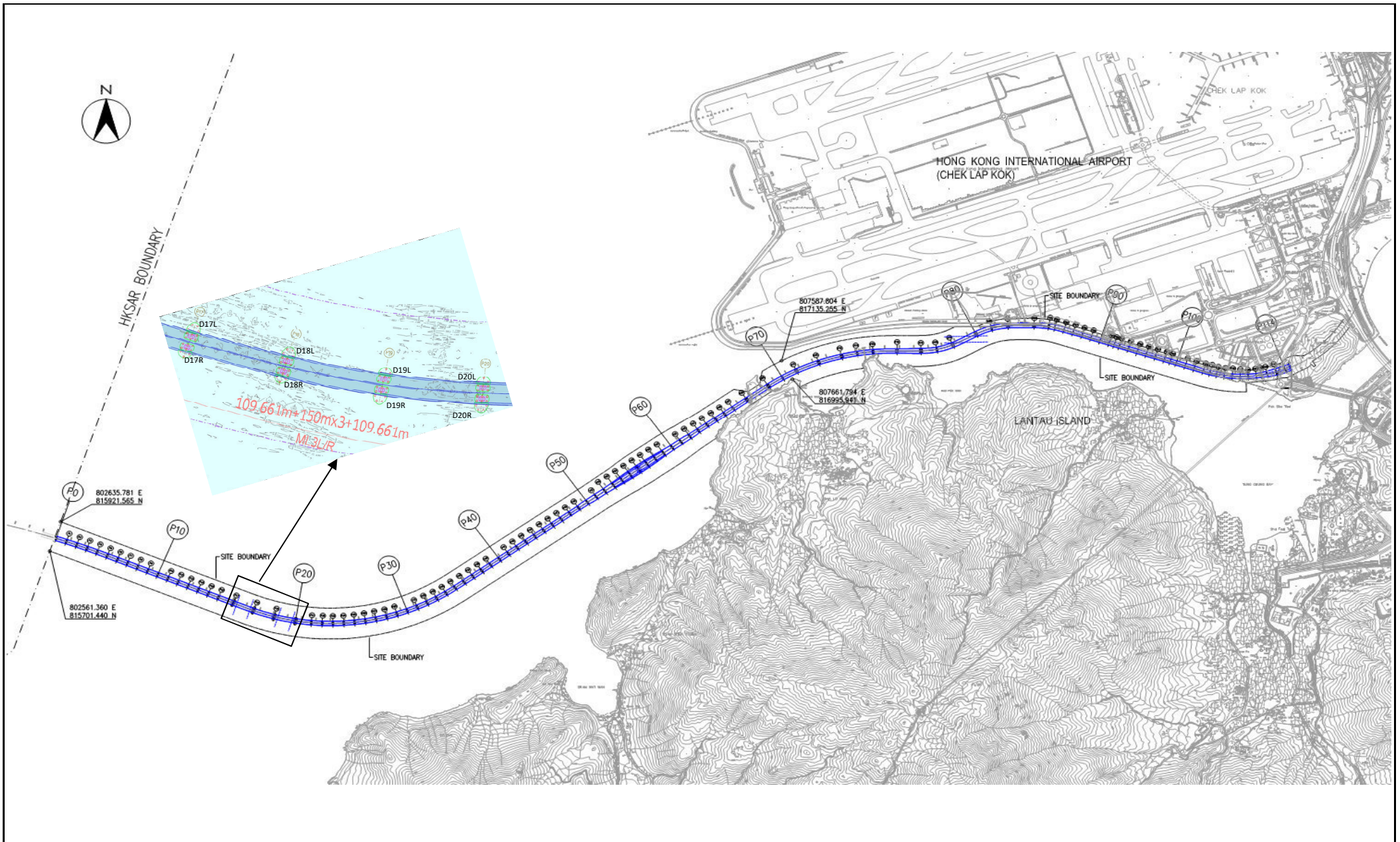
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	Hong Kong-Zhuhai-Macao Bridge		N.T.S	No. MA12014
Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill			Date	Figure
Site Layout Plan (Portion A)			Oct-15	1b



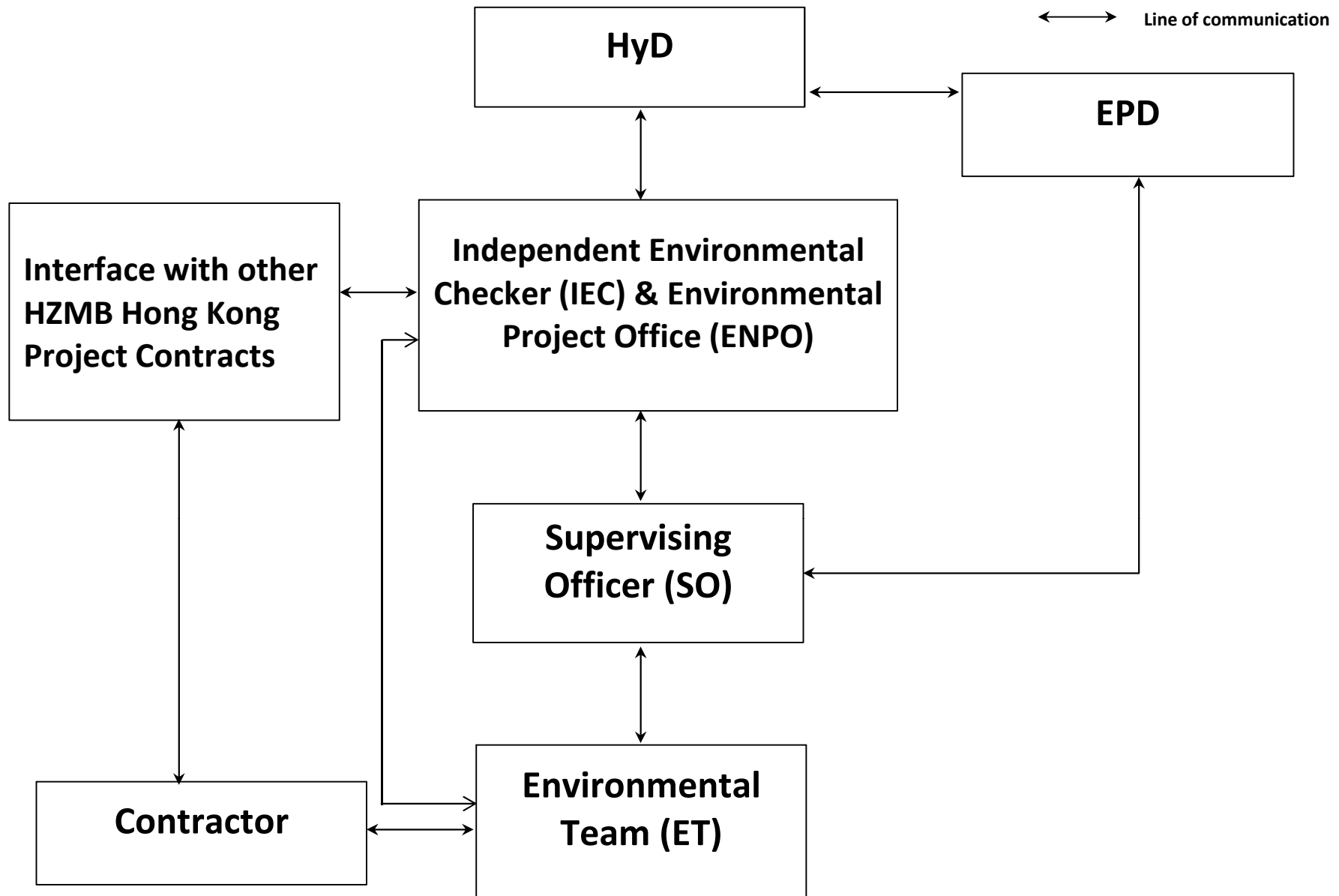




Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge		Scale	N.T.S	Propose No.	MA12014	CINOTECH
	Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill		Date	五月-13	Figure	1c	
Site Layout Plan (Portion A and C)							



Title	Contract No. HY/2011/09	Scale	Propose	CINOTECH
	Hong Kong-Zhuhai-Macao Bridge	N.T.S	No. MA12014	
	Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill	Date	Figure	
	Site Layout Plan (Pier(s) Site)	Oct-15	1d	

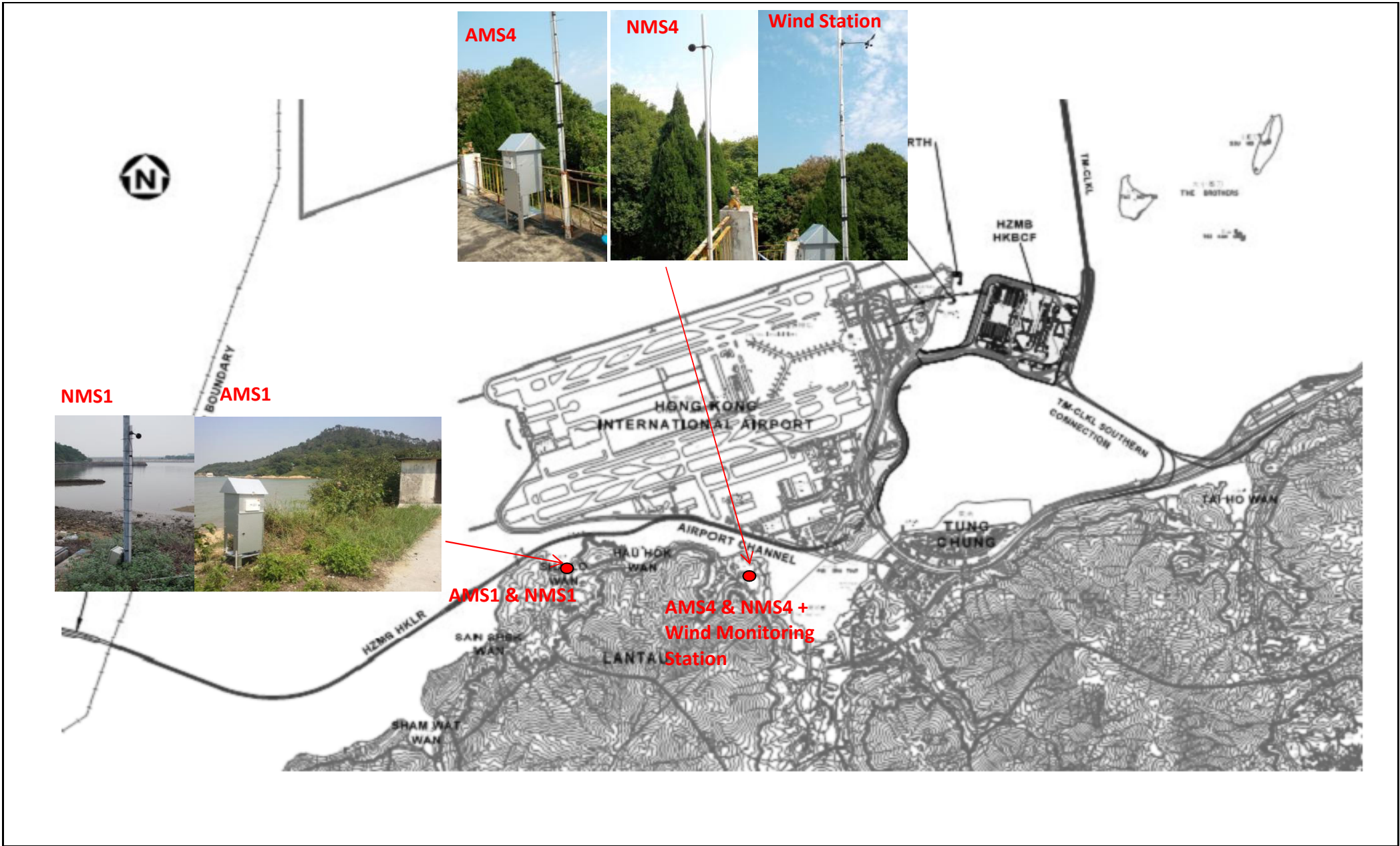


Title Contract No. HY/2011/09  
 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between  
 HKSAR Boundary and Scenic Hill  
 Project Organisation for Environmental Works

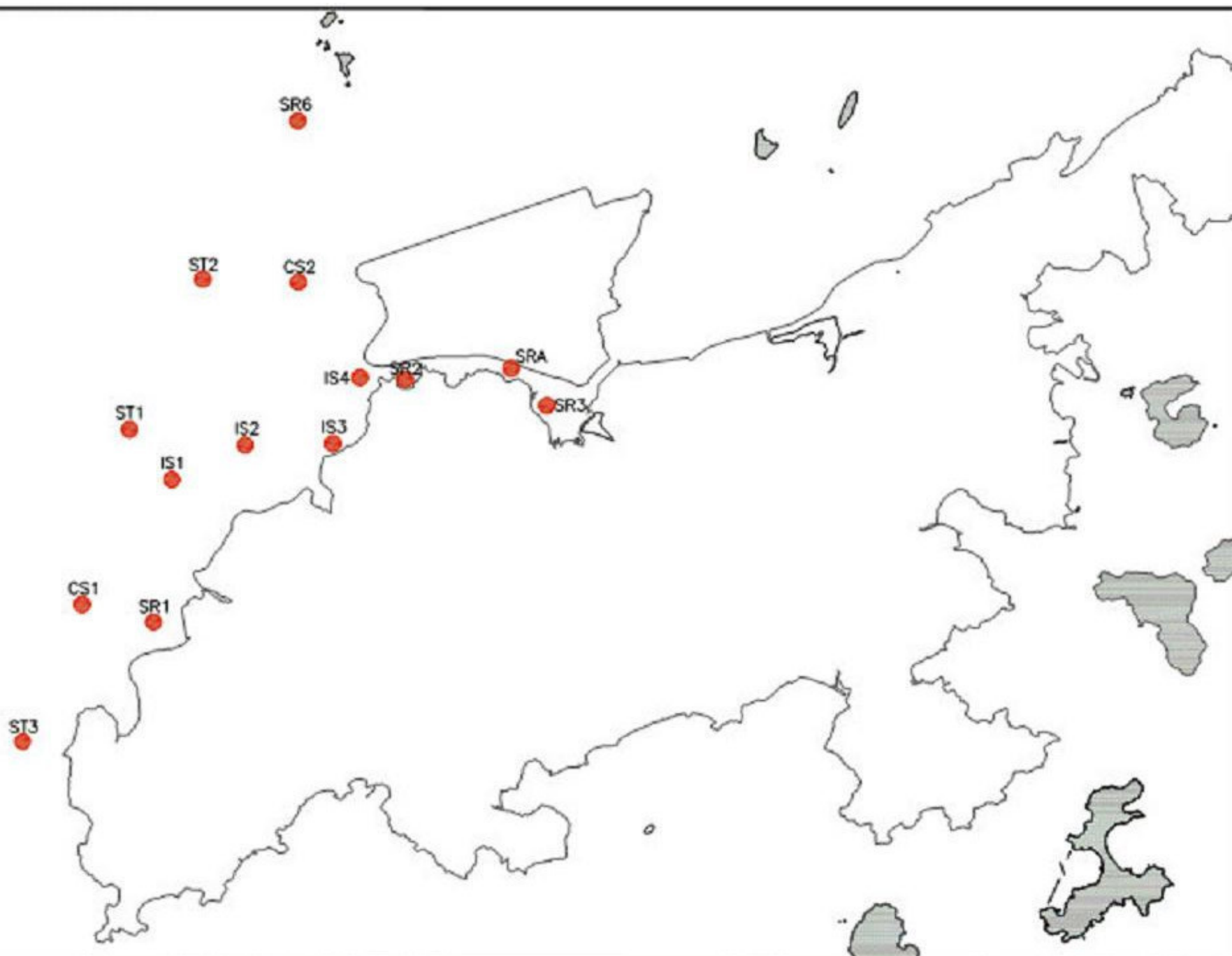
Scale N.T.S  
 Date Feb-13

Propose No. MA12014  
 Figure 2





Title	Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill	Scale	N.T.S	Propose No.	MA12014	CINOTECH
		Date	Feb-13	Figure	3	
Locations of Air Quality and Noise Monitoring Stations						



SCALE	N.T.S	DATE	28 Jan 2013
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PROJECT NO.	MA12014	FIGURE NO.	4
		REV	-

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**APPENDIX A  
CONSTRUCTION PROGRAMME**

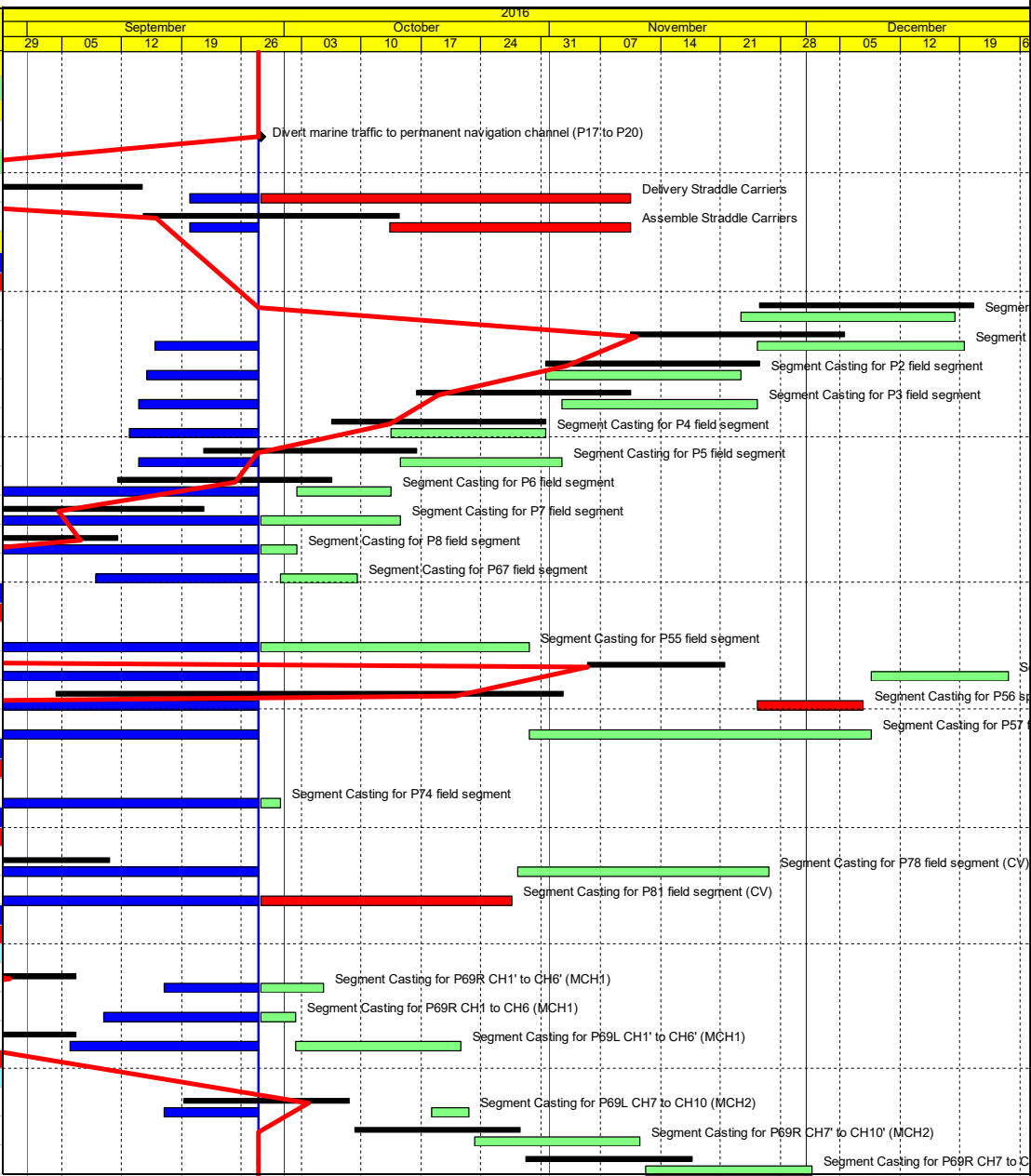
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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish
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HKZB Hong Kong Link Road - 3 Months Rolling Programme 1609 (based on DWP01g Programme)								
Project General Submission								
MTTA for existing navigation channel								
PGS1620	Divert marine traffic to permanent navigation channel (P17 to P20)	0.00	0.00	0%	28/9/16			25/6/16
PROCUREMENT								
PR1090	Delivery Straddle Carriers	49.00	43.61	11%	20/9/16 A	10/11/16	16/7/16	14/9/16
PR1100	Assemble Straddle Carriers	30.00	28.50	5%	20/9/16 A	10/11/16	14/9/16	14/10/16
Segment Casting								
Type A Segment								
Field Segment								
SCA1010	Segment Casting for P0 field segment	25.00	25.00	0%	23/11/16	18/12/16	25/11/16	20/12/16
SCA1030	Segment Casting for P1 field segment	25.00	24.38	2.5%	16/9/16 A	19/12/16	10/11/16	5/12/16
SCA1050	Segment Casting for P2 field segment	25.00	22.50	10%	15/9/16 A	23/11/16	31/10/16	25/11/16
SCA1070	Segment Casting for P3 field segment	25.00	22.50	10%	14/9/16 A	25/11/16	16/10/16	10/11/16
SCA1090	Segment Casting for P4 field segment	25.00	18.13	27.5%	13/9/16 A	31/10/16	6/10/16	31/10/16
SCA1110	Segment Casting for P5 field segment	25.00	18.75	25%	14/9/16 A	2/11/16	21/9/16	16/10/16
SCA1130	Segment Casting for P6 field segment	25.00	11.25	55%	19/8/16 A	13/10/16	11/9/16	6/10/16
SCA1150	Segment Casting for P7 field segment	25.00	16.88	32.5%	21/8/16 A	14/10/16	27/8/16	21/9/16
SCA1170	Segment Casting for P8 field segment	25.00	4.38	82.5%	29/7/16 A	2/10/16	17/8/16	11/9/16
SCA2210	Segment Casting for P67 field segment	25.00	8.75	65%	9/9/16 A	9/10/16	15/7/16	8/8/16
Type B Segment								
Field Segment								
SCB1060	Segment Casting for P55 field segment	72.00	31.97	55.6%	7/7/14 A	29/10/16	14/5/15	24/7/15
SCB1070	Segment Casting for P56 field segment	16.00	16.00	0%	1/7/16 A	24/12/16	5/11/16	21/11/16
SCB1080	Segment Casting for P56 special segment	60.00	12.84	78.6%	9/7/16 A	7/12/16	4/9/16	2/11/16
SCB1100	Segment Casting for P57 field segment	72.00	39.96	44.5%	29/8/15 A	8/12/16	30/9/15	10/12/15
Type C Segment								
Field Segment								
SCC1090	Segment Casting for P74 field segment	36.00	2.99	91.7%	13/6/16 A	30/9/16	22/5/16	26/6/16
Type CV Segment								
Field Segment								
SCC1110	Segment Casting for P78 field segment (CV)	60.00	30.00	50%	29/5/16 A	26/11/16	13/7/16	10/9/16
SCC1130	Segment Casting for P81 field segment (CV)	60.00	30.00	50%	6/6/16 A	27/10/16	29/4/16	27/6/16
Type CH Segment								
Type CH1 Segment (CH1 to CH6)								
ML10 (P68 & P69) 180m span								
SCH2440	Segment Casting for P69R CH1' to CH6' (MCH1)	24.00	7.99	66.7%	17/9/16 A	5/10/16	14/8/16	6/9/16
SCH2510	Segment Casting for P69R CH1 to CH6 (MCH1)	24.00	4.01	83.3%	10/9/16 A	2/10/16	21/7/16	13/8/16
SCH2580	Segment Casting for P69L CH1' to CH6' (MCH1)	24.00	19.99	16.7%	6/9/16 A	21/10/16	14/8/16	6/9/16
Type CH2 Segment (CH7 to CH10)								
ML10 (P68 & P69) 180m span								
SCH2400	Segment Casting for P69L CH7 to CH10 (MCH2)	20.00	5.00	75%	17/9/16 A	22/10/16	19/9/16	8/10/16
SCH2450	Segment Casting for P69R CH7' to CH10' (MCH2)	20.00	20.00	0%	23/10/16	11/11/16	9/10/16	28/10/16
SCH2520	Segment Casting for P69R CH7 to CH10 (MCH2)	20.00	20.00	0%	12/11/16	1/12/16	29/10/16	17/11/16



Actual Work	Critical Remaining Work	DWP_01g Milestone
Remaining Work	Milestone	DWP_01g Programme

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																	
									September				October				November				December					
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
SCH2570	Segment Casting for P69L CH7' to CH10' (MCH2)	20.00	20.00	0%	2/12/16	21/12/16	18/11/16	7/12/16	[Gantt bar: 2/12/16 to 21/12/16]																	
SCH2800	Segment Casting for P68L CH7' to CH10' (MCH2)	20.00	20.00	0%	28/9/16	17/10/16	30/8/16	18/9/16	[Gantt bar: 28/9/16 to 17/10/16]																	
<b>Type CH3 Segment (CH11 to CH15)</b>																										
<b>ML10 (P68 &amp; P69) 180m span</b>																										
SCH2410	Segment Casting for P69L CH11 to CH15 (MCH3)	20.00	20.00	0%	11/11/16	30/11/16	9/10/16	28/10/16	[Gantt bar: 11/11/16 to 30/11/16]																	
SCH2460	Segment Casting for P69R CH11' to CH15' (MCH3)	20.00	20.00	0%	1/12/16	20/12/16	29/10/16	17/11/16	[Gantt bar: 1/12/16 to 20/12/16]																	
SCH2530	Segment Casting for P69R CH11 to CH15 (MCH3)	20.00	20.00	0%	21/12/16	9/1/17	18/11/16	7/12/16	[Gantt bar: 21/12/16 to 9/1/17]																	
SCH2640	Segment Casting for P68L CH11 to CH15 (MCH3)	20.00	20.00	0%	28/9/16	17/10/16	19/7/16	7/8/16	[Gantt bar: 28/9/16 to 17/10/16]																	
SCH2690	Segment Casting for P68R CH11' to CH15' (MCH3)	20.00	4.00	80%	5/9/16 A	21/10/16	10/8/16	29/8/16	[Gantt bar: 5/9/16 A to 21/10/16]																	
SCH2810	Segment Casting for P68L CH11' to CH15' (MCH3)	20.00	20.00	0%	22/10/16	10/11/16	19/9/16	8/10/16	[Gantt bar: 22/10/16 to 10/11/16]																	
<b>Type CH4 Segment (CH16 to CH19)</b>																										
<b>ML10 (P68 &amp; P69) 180m span</b>																										
SCH2470	Segment Casting for P69R CH16' to CH19' (MCH4)	20.00	20.00	0%	28/9/16	17/10/16	15/11/16	4/12/16	[Gantt bar: 28/9/16 to 17/10/16]																	
SCH2540	Segment Casting for P69R CH16 to CH19 (MCH4)	20.00	20.00	0%	18/10/16	6/11/16	26/10/16	14/11/16	[Gantt bar: 18/10/16 to 6/11/16]																	
SCH2590	Segment Casting for P69L CH16' to CH19' (MCH4)	20.00	20.00	0%	7/11/16	26/11/16	15/11/16	4/12/16	[Gantt bar: 7/11/16 to 26/11/16]																	
<b>ML12 (P75 to P77) 165m span</b>																										
SCH3040	Segment Casting for P75L CH13' to CH16' (MCH4)	20.00	20.00	0%	28/9/16	17/10/16	6/10/16	25/10/16	[Gantt bar: 28/9/16 to 17/10/16]																	
<b>Type CH5 Segment (CH20 to CH25)</b>																										
<b>ML10 (P68 &amp; P69) 180m span</b>																										
SCH2430	Segment Casting for P69L CH20 to CH25 (MCH5)	21.00	21.00	0%	15/11/16	6/12/16	19/11/16	9/12/16	[Gantt bar: 15/11/16 to 6/12/16]																	
SCH2480	Segment Casting for P69R CH20' to CH25' (MCH5)	21.00	21.00	0%	6/12/16	27/12/16	10/12/16	30/12/16	[Gantt bar: 6/12/16 to 27/12/16]																	
SCH2550	Segment Casting for P69R CH20 to CH25 (MCH5)	21.00	21.00	0%	9/11/16	29/11/16	19/11/16	9/12/16	[Gantt bar: 9/11/16 to 29/11/16]																	
SCH2600	Segment Casting for P69L CH20' to CH25' (MCH5)	21.00	21.00	0%	30/11/16	20/12/16	10/12/16	30/12/16	[Gantt bar: 30/11/16 to 20/12/16]																	
SCH2660	Segment Casting for P68L CH20 to CH25 (MCH5)	21.00	6.99	66.7%	6/8/16 A	4/10/16	27/8/16	16/9/16	[Gantt bar: 6/8/16 A to 4/10/16]																	
SCH2830	Segment Casting for P68L CH20' to CH25' (MCH5)	21.00	21.00	0%	28/9/16	18/10/16	17/9/16	7/10/16	[Gantt bar: 28/9/16 to 18/10/16]																	
<b>ML12 (P75 to P77) 165m span</b>																										
SCH2890	Segment Casting for P75L CH17 to CH22 (MCH5)	21.00	21.00	0%	4/10/16	25/10/16	8/10/16	28/10/16	[Gantt bar: 4/10/16 to 25/10/16]																	
SCH2940	Segment Casting for P75R CH17' to CH22' (MCH5)	21.00	21.00	0%	25/10/16	15/11/16	29/10/16	18/11/16	[Gantt bar: 25/10/16 to 15/11/16]																	
SCH3050	Segment Casting for P75L CH17' to CH22' (MCH5)	21.00	21.00	0%	19/10/16	8/11/16	29/10/16	18/11/16	[Gantt bar: 19/10/16 to 8/11/16]																	
<b>Type CHV Segment</b>																										
<b>Type CH3 Segment (CHV11 to CHV15)</b>																										
<b>ML13 (P79 &amp; P80) 180m span</b>																										
SCH3950	Modify WD > TD (MCH3)	24.00	15.84	34%	21/9/16 A	13/10/16	14/10/16	6/11/16	[Gantt bar: 21/9/16 A to 13/10/16]																	
SCH4020	Segment Casting for P80R CH11 to CH15 (MCH3)	20.00	20.00	0%	14/10/16	2/11/16	10/9/16	29/9/16	[Gantt bar: 14/10/16 to 2/11/16]																	
<b>ML14 (P82 &amp; P83) 180m span</b>																										
SCH4270	Segment Casting for P82R CH11 to CH15 (MCH3)	20.00	16.00	20%	25/9/16 A	13/10/16	24/7/16	12/8/16	[Gantt bar: 25/9/16 A to 13/10/16]																	
<b>Type CH4 Segment (CHV16 to CHV19)</b>																										
<b>ML13 (P79 &amp; P80) 180m span</b>																										
SCH3960	Segment Casting for P80R CH16' to CH19' (MCH4)	20.00	10.00	50%	24/9/16 A	27/10/16	14/10/16	2/11/16	[Gantt bar: 24/9/16 A to 27/10/16]																	
SCH4030	Segment Casting for P80R CH16 to CH19 (MCH4)	20.00	20.00	0%	3/11/16	22/11/16	23/10/16	11/11/16	[Gantt bar: 3/11/16 to 22/11/16]																	
<b>ML14 (P82 &amp; P83) 180m span</b>																										
SCH4210	Segment Casting for P82R CH16' to CH19' (MCH4)	20.00	20.00	0%	28/9/16	17/10/16	27/8/16	15/9/16	[Gantt bar: 28/9/16 to 17/10/16]																	
SCH4280	Segment Casting for P82R CH16 to CH19 (MCH4)	20.00	20.00	0%	14/10/16	2/11/16	13/9/16	2/10/16	[Gantt bar: 14/10/16 to 2/11/16]																	
SCH4440	Segment Casting for P83R CH16' to CH19' (MCH4)	20.00	0.00	100%	12/9/16 A	28/9/16 A	10/7/16	29/7/16	[Gantt bar: 12/9/16 A to 28/9/16 A]																	
<b>Type CH5 Segment (CHV20 to CHV25)</b>																										

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																	
									September				October				November				December					
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
<b>ML13 (P79 &amp; P80) 180m span</b>																										
SCH3900	Segment Casting for P80L CH20 to CH25 (MCH5)	21.00	21.00	0%	19/10/16	8/11/16	10/10/16	30/10/16	Segment Casting for P80L CH20 to CH25 (MCH5)																	
SCH3970	Segment Casting for P80R CH20' to CH25' (MCH5)	21.00	21.00	0%	9/11/16	29/11/16	3/11/16	23/11/16	Segment Casting for P80R CH20' to CH25' (MCH5)																	
SCH4040	Segment Casting for P80R CH20 to CH25 (MCH5)	21.00	21.00	0%	23/11/16	13/12/16	12/11/16	2/12/16	Segment Casting for P80R CH20 to CH25 (MCH5)																	
SCH4100	Segment Casting for P80L CH20' to CH25' (MCH5)	21.00	21.00	0%	14/12/16	3/1/17	3/12/16	23/12/16	Segment Casting for P80L CH20' to CH25' (MCH5)																	
<b>ML14 (P82 &amp; P83) 180m span</b>																										
SCH4160	Segment Casting for P82L CH20 to CH25 (MCH5)	21.00	0.00	100%	14/9/16 A	28/9/16 A	24/8/16	13/9/16	Segment Casting for P82L CH20 to CH25 (MCH5)																	
SCH4220	Segment Casting for P82R CH20' to CH25' (MCH5)	21.00	21.00	0%	18/10/16	7/11/16	16/9/16	6/10/16	Segment Casting for P82R CH20' to CH25' (MCH5)																	
SCH4290	Segment Casting for P82R CH20 to CH25 (MCH5)	21.00	21.00	0%	3/11/16	23/11/16	3/10/16	23/10/16	Segment Casting for P82R CH20 to CH25 (MCH5)																	
SCH4340	Segment Casting for P82L CH20' to CH25' (MCH5)	21.00	14.01	33.3%	25/9/16 A	8/12/16	24/10/16	13/11/16	Segment Casting for P82L CH20' to CH25' (MCH5)																	
SCH4450	Segment Casting for P83R CH20' to CH25' (MCH5)	21.00	21.00	0%	28/9/16	18/10/16	14/9/16	5/10/16	Segment Casting for P83R CH20' to CH25' (MCH5)																	
SCH4510	Segment Casting for P83R CH20 to CH25 (MCH5)	21.00	21.00	0%	28/9/16	18/10/16	24/8/16	13/9/16	Segment Casting for P83R CH20 to CH25 (MCH5)																	
<b>LAND VIADUCT</b>																										
<b>ML19</b>																										
<b>DECK FINISHING WORKS</b>																										
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
M19F_1020	Utility trough, road barrier and firemain installation for ML19	29.00	15.95	45%	14/6/16 A	21/10/16	23/5/16	29/6/16	Utility trough, road barrier and firemain installation for ML19																	
<b>CIVIL PROVISION FOR TCSS</b>																										
M19F_1060	Install sign gantry GW13	10.00	5.00	50%	12/8/16 A	27/10/16	30/6/16	14/7/16	Install sign gantry GW13																	
M19F_1070	Install sign gantry GE15	10.00	5.00	50%	12/8/16 A	2/11/16	15/7/16	28/7/16	Install sign gantry GE15																	
M19F_1080	Install pole for vehicle detector VD/73/D	3.00	3.00	0%	2/11/16	5/11/16	29/7/16	1/8/16	Install pole for vehicle detector VD/73/D																	
M19F_1090	Remain civil provisions for TCSS ML19	29.00	17.40	40%	22/8/16 A	11/11/16	30/6/16	10/8/16	Remain civil provisions for TCSS ML19																	
<b>E&amp;M AND ROAD FINISHING WORKS</b>																										
M19L_2020	Drainage works for ML19	18.67	17.73	5%	15/8/16 A	11/11/16	30/6/16	27/7/16	Drainage works for ML19																	
M19L_2030	Road surface ML19L/C/R	21.00	21.00	0%	11/11/16*	6/12/16	3/10/16	31/10/16	Road surface ML19L/C/R																	
M19L_2040	E&M & Finishing works for ML19	40.00	14.00	65%	11/4/16 A	22/12/16	1/11/16	16/12/16	E&M & Finishing works for ML19																	
<b>ML18</b>																										
<b>DECK FINISHING WORKS</b>																										
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
ML18F_1020	Utility trough, road barrier and firemain installation for ML18	30.00	15.00	50%	28/6/16 A	8/11/16	30/6/16	11/8/16	Utility trough, road barrier and firemain installation for ML18																	
<b>CIVIL PROVISION FOR TCSS</b>																										
ML18F_1060	Install sign gantry GE13	10.00	7.50	25%	15/9/16 A	17/11/16	12/8/16	25/8/16	Install sign gantry GE13																	
ML18F_1070	Install sign gantry GE14	10.00	10.00	0%	17/11/16	29/11/16	26/8/16	8/9/16	Install sign gantry GE14																	
ML18F_1080	Install pole for vehicle detector VD/16/D	3.00	3.00	0%	29/11/16	2/12/16	9/9/16	12/9/16	Install pole for vehicle detector VD/16/D																	
ML18F_1090	Install pole for CCTV camera TV/57/A	3.00	3.00	0%	2/12/16	6/12/16	14/9/16	17/9/16	Install pole for CCTV camera TV/57/A																	
ML18F_1200	Remain civil provisions for TCSS ML18	30.00	30.00	0%	8/11/16	13/12/16	12/8/16	23/9/16	Remain civil provisions for TCSS ML18																	
<b>E&amp;M AND ROAD FINISHING WORKS</b>																										
M18L_2020	Drainage works for ML18	18.67	18.67	0%	11/11/16	3/12/16	12/8/16	7/9/16	Drainage works for ML18																	
M18L_2030	Road surface ML18L/R	30.00	30.00	0%	13/12/16	20/1/17	1/11/16	5/12/16	Road surface ML18L/R																	
<b>ML17</b>																										
<b>DECK FINISHING WORKS</b>																										
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
ML17F_1010	Utility trough, road barrier and firemain installation for ML17	24.00	12.48	48%	9/7/16 A	23/11/16	12/8/16	14/9/16	Utility trough, road barrier and firemain installation for ML17																	
<b>CIVIL PROVISION FOR TCSS</b>																										

■ Actual Work     ■ Critical Remaining Work     ◆ DWP\_01g Milestone  
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									September				October				November				December					
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
<b>DECK ERECTION WORKS</b>																										
P079_1030	P79 S01-02/25	15.00	7.50	50%	24/9/16 A	8/10/16	9/7/16	29/7/16	P79 S01-02/25																	
P079_1040	P79 S03-25/25 (2 shift)	30.00	30.00	0%	26/10/16	30/11/16	8/9/16	22/10/16	P79 S03-25/25 (2 shift)																	
<b>ML12</b>																										
<b>P78 MJ</b>																										
<b>COLUMN WORKS</b>																										
P078_1090	Bearing Installation - P78	5.00	5.00	0%	12/10/16	19/10/16	8/7/16	14/7/16	Bearing Installation - P78																	
<b>SOP AND PORTAL WORKS</b>																										
P078_1000	SOP Preparation & Erection	12.00	12.00	0%	19/10/16	2/11/16	15/7/16	30/7/16	SOP:Preparation & Erection																	
P078_1010	SOP Completion	18.00	18.00	0%	2/11/16	23/11/16	1/8/16	25/8/16	SOP:Completion																	
<b>P77</b>																										
<b>DECK ERECTION WORKS</b>																										
P077_1040	P77 S03-22/22	37.00	35.15	5%	24/9/16 A	14/11/16	18/8/16	12/10/16	P77 S03-22/22																	
P077_1120	Stitch 77-76	6.00	6.00	0%	14/11/16	21/11/16	13/10/16	20/10/16	Stitch 77-76																	
<b>P76</b>																										
<b>DECK ERECTION WORKS</b>																										
P076_1040	P76 S03-22/22	37.00	19.43	47.5%	24/6/16 A	26/10/16	18/7/16	7/9/16	P76 S03-22/22																	
<b>P75</b>																										
<b>TEMPORARY WORKS</b>																										
P075_1060	Remove cofferdem for pier P75	18.00	1.80	90%	12/9/16 A	29/9/16	30/7/16	24/8/16	Remove cofferdem for pier P75																	
<b>SOP AND PORTAL WORKS</b>																										
P075_1000	SOP Platform installation	10.00	10.00	0%	29/9/16	15/10/16	24/8/16	7/9/16	SOP Platform installation																	
P075_1010	SOP Segments erection	15.00	15.00	0%	15/10/16	3/11/16	7/9/16	29/9/16	SOP Segments erection																	
P075_1020	SOP Completion	35.00	35.00	0%	3/11/16	14/12/16	29/9/16	15/11/16	SOP Completion																	
<b>P74 MJ</b>																										
<b>DECK ERECTION WORKS</b>																										
P074_1140	P74 S01-06/06 (MJ)	21.00	21.00	0%	15/12/16	12/1/17	3/9/16	5/10/16	P74 S01-06/06 (MJ)																	
<b>ML11</b>																										
<b>P74 MJ</b>																										
<b>COLUMN WORKS</b>																										
P074_1130	Bearing Installation - P74	5.00	1.25	75%	20/9/16 A	29/9/16	21/6/16	25/6/16	Bearing Installation - P74																	
<b>SOP AND PORTAL WORKS</b>																										
P074_1000	SOP Preparation & Erection	12.00	12.00	0%	29/9/16	19/10/16	28/6/16	14/7/16	SOP:Preparation & Erection																	
P074_1010	SOP Completion	18.00	18.00	0%	19/10/16	9/11/16	15/7/16	8/8/16	SOP:Completion																	
<b>DECK ERECTION WORKS</b>																										
P074_1020	P74 S01-06/06 (MJ)	21.00	21.00	0%	15/12/16	12/1/17	3/9/16	5/10/16	P74 S01-06/06 (MJ)																	
<b>P73</b>																										
<b>DECK ERECTION WORKS</b>																										
P073_1120	Stitch 73-72	6.00	6.00	0%	28/9/16	6/10/16	18/8/16	25/8/16	Stitch 73-72																	
<b>P72</b>																										
<b>DECK ERECTION WORKS</b>																										
P072_1120	Stitch 72-71	6.00	6.00	0%	30/9/16	12/10/16	18/7/16	25/7/16	Stitch 72-71																	
<b>P71</b>																										
<b>DECK ERECTION WORKS</b>																										
P071_1110	P71 S03-22/22	58.00	2.90	95%	24/4/16 A	30/9/16	19/4/16	6/7/16	P71 S03-22/22																	
<b>P70 MJ</b>																										
<b>DECK ERECTION WORKS</b>																										
P070_1120	P70 S01-06/06 (MJ)	21.00	21.00	0%	21/11/16	15/12/16	5/8/16	2/9/16	P70 S01-06/06 (MJ)																	

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																		
									September					October				November			December						
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26	
P070_1130	Stitch 70-71	3.00	3.00	0%	15/12/16	19/12/16	3/9/16	7/9/16	Stitch 70-71																		
<b>DECK FINISHING WORKS</b>																											
<b>EXTERNAL PT</b>																											
ML1F_1000	Ext PT install	56.00	56.00	0%	22/11/16	2/2/17	6/8/16	26/10/16	Ext PT install																		
<b>ML10</b>																											
<b>P70 MJ</b>																											
<b>SOP AND PORTAL WORKS</b>																											
P070_1010	SOP Completion	18.00	14.40	20%	23/8/16 A	21/10/16	28/6/16	22/7/16	SOP Completion																		
<b>DECK ERECTION WORKS</b>																											
P070_1020	P70 S01-06/06 (MJ)	21.00	21.00	0%	21/11/16	15/12/16	5/8/16	2/9/16	P70 S01-06/06																		
<b>P69</b>																											
<b>TEMPORARY WORKS</b>																											
P069_1120	Remove cofferdam for pier P69	18.00	18.00	0%	28/9/16	24/10/16	28/4/16	24/5/16	Remove cofferdam for pier P69																		
<b>SOP AND PORTAL WORKS</b>																											
P069_1000	SOP Platform installation	10.00	10.00	0%	1/11/16	12/11/16	4/8/16	18/8/16	SOP Platform installation																		
P069_1010	SOP Segments erection	15.00	15.00	0%	12/11/16	30/11/16	18/8/16	8/9/16	SOP Segments erection																		
P069_1020	SOP Completion	35.00	35.00	0%	30/11/16	13/1/17	8/9/16	29/10/16	SOP Completion																		
<b>P68</b>																											
<b>SOP AND PORTAL WORKS</b>																											
P068_1040	SOP Completion	26.00	22.10	15%	15/9/16 A	29/10/16	27/7/16	14/9/16	SOP Completion																		
<b>DECK ERECTION WORKS</b>																											
P068_1050	P68 S01-02/25	15.00	15.00	0%	29/10/16	16/11/16	14/9/16	7/10/16	P68 S01-02/25																		
P068_1060	P68 S03-25/25 (Learning)	43.00	43.00	0%	16/11/16	9/1/17	14/10/16	5/12/16	P68 S03-25/25 (Learning)																		
<b>P67 MJ</b>																											
<b>DECK ERECTION WORKS</b>																											
P067_1110	P67 - P68 S01-06/06 (MJ)	21.00	21.00	0%	7/12/16	4/1/17	7/10/16	4/11/16	P67 - P68 S01-06/06 (MJ)																		
<b>WESTERN WATER (ML07 TO ML09)</b>																											
<b>ML9</b>																											
<b>P67 MJ</b>																											
<b>COLUMN WORKS</b>																											
P067_1100	Bearing Installation - P67	5.00	5.00	0%	27/10/16	2/11/16	25/7/16	30/7/16	Bearing Installation - P67																		
<b>SOP AND PORTAL WORKS</b>																											
P067_1000	SOP Preparation & Erection	12.00	12.00	0%	2/11/16	16/11/16	1/8/16	17/8/16	SOP Preparation & Erection																		
P067_1010	SOP Completion	18.00	18.00	0%	16/11/16	7/12/16	18/8/16	10/9/16	SOP Completion																		
<b>DECK ERECTION WORKS</b>																											
P067_1020	P67 - P66 S01-06/10 (MJ)	21.00	21.00	0%	7/12/16	4/1/17	7/10/16	4/11/16	P67 - P66 S01-06/10 (MJ)																		
<b>P66 SB</b>																											
<b>DECK ERECTION WORKS</b>																											
P066_1110	Stitch 66-65	3.00	3.00	0%	28/9/16*	30/9/16	5/4/16	7/4/16	Stitch 66-65																		
<b>P65 SB</b>																											
<b>DECK ERECTION WORKS</b>																											
P065_1100	Stitch 65-64	3.00	3.00	0%	3/10/16	6/10/16	8/4/16	11/4/16	Stitch 65-64																		
<b>P64</b>																											
<b>DECK ERECTION WORKS</b>																											
P064_1090	Stitch 64-63	3.00	3.00	0%	7/10/16	12/10/16	12/4/16	14/4/16	Stitch 64-63																		
<b>P63</b>																											
<b>DECK ERECTION WORKS</b>																											
P063_1120	Stitch 63-62	3.00	3.00	0%	13/10/16	15/10/16	12/5/16	18/5/16	Stitch 63-62																		

- Actual Work
- Critical Remaining Work
- Remaining Work
- Milestone
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**3MRP DWP\_01g 1609**

Date	Revision	Checked	Approved
5/10/16	1609 rolling based on DWP01g	Tim	



Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																	
									September				October				November				December					
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
<b>P62</b>																										
<b>DECK ERECTION WORKS</b>																										
P062_1120	Stitch 62-61	3.00	3.00	0%	17/10/16	20/10/16	19/9/16	22/9/16	Stitch 62-61																	
<b>P61</b>																										
<b>DECK ERECTION WORKS</b>																										
P061_1110	Stitch 61-60	3.00	3.00	0%	30/11/16	3/12/16	31/10/16	2/11/16	Stitch 61-60																	
<b>P60 SB (Portal)</b>																										
<b>DECK ERECTION WORKS</b>																										
P060_1080	P60 S01-03/10	30.00	20.01	33.3%	6/9/16 A	27/10/16	17/6/16	3/9/16	P60 S01-03/10																	
P060_1090	P60-P61 S04-10/10 L	28.00	28.00	0%	27/10/16	29/11/16	19/9/16	28/10/16	P60-P61 S04-10/10 L																	
P060_1100	P60-P59 S04-10/10 L	28.00	28.00	0%	27/10/16	29/11/16	19/9/16	28/10/16	P60-P59 S04-10/10 L																	
P060_1110	P60-P59 S04-10/10 RL	28.00	28.00	0%	27/10/16	29/11/16	19/9/16	28/10/16	P60-P59 S04-10/10 RL																	
P060_1120	P60-P61 S04-10/10 R	28.00	28.00	0%	28/10/16	30/11/16	21/9/16	29/10/16	P60-P61 S04-10/10 R																	
P060_1130	P60-P59 S04-10/10 R	28.00	28.00	0%	28/10/16	30/11/16	21/9/16	29/10/16	P60-P59 S04-10/10 R																	
P060_1140	P60-P59 S04-10/10 RR	28.00	28.00	0%	28/10/16	30/11/16	21/9/16	29/10/16	P60-P59 S04-10/10 RR																	
<b>P59 MJ</b>																										
<b>DECK ERECTION WORKS</b>																										
P059_1190	P59 - P60 S10/10 (MJ)	6.00	6.00	0%	30/11/16	7/12/16	31/10/16	5/11/16	P59 - P60 S10/10 (MJ)																	
P059_1200	Stitch 59-60	3.00	3.00	0%	7/12/16	10/12/16	7/11/16	9/11/16	Stitch 59-60																	
<b>MLS</b>																										
<b>P59 MJ</b>																										
<b>COLUMN WORKS</b>																										
<b>TURNAROUND</b>																										
P059_1160	Bearing Installation - P59N/S	5.00	5.00	0%	24/11/16	30/11/16	19/11/17	24/11/17																		
<b>SOP AND PORTAL WORKS</b>																										
<b>TURNAROUND</b>																										
P059_1020	Prepare works for precast SOP P59N/S (Turnaround Facility) - 4 nos.	6.00	6.00	0%	30/11/16	7/12/16	25/11/17	3/2/17																		
P059_1030	Install precast SOP P59N/S (Turnaround Facility) - 4 nos.	3.00	3.00	0%	7/12/16	10/12/16	4/2/17	7/2/17																		
P059_1040	In situ works for SOP P59N/S (Turnaround Facility) - 4 nos.	14.00	14.00	0%	10/12/16	29/12/16	8/2/17	23/2/17																		
<b>DECK ERECTION WORKS</b>																										
<b>MAIN DECK</b>																										
P059_1210	Stitch 59-58	3.00	3.00	0%	21/10/16	24/10/16	29/9/16	3/10/16	Stitch 59-58																	
<b>P58</b>																										
<b>SOP AND PORTAL WORKS</b>																										
<b>TURNAROUND</b>																										
P058_1050	In situ works for SOP P58N/S (Turnaround Facility) - 2 nos.	14.00	13.30	5%	19/9/16 A	30/11/16	9/11/17	24/11/17																		
<b>DECK ERECTION WORKS</b>																										
<b>MAIN DECK</b>																										
P058_1150	Stitch 58-57	3.00	3.00	0%	17/10/16	20/10/16	22/7/16	25/7/16	Stitch 58-57																	
<b>P57</b>																										
<b>SOP AND PORTAL WORKS</b>																										
<b>TURNAROUND</b>																										
P057_1050	In situ works for SOP P57N/S (Turnaround Facility) - 2 nos.	14.00	12.60	10%	8/9/16 A	15/11/16	3/12/16	19/12/16	In situ works																	
<b>DECK ERECTION WORKS</b>																										
<b>MAIN DECK</b>																										
P057_1150	Stitch 57-56	3.00	3.00	0%	13/10/16	15/10/16	24/6/16	28/6/16	Stitch 57-56																	
<b>P56</b>																										
<b>DECK ERECTION WORKS</b>																										
<b>MAIN DECK</b>																										

- Actual Work
- Critical Remaining Work
- Remaining Work
- Milestone
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**3MRP DWP\_01g 1609**

Date	Revision	Checked	Approved
5/10/16	1609 rolling based on DWP01g	Tim	



Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																	
									September					October				November				December				
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
P052_1100	P52-P51 S04-10/10 L	28.00	8.01	71.4%	24/8/16 A	12/10/16	17/6/16	27/7/16	P52-P51 S04-10/10 L																	
P052_1110	P52-P53 S04-10/10 L	28.00	8.01	71.4%	24/8/16 A	12/10/16	17/6/16	27/7/16	P52-P53 S04-10/10 L																	
P052_1120	P52-P53 S04-10/10 RL	28.00	8.01	71.4%	24/8/16 A	12/10/16	17/6/16	27/7/16	P52-P53 S04-10/10 RL																	
P052_1130	P52-P51 S04-10/10 R	28.00	8.01	71.4%	24/8/16 A	12/10/16	18/6/16	28/7/16	P52-P51 S04-10/10 R																	
P052_1140	P52-P53 S04-10/10 R	28.00	8.01	71.4%	24/8/16 A	12/10/16	18/6/16	28/7/16	P52-P53 S04-10/10 R																	
P052_1150	P52-P53 S04-10/10 R R	28.00	8.01	71.4%	24/8/16 A	12/10/16	18/6/16	28/7/16	P52-P53 S04-10/10 R R																	
P052_1160	Stitch 52-51	3.00	3.00	0%	17/10/16	20/10/16	29/7/16	1/8/16	Stitch 52-51																	
<b>P51</b>																										
<b>DECK ERECTION WORKS</b>																										
P051_1100	Stitch 51-50	3.00	3.00	0%	13/10/16	15/10/16	16/5/16	18/5/16	Stitch 51-50																	
<b>P50</b>																										
<b>DECK ERECTION WORKS</b>																										
P050_1120	Stitch 50-49	3.00	3.00	0%	7/10/16	12/10/16	1/4/16	6/4/16	Stitch 50-49																	
<b>P49</b>																										
<b>DECK ERECTION WORKS</b>																										
P049_1130	Stitch 49-48	3.00	3.00	0%	3/10/16	6/10/16	3/3/16	5/3/16	Stitch 49-48																	
<b>P48</b>																										
<b>DECK ERECTION WORKS</b>																										
P048_1120	Stitch 48-47	3.00	3.00	0%	28/9/16	30/9/16	29/2/16	2/3/16	Stitch 48-47																	
<b>DECK FINISHING WORKS</b>																										
<b>EXTERNAL PT</b>																										
ML07F_1000	Ext PT install	58.00	38.63	33.4%	19/1/16 A	17/11/16	2/6/16	22/8/16	Ext PT install																	
ML07F_1010	Ext PT stress	20.00	20.00	0%	17/11/16	10/12/16	24/8/16	21/9/16	Ext PT stress																	
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
ML07F_1020	Utility trough, road barrier and firemain installation for ML07	50.00	50.00	0%	10/12/16	14/2/17	29/9/16	1/12/16	Utility trough, road barrier and firemain installation for ML07																	
<b>WESTERN WATER (ML04 TO ML06)</b>																										
<b>ML6</b>																										
<b>DECK FINISHING WORKS</b>																										
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
ML06F_1020	Utility trough, road barrier and firemain installation for ML06	50.00	36.50	27%	24/8/16 A	15/11/16	18/6/16	27/8/16	Utility trough, road barrier and firemain installation for ML06																	
<b>CIVIL PROVISION FOR TCSS</b>																										
ML06F_1060	Install sign gantry GE5	10.00	10.00	0%	15/11/16	26/11/16	29/8/16	10/9/16	Install sign gantry GE5																	
ML06F_1090	Install pole for vehicle detector VD/30/D	3.00	3.00	0%	26/11/16	30/11/16	12/9/16	16/9/16	Install pole for vehicle detector VD/30/D																	
ML06F_1100	Install pole for vehicle detector VD/59/D	3.00	3.00	0%	30/11/16	3/12/16	17/9/16	21/9/16	Install pole for vehicle detector VD/59/D																	
ML06F_1130	Install pole for CCTV camera TV/23/A	3.00	3.00	0%	3/12/16	7/12/16	22/9/16	24/9/16	Install pole for CCTV camera TV/23/A																	
ML06F_1200	Remain civil provisions for TCSS ML06	50.00	50.00	0%	15/11/16	16/1/17	29/8/16	7/11/16	Remain civil provisions for TCSS ML06																	
<b>E&amp;M AND ROAD FINISHING WORKS</b>																										
M06L_2020	Drainage works for ML06	18.67	18.67	0%	15/11/16	7/12/16	29/8/16	24/9/16	Drainage works for ML06																	
<b>ML5</b>																										
<b>DECK FINISHING WORKS</b>																										
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
ML05F_1020	Utility trough, road barrier and firemain installation for ML05	50.00	50.00	0%	28/9/16	30/11/16	20/7/16	28/9/16	Utility trough, road barrier and firemain installation for ML05																	
<b>CIVIL PROVISION FOR TCSS</b>																										
ML05F_1070	Install sign gantry GE4	10.00	10.00	0%	1/12/16	12/12/16	29/9/16	14/10/16	Install sign gantry GE4																	
ML05F_1080	Install sign gantry GW4	10.00	10.00	0%	13/12/16	23/12/16	15/10/16	27/10/16	Install sign gantry GW4																	
ML05F_1090	Install pole for vehicle detector VD/31/D	3.00	3.00	0%	24/12/16	29/12/16	28/10/16	31/10/16	Install pole for vehicle detector VD/31/D																	

■ Actual Work    
 ■ Critical Remaining Work    
 ◆ DWP\_01g Milestone  
■ Remaining Work    
 ◆ Milestone    
 ■ DWP\_01g Programme

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Date	Revision	Checked	Approved
5/10/16	1609 rolling based on DWP01g	Tim	

Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																	
									September				October				November				December					
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
ML05F_1200	Remain civil provisions for TCSS ML05	50.00	50.00	0%	1/12/16	3/2/17	29/9/16	1/12/16	[Gantt bar: 29/9/16 to 1/12/16]																	
<b>E&amp;M AND ROAD FINISHING WORKS</b>																										
M05L_2020	Drainage works for ML05	18.67	18.67	0%	7/12/16	30/12/16	29/9/16	26/10/16	[Gantt bar: 29/9/16 to 26/10/16]																	
<b>ML4</b>																										
<b>DECK FINISHING WORKS</b>																										
<b>EXTERNAL PT</b>																										
ML04F_1010	Ext PT Stressing	14.00	5.60	60%	1/9/16 A	6/10/16	8/8/16	26/8/16	[Gantt bar: 1/9/16 to 26/8/16]																	
<b>UTILITY TROUGH &amp; ROAD BARRIER</b>																										
ML04F_1020	Utility trough, road barrier and firemain installation for ML04	36.00	36.00	0%	15/11/16	29/12/16	29/8/16	21/10/16	[Gantt bar: 29/8/16 to 21/10/16]																	
<b>NAVIGATION CHANNEL</b>																										
<b>ML3</b>																										
<b>P16 MJ</b>																										
<b>DECK ERECTION WORKS</b>																										
P016_1180	Stitch 16-17	6.00	6.00	0%	28/9/16	6/10/16	8/8/16	15/8/16	[Gantt bar: 28/9/16 to 15/8/16]																	
<b>DECK FINISHING WORKS</b>																										
<b>EXTERNAL PT</b>																										
ML03F_1000	Ext PT install	85.00	23.00	72.94%	23/8/16 A	29/10/16	6/5/16	1/9/16	[Gantt bar: 23/8/16 to 1/9/16]																	
ML03F_1010	Ext PT stress	20.00	20.00	0%	31/10/16	22/11/16	7/9/16	6/10/16	[Gantt bar: 7/9/16 to 6/10/16]																	
<b>WESTERN WATER (ML01 TO ML02)</b>																										
<b>ML2</b>																										
<b>P16 MJ</b>																										
<b>DECK ERECTION WORKS</b>																										
P016_1190	Stitch 16-15	3.00	3.00	0%	7/10/16	12/10/16	2/9/16	5/9/16	[Gantt bar: 7/10/16 to 5/9/16]																	
<b>P12</b>																										
<b>DECK ERECTION WORKS</b>																										
P012_1020	P12 S01-10/10	7.00	4.90	30%	26/9/16 A	19/10/16	28/9/16	7/10/16	[Gantt bar: 26/9/16 to 7/10/16]																	
<b>P11</b>																										
<b>DECK ERECTION WORKS</b>																										
P011_1020	P11 S01-10/10	7.00	7.00	0%	19/10/16	27/10/16	8/10/16	19/10/16	[Gantt bar: 19/10/16 to 19/10/16]																	
<b>P10</b>																										
<b>DECK ERECTION WORKS</b>																										
P010_1020	P10 S01-10/10	7.00	7.00	0%	27/10/16	4/11/16	20/10/16	27/10/16	[Gantt bar: 27/10/16 to 27/10/16]																	
<b>P9 SB</b>																										
<b>SOP AND PORTAL WORKS</b>																										
P009_1010	SOP Completion	17.00	11.90	30%	22/8/16 A	15/10/16	6/7/16	28/7/16	[Gantt bar: 22/8/16 to 28/7/16]																	
<b>DECK ERECTION WORKS</b>																										
P009_1020	P09 S01-10/10	9.00	9.00	0%	4/11/16	15/11/16	28/10/16	7/11/16	[Gantt bar: 28/10/16 to 7/11/16]																	
<b>P8 MJ</b>																										
<b>DECK ERECTION WORKS</b>																										
P008_1130	P08 S01-10/10 (MJ)	7.00	7.00	0%	15/11/16	23/11/16	8/11/16	15/11/16	[Gantt bar: 8/11/16 to 15/11/16]																	
<b>DECK FINISHING WORKS</b>																										
<b>EXTERNAL PT</b>																										
ML02F_1000	Ext PT install	50.00	50.00	0%	13/10/16	10/12/16	28/9/16	30/11/16	[Gantt bar: 28/9/16 to 30/11/16]																	
ML02F_1010	Ext PT stress	14.00	14.00	0%	12/12/16	30/12/16	5/12/16	20/12/16	[Gantt bar: 5/12/16 to 20/12/16]																	
<b>ML1</b>																										
<b>P8 MJ</b>																										
<b>SOP AND PORTAL WORKS</b>																										
P008_1010	SOP Completion	17.00	13.60	20%	3/9/16 A	19/10/16	8/7/16	30/7/16	[Gantt bar: 3/9/16 to 30/7/16]																	
<b>DECK ERECTION WORKS</b>																										

█ Actual Work     █ Critical Remaining Work     █ Remaining Work  
◆ Milestone     ◆ Milestone     ◆ Milestone

### 3MRP DWP\_01g 1609

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	1609 Start	1609 Finish	DWP01g Start	DWP01g Finish	2016																	
									September				October				November				December					
									29	05	12	19	26	03	10	17	24	31	07	14	21	28	05	12	19	26
P008_1020	P08 S01-10/10 (MJ)	7.00	7.00	0%	15/11/16	23/11/16	8/11/16	15/11/16																		
<b>P7 SB</b>																										
<b>SOP AND PORTAL WORKS</b>																										
P007_1010	SOP Completion	17.00	15.30	10%	16/9/16 A	21/10/16	29/7/16	20/8/16																		
<b>DECK ERECTION WORKS</b>																										
P007_1020	P07 S01-10/10	9.00	9.00	0%	23/11/16	3/12/16	16/11/16	25/11/16																		
<b>P6</b>																										
<b>SOP AND PORTAL WORKS</b>																										
P006_1010	SOP Completion	13.00	13.00	0%	28/9/16	17/10/16	28/7/16	13/8/16																		
<b>DECK ERECTION WORKS</b>																										
P006_1020	P06 S01-10/10	7.00	7.00	0%	3/12/16	12/12/16	26/11/16	3/12/16																		
<b>P5</b>																										
<b>COLUMN WORKS</b>																										
P005_1130	Prestress works & infill concrete at P5	34.00	6.80	80%	7/4/16 A	7/10/16	1/6/16	18/7/16																		
<b>SOP AND PORTAL WORKS</b>																										
P005_1000	SOP Preparation & Erection	8.00	8.00	0%	7/10/16	20/10/16	20/7/16	29/7/16																		
P005_1010	SOP Completion	13.00	13.00	0%	20/10/16	4/11/16	30/7/16	17/8/16																		
<b>DECK ERECTION WORKS</b>																										
P005_1020	P05 S01-10/10	7.00	7.00	0%	12/12/16	20/12/16	5/12/16	12/12/16																		
<b>P4</b>																										
<b>COLUMN WORKS</b>																										
P004_1130	Prestress works & infill concrete at P4	34.00	6.80	80%	13/6/16 A	22/10/16	15/6/16	1/8/16																		
<b>SOP AND PORTAL WORKS</b>																										
P004_1000	SOP Preparation & Erection	8.00	8.00	0%	22/10/16	1/11/16	3/8/16	12/8/16																		
P004_1010	SOP Completion	13.00	13.00	0%	1/11/16	16/11/16	13/8/16	31/8/16																		
<b>DECK ERECTION WORKS</b>																										
P004_1020	P04 S01-10/10	7.00	7.00	0%	20/12/16	30/12/16	13/12/16	20/12/16																		
<b>P3</b>																										
<b>COLUMN WORKS</b>																										
P003_1100	Prestress works & infill concrete at P3	34.00	5.10	85%	26/4/16 A	6/10/16	21/6/16	8/8/16																		
<b>SOP AND PORTAL WORKS</b>																										
P003_1000	SOP Preparation & Erection	8.00	8.00	0%	25/10/16	3/11/16	8/8/16	19/8/16																		
P003_1010	SOP Completion	13.00	13.00	0%	3/11/16	18/11/16	19/8/16	7/9/16																		
<b>P2</b>																										
<b>COLUMN WORKS</b>																										
P002_1100	Prestress works & infill concrete at P2	34.00	22.10	35%	11/7/16 A	29/10/16	23/6/16	11/8/16																		
<b>SOP AND PORTAL WORKS</b>																										
P002_1000	SOP Preparation & Erection	8.00	8.00	0%	29/10/16	8/11/16	11/8/16	22/8/16																		
P002_1010	SOP Completion	13.00	13.00	0%	8/11/16	23/11/16	22/8/16	9/9/16																		
<b>P1 SB</b>																										
<b>SOP AND PORTAL WORKS</b>																										
P001_1000	SOP Preparation & Erection	11.00	11.00	0%	10/11/16	23/11/16	25/8/16	9/9/16																		
P001_1010	SOP Completion	17.00	17.00	0%	23/11/16	13/12/16	9/9/16	6/10/16																		
<b>P0 MJ</b>																										
<b>TEMPORARY WORKS</b>																										
P000_1000	Temporary piles installation	24.00	24.00	0%	21/10/16	18/11/16	13/10/16	10/11/16																		
P000_1010	Shoring installation	48.00	48.00	0%	18/11/16	17/1/17	11/11/16	10/1/17																		

■ Actual Work     ■ Critical Remaining Work     ■ Remaining Work     ◆ Milestone  
◆ Milestone     ◆ Milestone     ◆ Milestone

### 3MRP DWP\_01g 1609

Date	Revision	Checked	Approved
5/10/16	1609 rolling based on DWP01g	Tim	



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**APPENDIX B  
ACTION AND LIMIT LEVELS**

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## Appendix B - Action and Limit Levels

**Table B-1 Action and Limit Levels for 1-Hour TSP**

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS1	381	500
AMS4	352	

**Table B-2 Action and Limit Levels for 24-Hour TSP**

Location	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
AMS1	170	260
AMS4	171	

**Table B-3 Action and Limit Levels for Construction Noise**

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) *

Noted: If works are to be carried during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

(\*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

**Table B-4 Action and Limit Levels for Water Quality**

<b>Parameter (unit)</b>	<b>Water Depth</b>	<b>Action Level</b>	<b>Limit Level</b>
Dissolved Oxygen (mg/L) (surface, middle, bottom)	Surface and Middle	<u>5.0</u>	4.2 except 5 for FCZ
	Bottom	<u>4.7</u>	3.6
Turbidity (NTU)	Depth average	<u>27.5</u> and 120% of upstream control station's turbidity at the same tide of the same day	<u>47.0</u> and 130% of turbidity at the upstream control station at the same tide of same day
Suspended Solids (mg/L)	Depth average	<u>23.5</u> and 120% of upstream control station's SS at the same tide of the same day	<u>34.4</u> and 130% of SS at the upstream control station at the same tide of same day and 10mg/L for WSD Seawater Intakes

Note:

- (1) Depth-averaged is calculated by taking the arithmetic means of reading of all three depths
- (2) For DO, non-compliance of the water quality limit occurs when monitoring result is lower than the limit.
- (3) For SS & turbidity non-compliance of the water quality limits occur when monitoring result is higher than the limits.
- (4) All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
- (5) The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2mg/L and 3.6mg/L respectively.

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**APPENDIX C  
COPIES OF CALIBRATION  
CERTIFICATES**

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# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA12014/67/0023

Project No. AMS 1 - Sha Lo Wan Operator: WK  
 Date: 25-Jul-16 Next Due Date: 24-Sep-16  
 Equipment No.: A-01-67 Serial No. 3218

Ambient Condition			
Temperature, Ta (K)	303	Pressure, Pa (mmHg)	759.5

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.8	4.06	68.81	10.8	3.26
2	14.5	3.78	63.99	8.9	2.96
3	10.3	3.18	54.07	6.7	2.57
4	6.9	2.60	44.41	4.6	2.13
5	4.2	2.03	34.83	2.9	1.69

By Linear Regression of Y on X

Slope, mw = 0.0452 Intercept, bw = 0.1162  
 Correlation coefficient\* = 0.9989

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM  
 From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.31

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: Kwan Date: 25/7/16  
 Checked by: [Signature] Signature: \_\_\_\_\_ Date: 25 July 2016

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA12014/74/0023

Project No. AMS 4 - San Tau Operator: WK  
 Date: 25-Jul-16 Next Due Date: 24-Sep-16  
 Equipment No.: A-01-74 Serial No. 2202

Ambient Condition			
Temperature, Ta (K)	303.8	Pressure, Pa (mmHg)	758.6

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X-axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	15.8	3.93	66.63	10.1	3.14
2	11.9	3.41	57.94	7.6	2.73
3	9.4	3.03	51.59	6.0	2.42
4	5.4	2.30	39.31	3.7	1.90
5	3.3	1.80	30.91	2.2	1.47

**By Linear Regression of Y on X**  
 Slope, mw = 0.0463 Intercept, bw = 0.0515  
 Correlation coefficient\* = 0.9995  
 \*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 43 CFM  
 From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$  4.26

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: \_\_\_\_\_ Date: 25/7/2016  
 Checked by: [Signature] Signature: \_\_\_\_\_ Date: 25 July 2016



# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA12014/67/0024

Project No. AMS 1 - Sha Lo Wan Operator: WK  
 Date: 24-Sep-16 Next Due Date: 23-Nov-16  
 Equipment No.: A-01-67 Serial No. 3218

Ambient Condition			
Temperature, Ta (K)	303.1	Pressure, Pa (mmHg)	759.3

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.7	4.05	68.59	10.5	3.21
2	14.2	3.73	63.31	8.8	2.94
3	10.6	3.23	54.82	6.7	2.57
4	6.7	2.57	43.76	4.5	2.10
5	4.3	2.06	35.22	3.0	1.72

**By Linear Regression of Y on X**

Slope,  $m_w = \underline{0.0442}$  Intercept,  $b_w = \underline{0.1573}$   
 Correlation coefficient\* = 0.9996

\*If Correlation Coefficient < 0.990, check and recalibrate.

**Set Point Calculation**

From the TSP Field Calibration Curve, take  $Qstd = 43$  CFM

From the Regression Equation, the "Y" value according to

$$m_w \times Qstd + b_w = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (m_w \times Qstd + b_w)^2 \times (760 / Pa) \times (Ta / 298) = \underline{4.32}$

Remarks: \_\_\_\_\_

Conducted by: wk tang Signature: Kwan  
 Checked by: la Signature: \_\_\_\_\_

Date: 24/9/16  
 Date: 24 September 2016

# High-Volume TSP Sampler

## 5-POINT CALIBRATION DATA SHEET

**CINOTECH**

File No. MA12014/74/0024

Project No. AMS 4 - San Tau Operator: WK  
 Date: 24-Sep-16 Next Due Date: 23-Nov-16  
 Equipment No.: A-01-74 Serial No. 2202

Ambient Condition			
Temperature, Ta (K)	302	Pressure, Pa (mmHg)	758.3

Orifice Transfer Standard Information					
Serial No.:	2896	Slope, mc	0.0598	Intercept, bc	-0.05079
Last Calibration Date:	4-Mar-16	$mc \times Q_{std} + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	3-Mar-17	$Q_{std} = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	$\Delta H$ (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) X - axis	$\Delta W$ (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	16.2	3.99	67.65	10.5	3.22
2	11.8	3.41	57.86	7.8	2.77
3	9.7	3.09	52.54	6.3	2.49
4	5.4	2.31	39.41	3.8	1.93
5	3.2	1.77	30.54	2.1	1.44

**By Linear Regression of Y on X**

Slope,  $m_w =$  0.0473 Intercept,  $b_w =$  0.0241

Correlation coefficient\* = 0.9991

\*If Correlation Coefficient < 0.990, check and recalibrate.

### Set Point Calculation

From the TSP Field Calibration Curve, take  $Q_{std} = 43$  CFM

From the Regression Equation, the "Y" value according to

$$m_w \times Q_{std} + b_w = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point;  $W = (m_w \times Q_{std} + b_w)^2 \times (760 / Pa) \times (Ta / 298) =$  4.30

Remarks: \_\_\_\_\_

Conducted by: Wk Tang Signature: Kwan  
 Checked by: A Signature: \_\_\_\_\_

Date: 24/9/16  
 Date: 24 September 2016



TISCH ENVIRONMENTAL, INC.  
 145 SOUTH MIAMI AVE  
 VILLAGE OF CLEVELAND, OH  
 45002  
 513.467.9000  
 877.263.7610 TOLL FREE  
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 04, 2016 Rootmeter S/N 0438320 Ta (K) - 295  
 Operator Tisch Orifice I.D. - 2896 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4340	3.2	2.00
2	NA	NA	1.00	1.0250	6.4	4.00
3	NA	NA	1.00	0.9150	7.9	5.00
4	NA	NA	1.00	0.8770	8.7	5.50
5	NA	NA	1.00	0.7210	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0001	0.6974	1.4173	0.9957	0.6944	0.8836
0.9959	0.9716	2.0044	0.9915	0.9674	1.2496
0.9938	1.0861	2.2410	0.9894	1.0814	1.3971
0.9928	1.1320	2.3503	0.9885	1.1271	1.4653
0.9875	1.3696	2.8346	0.9831	1.3636	1.7672
Qstd slope (m) =	2.11176		Qa slope (m) =	1.32235	
intercept (b) =	-0.05079		intercept (b) =	-0.03166	
coefficient (r) =	0.99982		coefficient (r) =	0.99982	

y axis = SQRT[H2O(Pa/760) (298/Ta)]      y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)  
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]  
 Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{ [SQRT(H2O(Pa/760) (298/Ta))] - b}  
 Qa = 1/m{ [SQRT H2O(Ta/Pa)] - b}



# Calibration Certificate

Certificate No. **606763**

Page 1 of 2 Pages

**Customer :** Dragages - China Harbour - VSL Joint Venture

**Address :** 3/F., Island Place Tower, 510 King's Road, North Point, H. K.

**Order No. :** Q62747

**Date of receipt :** 28-Jul-16

## Item Tested

**Description :** Weather Stations,Vantage Pro2

**Manufacturer :** Davis

**I.D. :** --

**Model :** 6152 CUK

**Serial No. :** AK130520004

## Test Conditions

**Date of Test :** 1-Aug-16

**Supply Voltage :** --

**Ambient Temperature :** (23 ± 3)°C

**Relative Humidity :** (50 ± 25) %

## Test Specifications

Calibration check.

Ref. Document/Procedure : Z04.

## Test Results


The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S155	Std. Anemometer	507918	NIM-PRC

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant. The test results apply to the above Unit-Under-Test only

**Calibrated by :**   
C. H. Chan

**Approved by :**   
Steve Kwan

**Date:** 1-Aug-16



# Calibration Certificate

Certificate No. 606763

Page 2 of 2 Pages

Results :

## 1. Wind Speed

Applied Value (m/s)	UUT Reading (m/s)
0.0	0.0
2.5	2.2
5.0	4.9
7.5	7.2
10.0	9.8
15.0	14.8
19.0	18.3

Uncertainty :  $\pm (0.9 \% + 0.16 \text{ m/s})$

## 2. Wind Direction

Reference Value	UUT Indication
N (0°)	N (0°)
NE (45°)	NE (45°)
E (90°)	E (90°)
SE (135°)	SE (135°)
S (180°)	S (180°)
SW (225°)	SW (225°)
W (270°)	W (270°)
NW (315°)	NW (315°)

Remark : 1. UUT: Unit-Under-Test

2. Atmospheric Pressure : 1 009 hPa

3. Before the calibration of the Wind Direction function, the Arrow Head was adjusted to the magnetic NORTH direction while the monitor indicated N. The customer is reminded to do the alignment again after installation.

4. The UUT was equipped with ISS Transmitter -- Mfg code: AK130520004.

----- END -----



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C160050  
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-2931)      Date of Receipt / 收件日期 : 28 December 2015

Description / 儀器名稱 : Sound & Vibration Analyser  
Manufacturer / 製造商 : BSWA  
Model No. / 型號 : BSWA 801  
Serial No. / 編號 : 35924  
Supplied By / 委託者 : Dragages - China Harbour - VSL Joint Venture  
3/F, Island Place Tower, 510 King's Road,  
North Point, Hong Kong

### TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C      Relative Humidity / 相對濕度 : (55 ± 20)%  
Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 4 January 2016


### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.  
The results do not exceed manufacturer's specification.  
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By :   
測試 : H T Wong  
Technical Officer

Certified By :   
核證 : K C Lee  
Project Engineer

Date of Issue : 6 January 2016  
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Sun Creation Engineering Limited - Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 - 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C160050  
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using the laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.3.2.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

Equipment ID	Description	Certificate No.
CL280	40 MHz Arbitrary Waveform Generator	C150014
CL281	Multifunction Acoustic Calibrator	DC130171

- Test procedure : MA101N.

- Results :

### 6.1 Sound Pressure Level

#### 6.1.1 Reference Sound Pressure Level

##### 6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
HIGH	SPL	A	Fast	94.00	1	93.6

##### 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
HIGH	SPL	A	Fast	94.00	1	94.0	± 1.1

##### 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
HIGH	SPL	A	Fast	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 61672 Class 1 Spec. : ± 0.6 dB per 10 dB step and ± 1.1 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

# Certificate of Calibration

## 校正證書

Certificate No. : C160050

證書編號

### 6.2 Time Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
HIGH	SPL	A	Fast	94.00	1	94.0	Ref.
			Slow			94.0	

### 6.3 Frequency Weighting

#### 6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
HIGH	SPL	A	Fast	94.00	63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.5
					250 Hz	85.3	-8.6 ± 1.4
					500 Hz	90.7	-3.2 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.6
					4 kHz	95.0	+1.0 ± 1.6
					8 kHz	93.0	-1.1 (+2.1 ; -3.1)
					12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)

#### 6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 61672 Class 1 Spec. (dB)
Range	Mode	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
HIGH	SPL	C	Fast	94.00	63 Hz	93.2	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.5
					250 Hz	94.0	0.0 ± 1.4
					500 Hz	94.0	0.0 ± 1.4
					1 kHz	94.0	Ref.
					2 kHz	93.9	-0.2 ± 1.6
					4 kHz	93.3	-0.8 ± 1.6
					8 kHz	91.1	-3.0 (+2.1 ; -3.1)
					12.5 kHz	87.8	-6.2 (+6.0 ; -∞)

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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# Certificate of Calibration

## 校正證書

Certificate No. : C160050  
證書編號

Remarks : - UUT Microphone S/N : 520978

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

94 dB : 63 Hz - 125 Hz	: ± 0.35 dB
250 Hz - 500 Hz	: ± 0.30 dB
1 kHz	: ± 0.20 dB
2 kHz - 4 kHz	: ± 0.35 dB
8 kHz	: ± 0.45 dB
12.5 kHz	: ± 0.70 dB
104 dB: 1 kHz	: ± 0.10 dB (Ref. 94 dB)
114 dB: 1 kHz	: ± 0.10 dB (Ref. 94 dB)

- The uncertainties are for a confidence probability of not less than 95 %.

### Note :

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606 Fax/傳真: 2744 8986 E-mail/電郵: callab@suncreation.com Website/網址: www.suncreation.com



輝創工程有限公司

Sun Creation Engineering Limited

Calibration and Testing Laboratory

# Certificate of Calibration

## 校正證書

Certificate No. : C160221

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC15-2931)

Date of Receipt / 收件日期 : 7 January 2016

Description / 儀器名稱 : Acoustic Calibrator

Manufacturer / 製造商 : Svantek

Model No. / 型號 : SV30A

Serial No. / 編號 : 24803

Supplied By / 委託者 : Dragages - China Harbour - VSL Joint Venture  
3/F, Island Place Tower, 510 King's Road,  
North Point, Hong Kong

### TEST CONDITIONS / 測試條件

Temperature / 溫度 :  $(23 \pm 2)^{\circ}\text{C}$

Relative Humidity / 相對濕度 :  $(55 \pm 20)\%$

Line Voltage / 電壓 : ---

### TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 14 January 2016

### TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

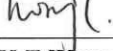
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA


Tested By

測試

  
\_\_\_\_\_  
H T Wong  
Technical Officer

Certified By

核證

  
\_\_\_\_\_  
K C Lee  
Project Engineer

Date of Issue

簽發日期

15 January 2016

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, Tsing Shan Wan Exchange Building, I-Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 – 校正及檢測實驗室

c/o 香港新界屯門興安里一號青山灣機樓四樓

Tel/電話: 2927 2606

Fax/傳真: 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com

# Certificate of Calibration

## 校正證書

Certificate No. : C160221

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C153519
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C141558

- Test procedure : MA100N.

- Results :

### 5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.3	± 0.3	± 0.2
114 dB, 1 kHz	114.3		

### 5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.999 98	1 kHz ± 0.02 %	± 0.01

Remark : - The uncertainties are for a confidence probability of not less than 95 %.

### Note :

The values given in this Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Website/網址: www.suncreation.com

### TEST REPORT Chemical Analysis of Water Accuracy check of YSI Sondes Environmental Monitoring System

Date of issue: 05-08-2016

Page 1 of 1 page(s)

Castco LRN: EN0160804-16

**Sample details as supplied by customer:-**

Customer : Dragages-China Harbour-VSL Joint Venture

Customer Ref. No. : --

Address : Tung Chung Waterfront Road, adjacent to Tung Chung New Development Pier

Job Title : Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road - Section between HKSAR Boundary and Scenic Hill

Contract No.: HY/2011/09

**Laboratory Test Results:-**

Instrument Name: Sonde Environmental Monitoring System

Manufacturer : YSI

Instrument No. : W.03.12

Model No. : YSI 6820

Date of Calibration : 04-08-2016

Serial No. : 12B100803

Date of Next Calibration : 04-11-2016

pH Value Check (pH Probe : Model:6589 , L/N:15B)

Expected Reading (pH Unit)	Sonde Reading (pH Unit)	Tolerance (pH Unit)	Tolerance Limit (pH Unit)	Method Reference
4.00	4.00	0.00	± 0.2	APHA 21e, 4500-H <sup>+</sup> B
7.02	6.99	-0.03		
10.06	9.99	-0.07		

Turbidity Check (Turbidity Sensor : Model :6136,S/N:13K103053)

Expected Reading (NTU)	Sonde Reading (NTU)	Tolerance (%)	Tolerance Limit (%)	Method Reference
4.00	4.2	5.0	± 10	APHA 21e, 2130B
10.00	9.4	-6.0		
20.00	19.0	-5.0		
50.00	47.7	-4.6		
100.00	94.8	-5.2		

Conductivity Performance Check (Conductivity Sensor : Model: 6560, L/N : 15B100399)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
1412 at 25 °C	1298 at 25 °C	-8.1	+ 10	APHA 21e, 2510B

Salinity Performance Check (Salinity Sensor : Model 6560,L/N:15B100399)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
33	31.66	-4.1	± 10	APHA 19e, 2520B

Dissolved Oxygen Check ( Dissolved Oxygen Sensor: Model: 6562 , L/N:15A100007)

DO from Winkler Titration (mg/L)	Sonde Reading (mg/L)	Tolerance (mg/L)	Tolerance Limit (mg/L)	Method Reference
8.70	8.80	0.10	± 0.20	APHA 21e, 4500-O C&G
4.41	4.36	-0.05		


Water Level Meter Check

Expected Reading (m)	Sonde Reading (m)	Tolerance (m)	Tolerance Limit (m)	Method Reference
1.04	1.014	-0.026	± 0.05	YSI Sondes Procedure Manual

Temperature Check

Expected Reading (°C)	Sonde Reading (°C)	Tolerance (°C)	Tolerance Limit (°C)	Method Reference
25.0	24.71	-0.29	± 2.0	Telarc Technical Guide No.3 1986

Checked by :

  
Au Kwok Kin  
Senior Chemist

Certified by :

  
Cheng Chi Fai  
Senior Manager

End of Report

### TEST REPORT Chemical Analysis of Water Accuracy check of YSI Sondes Environmental Monitoring System

Date of issue: 05-08-2016

Page 1 of 1 page(s)

Castco LRN: EN0160804-17

**Sample details as supplied by customer:-**

Customer : Dragages-China Harbour-VSL Joint Venture

Customer Ref. No. : --

Address: Tung Chung Waterfront Road, adjacent to Tung Chung New Development Pier

Job Title : Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road - Section between HKSAR Boundary and Scenic Hill

Contract No.: HY/2011/09

**Laboratory Test Results:-**

Instrument Name: Sonde Environmental Monitoring System

Manufacturer : YSI

Model No. : YSI 6820

Serial No. : 12B100804

Instrument No. : W.03.13

Date of Calibration : 04-08-2016

Date of Next Calibration : 04-11-2016

pH Value Check (pH Probe : Model:6589 , I/N:14M)

Expected Reading (pH Unit)	Sonde Reading (pH Unit)	Tolerance (pH Unit)	Tolerance Limit (pH Unit)	Method Reference
4.00	4.04	0.04	± 0.2	APHA 21e, 4500-H <sup>+</sup> B
7.02	7.05	0.03		
10.06	10.01	-0.05		

Turbidity Check (Turbidity Sensor : Model :6136,S/N:11J100476)

Expected Reading (NTU)	Sonde Reading (NTU)	Tolerance (%)	Tolerance Limit (%)	Method Reference
4.00	4.2	5.0	± 10	APHA 21e, 2130B
10.00	9.8	-2.0		
20.00	19.0	-5.0		
50.00	48.0	-4.0		
100.00	95.8	-4.2		

Conductivity Performance Check (Conductivity Sensor : Model: 6560, L/N : 14M100013)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
1412 at 25 °C	1330 at 25 °C	-5.8	± 10	APHA 21e, 2510B

Salinity Performance Check (Salinity Sensor : Model: 6560, L/N : 14M100013)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
33	32.61	-1.2	± 10	APHA 19e, 2520B

Dissolved Oxygen Check (Dissolved Oxygen Sensor: Model: 6562 , L/N:07E100029)

DO from Winkler Titration (mg/L)	Sonde Reading (mg/L)	Tolerance (mg/L)	Tolerance Limit (mg/L)	Method Reference
8.70	8.76	0.06	± 0.20	APHA 21e, 4500-O C&G
4.19	4.28	0.09		


Water Level Meter Check

Expected Reading (m)	Sonde Reading (m)	Tolerance (m)	Tolerance Limit (m)	Method Reference
1.04	1.029	-0.011	± 0.05	YSI Sondes Procedure Manual

Temperature Check

Expected Reading (°C)	Sonde Reading (°C)	Tolerance (°C)	Tolerance Limit (°C)	Method Reference
25.0	24.79	-0.21	± 2.0	Telarc Technical Guide No.3 1986

Checked by :

  
Au Kwok Kin  
Senior Chemist

Certified by :

  
Cheng Chi Fai  
Senior Manager

**End of Report**

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**APPENDIX D  
ENVIRONMENTAL MONITORING  
SCHEDULES**

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**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
Impact Air Quality and Noise Monitoring Schedule in September 2016**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Sep	2-Sep	3-Sep
					24 hr TSP 1 hr TSP X 3	
4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep
				24 hr TSP 1 hr TSP X 3	Noise	
11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	16-Sep	17-Sep
			24 hr TSP 1 hr TSP X 3	Noise		
18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep
		24 hr TSP 1 hr TSP X 3	Noise			
25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	
	24 hr TSP 1 hr TSP X 3	Noise			24 hr TSP 1 hr TSP X 3	

**Air Quality Monitoring Stations**

AMS1 - Sha Lo Wan  
AMS4 - San Tau

**Noise Monitoring Stations**

NMS1 - Sha Lo Wan  
NMS4 - San Tau

**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
Tentative Impact Air Quality and Noise Monitoring Schedule in October 2016**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						<b>1-Oct</b>
<b>2-Oct</b>	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct
				24 hr TSP 1 hr TSP X 3	Noise	
<b>9-Oct</b>	<b>10-Oct</b>	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct
			24 hr TSP 1 hr TSP X 3	Noise		
<b>16-Oct</b>	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct
		24 hr TSP 1 hr TSP X 3	Noise			
<b>23-Oct</b>	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
	24 hr TSP 1 hr TSP X 3	Noise			24 hr TSP 1 hr TSP X 3	
<b>30-Oct</b>	31-Oct					

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Air Quality Monitoring Stations**

AMS1 - Sha Lo Wan  
AMS4 - San Tau

**Noise Monitoring Stations**

NMS1 - Sha Lo Wan  
NMS4 - San Tau



**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
Impact Water Quality Monitoring Schedule in September 2016**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>1-May</b>				1-Sep	2-Sep	3-Sep
					<u>Water Quality Monitoring</u> Mid-Ebb 13:31 Mid-Flood 19:52	
<b>4-Sep</b>	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep
	<u>Water Quality Monitoring</u> Mid-Flood 8:57 Mid-Ebb 15:09		<u>Water Quality Monitoring</u> Mid-Flood 10:15 Mid-Ebb 16:13			<u>Water Quality Monitoring</u> Mid-Ebb 6:46 Mid-Flood 14:50
<b>11-Sep</b>	12-Sep	13-Sep	14-Sep	15-Sep	<b>16-Sep</b>	17-Sep
	<u>Water Quality Monitoring</u> Mid-Ebb 9:17 Mid-Flood 16:55		<u>Water Quality Monitoring</u> Mid-Ebb 10:55 Mid-Flood 17:55			<u>Water Quality Monitoring</u> Mid-Ebb 13:08 Mid-Flood 19:32
<b>18-Sep</b>	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep
	<u>Water Quality Monitoring</u> Mid-Flood 8:28 Mid-Ebb 14:36		<u>Water Quality Monitoring</u> Mid-Flood 10:13 Mid-Ebb 16:08			<u>Water Quality Monitoring</u> Mid-Ebb 6:43 Mid-Flood 14:24
<b>25-Sep</b>	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	
	<u>Water Quality Monitoring</u> Mid-Ebb 9:25 Mid-Flood 16:44		<u>Water Quality Monitoring</u> Mid-Ebb 11:11 Mid-Flood 17:50		<u>Water Quality Monitoring</u> Mid-Ebb 12:32 Mid-Flood 18:43	

**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
Tentative Impact Water Quality Monitoring Schedule in October 2016**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						<b>1-Oct</b>
<b>2-Oct</b>	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct
	<u>Water Quality Monitoring</u> Mid-Flood 8:08 Mid-Ebb 14:13		<u>Water Quality Monitoring</u> Mid-Flood 9:21 Mid-Ebb 15:14		<u>Water Quality Monitoring</u> Mid-Flood 10:57 Mid-Ebb 16:29	
<b>9-Oct</b>	<b>10-Oct</b>	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct
		<u>Water Quality Monitoring</u> Mid-Ebb 8:18 Mid-Flood 16:05		<u>Water Quality Monitoring</u> Mid-Ebb 10:20 Mid-Flood 17:12		<u>Water Quality Monitoring</u> Mid-Ebb 12:01 Mid-Flood 18:19
<b>16-Oct</b>	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct
	<u>Water Quality Monitoring</u> Mid-Flood 7:31 Mid-Ebb 13:34		<u>Water Quality Monitoring</u> Mid-Flood 9:14 Mid-Ebb 15:06		<u>Water Quality Monitoring</u> Mid-Flood 11:19 Mid-Ebb 16:58	
<b>23-Oct</b>	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
	<u>Water Quality Monitoring</u> Mid-Ebb 7:31 Mid-Flood 15:19		<u>Water Quality Monitoring</u> Mid-Ebb 9:55 Mid-Flood 16:41		<u>Water Quality Monitoring</u> Mid-Ebb 11:29 Mid-Flood 17:35	
<b>30-Oct</b>	31-Oct					
	<u>Water Quality Monitoring</u> Mid-Flood 7:22 Mid-Ebb 13:16					

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
Construction-Phase Dolphin Monitoring in West Lantau (Line Transect Vessel Survey) in September 2016**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Sep	2-Sep	3-Sep
4-Sep	5-Sep	6-Sep	7-Sep	8-Sep	9-Sep	10-Sep
					Line Transect Vessel Survey	
11-Sep	12-Sep	13-Sep	14-Sep	15-Sep	16-Sep	17-Sep
18-Sep	19-Sep	20-Sep	21-Sep	22-Sep	23-Sep	24-Sep
		Line Transect Vessel Survey				
25-Sep	26-Sep	27-Sep	28-Sep	29-Sep	30-Sep	

**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
Tentative Construction-Phase Dolphin Monitoring in West Lantau (Line Transect Vessel Survey) in October 2016**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						<b>1-Oct</b>
<b>2-Oct</b>	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	8-Oct
<b>9-Oct</b>	<b>10-Oct</b>	11-Oct	12-Oct	13-Oct	14-Oct	15-Oct
		Line Transect Vessel Survey				
<b>16-Oct</b>	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	22-Oct
		Line Transect Vessel Survey				
<b>23-Oct</b>	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	29-Oct
<b>30-Oct</b>	31-Oct					

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

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**APPENDIX E  
1-HOUR TSP MONITORING RESULTS  
AND GRAPHICAL PRESENTATION**

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## Appendix E - 1-hour TSP Monitoring Results

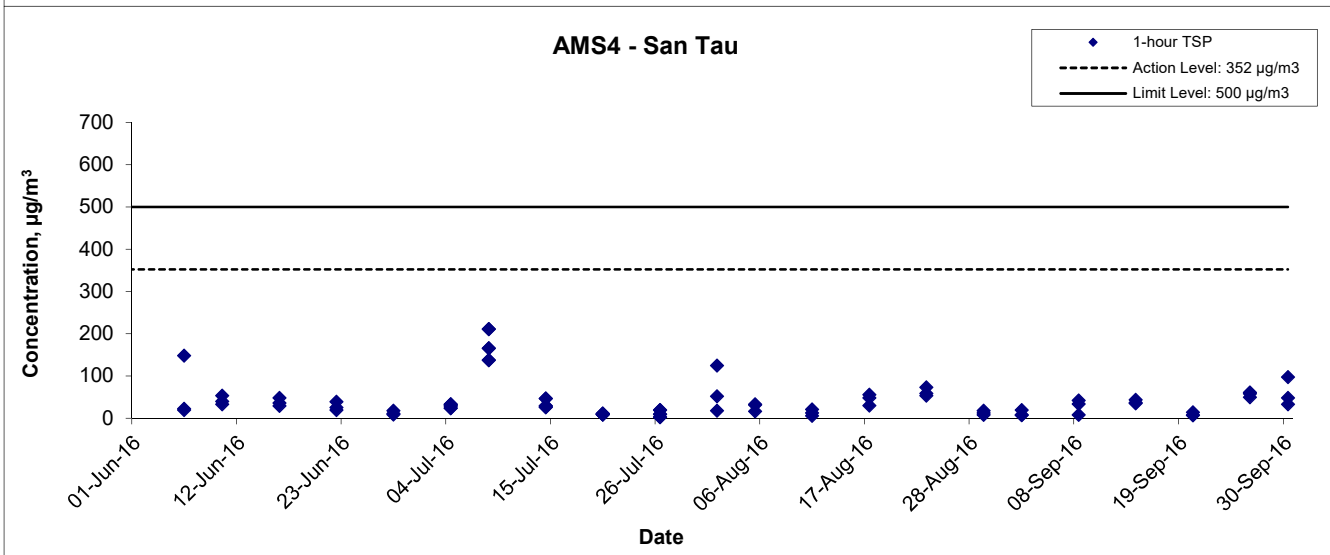
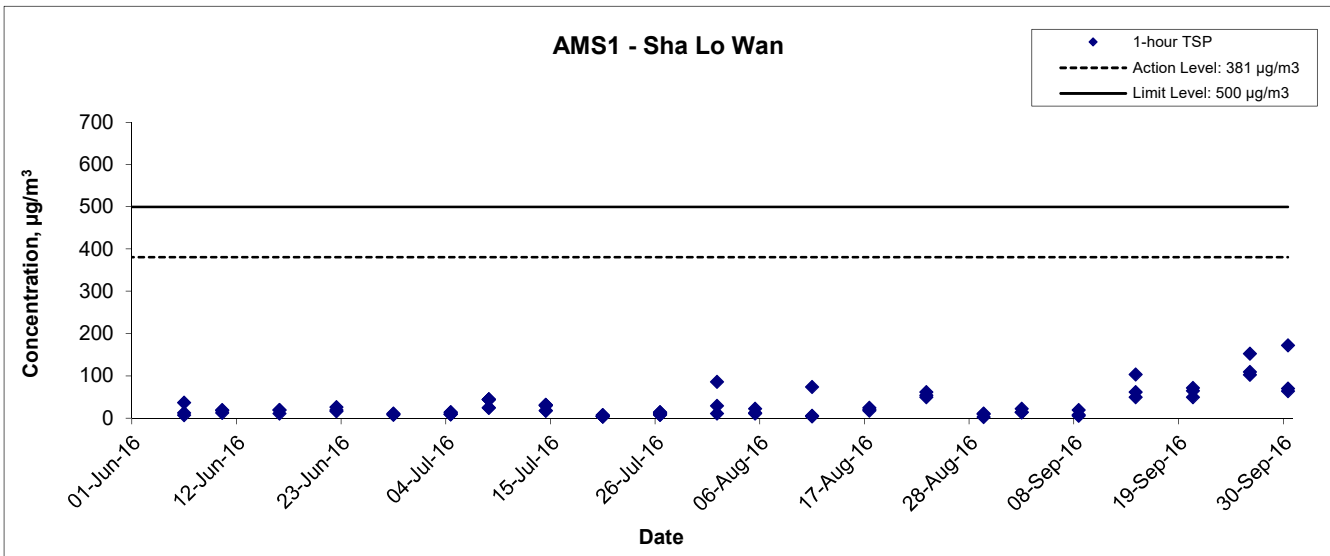
### Location AMS1 - Sha Lo Wan

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
					Initial	Final		Initial	Final		Initial	Final			
2-Sep-16	13:40	Cloudy	301.5	753.6	2.6861	2.6877	0.0016	484.8	485.8	1.0	1.21	1.21	1.21	72.8	22
2-Sep-16	14:40	Cloudy	301.7	753.4	2.6688	2.6698	0.0010	485.8	486.8	1.0	1.21	1.21	1.21	72.7	14
2-Sep-16	15:40	Cloudy	301.9	753.2	2.6711	2.6721	0.0010	486.8	487.8	1.0	1.21	1.21	1.21	72.7	14
8-Sep-16	9:00	Cloudy	299.7	759.3	2.6551	2.6557	0.0006	511.8	512.8	1.0	1.22	1.22	1.22	73.3	8
8-Sep-16	10:00	Cloudy	299.9	759.1	2.6628	2.6632	0.0004	512.8	513.8	1.0	1.22	1.22	1.22	73.2	5
8-Sep-16	11:00	Cloudy	300.1	758.9	2.6497	2.6511	0.0014	513.8	514.8	1.0	1.22	1.22	1.22	73.2	19
14-Sep-16	13:30	Sunny	302.2	756.5	2.6365	2.6440	0.0075	538.8	539.8	1.0	1.21	1.21	1.21	72.8	103
14-Sep-16	14:30	Sunny	302.4	756.3	2.6319	2.6364	0.0045	539.8	540.8	1.0	1.21	1.21	1.21	72.8	62
14-Sep-16	15:30	Sunny	302.6	756.1	2.6358	2.6394	0.0036	540.8	541.8	1.0	1.21	1.21	1.21	72.7	49
20-Sep-16	13:00	Sunny	302.9	758.6	2.8519	2.8555	0.0036	565.8	566.8	1.0	1.21	1.21	1.21	72.8	49
20-Sep-16	14:00	Sunny	303.1	758.4	2.8522	2.8574	0.0052	566.8	567.8	1.0	1.21	1.21	1.21	72.8	71
20-Sep-16	15:00	Sunny	303.3	758.2	2.8371	2.8418	0.0047	567.8	568.8	1.0	1.21	1.21	1.21	72.8	65
26-Sep-16	9:00	Sunny	302.7	759.6	2.8170	2.8245	0.0075	592.8	593.8	1.0	1.22	1.22	1.22	73.0	103
26-Sep-16	10:00	Sunny	302.9	759.4	2.8304	2.8384	0.0080	593.8	594.8	1.0	1.22	1.22	1.22	72.9	110
26-Sep-16	11:00	Sunny	303.1	759.3	2.8307	2.8418	0.0111	594.8	595.8	1.0	1.22	1.21	1.22	72.9	152
30-Sep-16	13:00	Cloudy	300.4	758.3	2.8129	2.8255	0.0126	619.8	620.8	1.0	1.22	1.22	1.22	73.2	172
30-Sep-16	14:00	Cloudy	300.6	758.1	2.8146	2.8193	0.0047	620.8	621.8	1.0	1.22	1.22	1.22	73.2	64
30-Sep-16	15:00	Cloudy	300.8	757.9	2.8166	2.8217	0.0051	621.8	622.8	1.0	1.22	1.22	1.22	73.1	70
														Min	5
														Max	172
														Average	64

### Location AMS4 - San Tau

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
					Initial	Final		Initial	Final		Initial	Final			
2-Sep-16	9:00	Cloudy	301.2	754.3	2.6567	2.6581	0.0014	7530.6	7531.6	1.0	1.22	1.22	1.22	73.5	19
2-Sep-16	10:00	Cloudy	301.4	754.1	2.6715	2.6721	0.0006	7531.6	7532.6	1.0	1.22	1.22	1.22	73.4	8
2-Sep-16	11:00	Cloudy	301.6	753.9	2.6637	2.6642	0.0005	7532.6	7533.6	1.0	1.22	1.22	1.22	73.4	7
8-Sep-16	13:00	Sunny	301.5	757.6	2.6763	2.6769	0.0006	7557.6	7558.6	1.0	1.23	1.23	1.23	73.6	8
8-Sep-16	14:00	Sunny	301.7	757.4	2.6564	2.6589	0.0025	7558.6	7559.6	1.0	1.23	1.23	1.23	73.6	34
8-Sep-16	15:00	Sunny	301.9	757.2	2.6583	2.6614	0.0031	7559.6	7560.6	1.0	1.23	1.23	1.23	73.5	42
14-Sep-16	9:00	Sunny	300.1	759.4	2.6153	2.6185	0.0032	7590.9	7591.9	1.0	1.23	1.23	1.23	73.9	43
14-Sep-16	10:00	Sunny	300.3	759.2	2.6133	2.6160	0.0027	7591.9	7592.9	1.0	1.23	1.23	1.23	73.8	37
14-Sep-16	11:00	Sunny	300.5	759.0	2.6260	2.6286	0.0026	7592.9	7593.9	1.0	1.23	1.23	1.23	73.8	35
20-Sep-16	13:00	Sunny	302.5	756.2	2.6591	2.6596	0.0005	7617.9	7618.9	1.0	1.22	1.22	1.22	73.4	7
20-Sep-16	14:00	Sunny	302.7	756.0	2.6484	2.6489	0.0005	7618.9	7619.9	1.0	1.22	1.22	1.22	73.4	7
20-Sep-16	15:00	Sunny	302.9	755.8	2.6523	2.6533	0.0010	7619.9	7620.9	1.0	1.22	1.22	1.22	73.3	14
26-Sep-16	13:00	Sunny	303.5	757.3	2.8397	2.8433	0.0036	7645.2	7646.2	1.0	1.21	1.21	1.21	72.8	49
26-Sep-16	14:00	Sunny	303.6	757.1	2.8374	2.8416	0.0042	7646.2	7647.2	1.0	1.21	1.21	1.21	72.7	58
26-Sep-16	15:00	Sunny	303.7	756.9	2.8516	2.8560	0.0044	7647.2	7648.2	1.0	1.21	1.21	1.21	72.7	61
30-Sep-16	13:00	Cloudy	301.5	759.4	2.7982	2.8006	0.0024	7672.2	7673.2	1.0	1.22	1.22	1.22	73.1	33
30-Sep-16	14:00	Cloudy	301.7	759.2	2.8307	2.8342	0.0035	7673.2	7674.2	1.0	1.22	1.22	1.22	73.1	48
30-Sep-16	15:00	Cloudy	301.9	759.0	2.8406	2.8477	0.0071	7674.2	7675.2	1.0	1.22	1.22	1.22	73.0	97
														Min	7
														Max	97
														Average	34

### 1-hour TSP Concentration Levels



Title Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill  Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12014	
	Date Sept 16	Appendix E	

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**APPENDIX F  
24-HOUR TSP MONITORING RESULTS  
AND GRAPHICAL PRESENTATION**

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## Appendix F - 24-hour TSP Monitoring Results

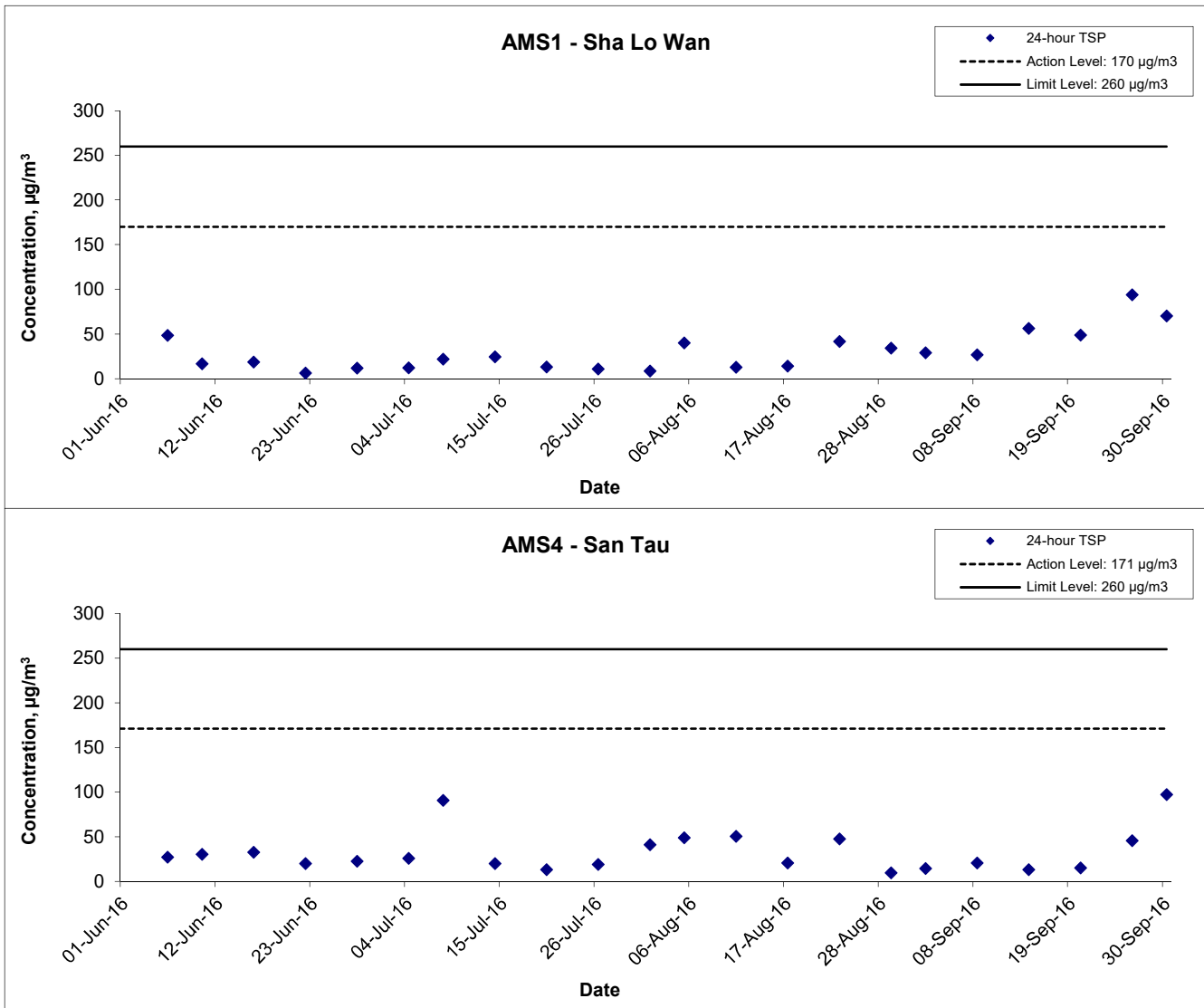
### Location AMS1 - Sha Lo Wan

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
					Initial	Final		Initial	Final		Initial	Final			
2-Sep-16	16:45	Cloudy	302.1	753.0	2.6600	2.7104	0.0504	487.8	511.8	24.0	1.21	1.21	1.21	1743.5	29
8-Sep-16	12:00	Cloudy	300.3	758.7	2.6700	2.7168	0.0468	514.8	538.8	24.0	1.22	1.22	1.22	1756.1	27
14-Sep-16	16:30	Sunny	302.8	755.9	2.6294	2.7275	0.0981	541.8	565.8	24.0	1.21	1.21	1.21	1745.1	56
20-Sep-16	16:15	Sunny	303.5	758.0	2.8529	2.9383	0.0854	568.8	592.8	24.0	1.21	1.21	1.21	1745.4	49
26-Sep-16	12:00	Sunny	303.3	759.1	2.8335	2.9977	0.1642	595.8	619.8	24.0	1.21	1.21	1.21	1749.0	94
30-Sep-16	16:10	Cloudy	301.0	757.7	2.8388	2.9622	0.1234	622.8	646.8	24.0	1.22	1.22	1.22	1754.4	70
														Min	27
														Max	94
														Average	54

### Location AMS4 - San Tau

Sampling Date	Start Time	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Conc. (µg/m <sup>3</sup> )
					Initial	Final		Initial	Final		Initial	Final			
2-Sep-16	12:00	Cloudy	301.8	753.7	2.6587	2.6840	0.0253	7533.6	7557.6	24.0	1.22	1.22	1.22	1760.8	14
8-Sep-16	16:00	Cloudy	302.1	757.0	2.6589	2.6953	0.0364	7560.6	7584.6	24.0	1.23	1.22	1.22	1763.8	21
14-Sep-16	12:00	Sunny	300.7	758.8	2.8264	2.8498	0.0234	7593.9	7617.9	24.0	1.23	1.23	1.23	1770.2	13
20-Sep-16	16:15	Sunny	303.1	755.6	2.6446	2.6710	0.0264	7620.9	7644.9	24.0	1.22	1.22	1.22	1759.2	15
26-Sep-16	16:00	Sunny	303.9	756.7	2.8477	2.9272	0.0795	7648.2	7672.2	24.0	1.21	1.21	1.21	1744.5	46
30-Sep-16	16:05	Cloudy	302.1	758.8	2.8122	2.9824	0.1702	7675.2	7699.2	24.0	1.22	1.22	1.22	1752.2	97
														Min	13
														Max	97
														Average	34

## 24-hour TSP Concentration Levels



Title Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill  Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
	Date Sept 16	Appendix F	

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**APPENDIX G  
NOISE MONITORING RESULTS AND  
GRAPHICAL PRESENTATION**

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**Appendix G - Noise Monitoring Results**

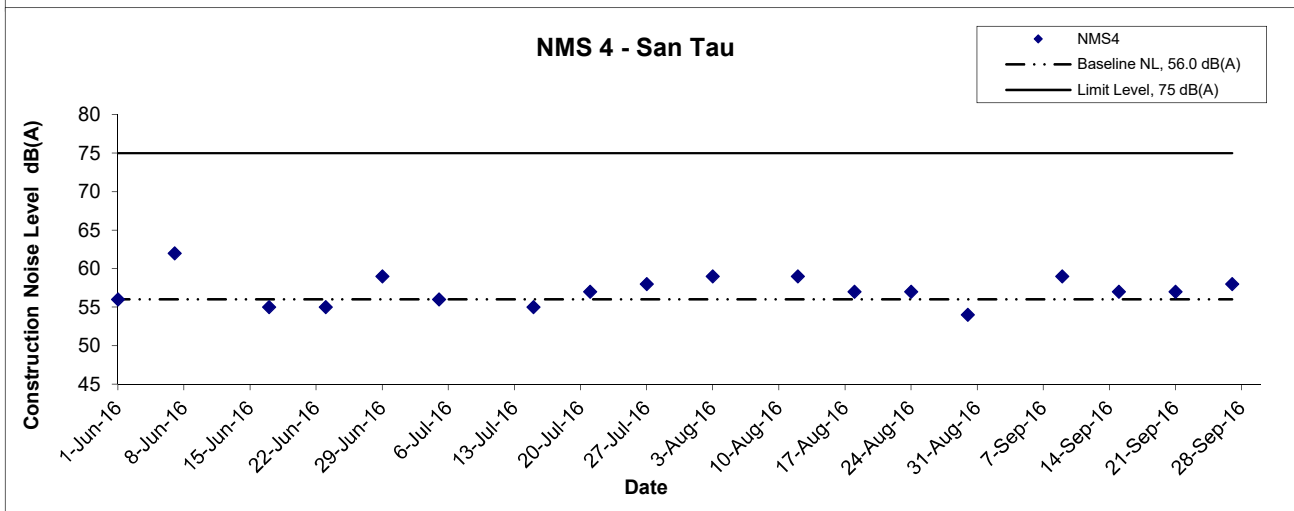
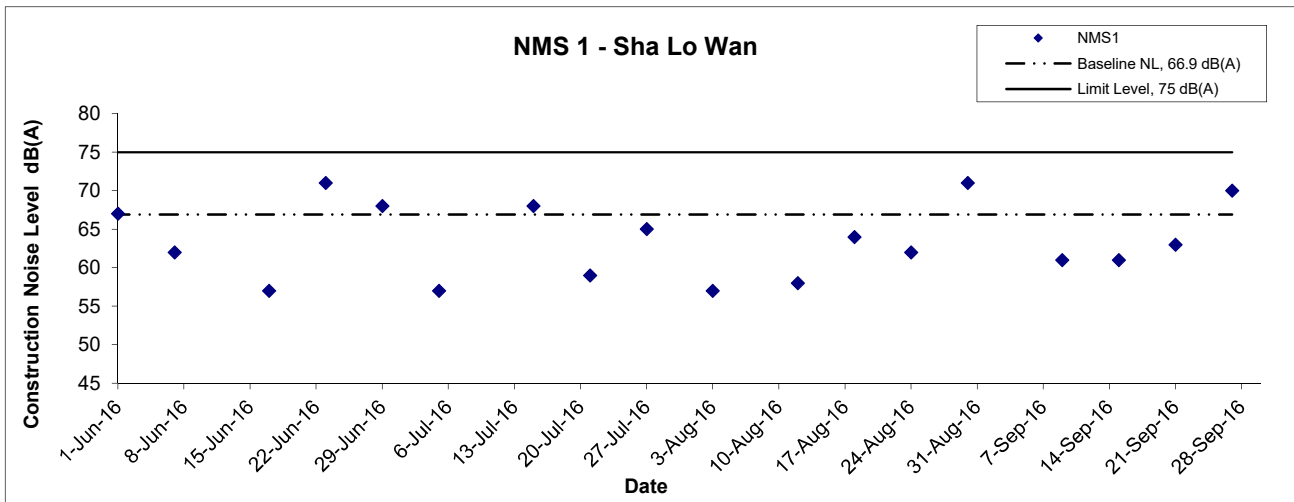
Location NMS 1 - Sha Lo Wan								
Date	Weather	Time	Unit: dB (A) (5-min)			Average L <sub>eq</sub>	Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>			
9-Sep-16	Cloudy	11:30	59.1	60.7	57.2	61	66.9	61 Measured ≤ Limit Level
		11:35	62.1	65.3	57.9			
		11:40	59.5	60.9	57.8			
		11:45	60.4	62.3	57.5			
		11:50	61.8	64.5	57.7			
		11:55	60.2	61.9	57.4			
15-Sep-16	Sunny	15:00	61.8	66.9	52.8	61	66.9	61 Measured ≤ Limit Level
		15:05	60.9	64.0	52.2			
		15:10	61.5	65.7	53.1			
		15:15	61.3	65.9	52.7			
		15:20	59.8	63.2	53.2			
		15:25	59.6	62.3	52.0			
21-Sep-16	Sunny	9:00	63.0	67.5	58.0	63	66.9	63 Measured ≤ Limit Level
		9:05	62.7	68.8	53.5			
		9:10	64.8	66.9	56.4			
		9:15	62.3	66.8	52.8			
		9:20	59.7	66.4	56.0			
		9:25	64.9	66.4	56.5			
27-Sep-16	Sunny	13:00	65.6	71.1	51.7	70	66.9	70 Measured ≤ Limit Level
		13:05	72.0	77.5	54.6			
		13:10	69.9	74.5	57.0			
		13:15	70.5	75.9	54.6			
		13:20	69.0	73.8	53.4			
		13:25	71.8	76.5	54.3			

Remark: \* +3dB(A) Façade correction included

Location NMS 4 - San Tau								
Date	Weather	Time	Unit: dB (A) (5-min)			Average L <sub>eq</sub>	Baseline Level L <sub>eq</sub>	Construction Noise Level L <sub>eq</sub>
			L <sub>eq</sub>	L <sub>10</sub>	L <sub>90</sub>			
9-Sep-16	Cloudy	14:30	59.7	60.7	57.2	59	56.0	59 Measured ≤ Limit Level
		14:35	58.2	59.2	57.1			
		14:40	58.1	58.9	57.2			
		14:45	58.4	58.8	57.1			
		14:50	58.9	59.7	57.1			
		14:55	58.4	59.5	57.2			
15-Sep-16	Sunny	15:55	55.7	56.9	54.2	57	56.0	57 Measured ≤ Limit Level
		16:00	58.2	61.0	54.2			
		16:05	56.2	58.5	54.3			
		16:10	55.9	56.8	54.1			
		16:15	57.2	59.2	54.0			
		16:20	56.2	58.7	54.1			
21-Sep-16	Sunny	10:15	58.5	59.3	49.3	57	56.0	57 Measured ≤ Limit Level
		10:20	55.7	56.4	54.2			
		10:25	56.8	58.9	54.1			
		10:30	57.5	59.4	54.0			
		10:35	56.9	58.7	54.3			
		10:40	57.3	59.2	55.3			
27-Sep-16	Sunny	16:05	56.5	58.9	53.6	58	56.0	58 Measured ≤ Limit Level
		16:10	58.0	60.9	53.6			
		16:15	58.7	61.4	54.3			
		16:20	57.3	60.5	54.6			
		16:25	57.9	60.3	54.1			
		16:30	56.8	59.7	53.2			

Remark: \* +3dB(A) Façade correction included

## Noise Levels



Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill Graphical Presentation of Construction Noise Monitoring Results	Scale	N.T.S	Project No.	MA12014	
	Date	Sep 16	Appendix	G	

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**APPENDIX H  
WATER QUALITY MONITORING  
RESULTS AND GRAPHICAL  
PRESENTATION**

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**Water Quality Monitoring Results at CS1 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Sunny	Rough	13:25	Surface	1	28.2 28.2	28.2	7.5 7.5	7.5	24.1 24.1	24.1	96.6 95.3	96.0	6.6 6.5	6.6	6.4	8.5 8.6	8.6	9.8	8.8 7.4	8.1	7.7
				Middle	5	28.2 28.2	28.2	7.6 7.6	7.6	30.3 30.1	30.2	94.5 94.3	94.4	6.2 6.2	6.2		11.4 10.4	10.9		7.5 8.5	8.0	
				Bottom	9	28.1 28.2	28.2	7.6 7.6	7.6	29.6 29.7	29.7	87.9 87.4	87.7	5.8 5.8	5.8		9.7 9.9	9.8		7.5 6.5	7.0	
5-Sep-16	Cloudy	Moderate	14:20	Surface	1	27.6 27.6	27.6	7.5 7.6	7.6	22.5 22.4	22.5	76.9 78.1	77.5	5.4 5.4	5.4	5.5	4.0 3.7	3.9	5.8	8.7 8.5	8.6	8.4
				Middle	6	27.4 27.4	27.4	7.6 7.6	7.6	24.7 24.8	24.8	79.1 78.0	78.6	5.5 5.4	5.5		5.0 5.3	5.2		8.0 7.6	7.8	
				Bottom	11	27.2 27.2	27.2	7.6 7.6	7.6	27.5 27.5	27.5	80.0 79.4	79.7	5.5 5.4	5.5		8.1 8.2	8.2		9.5 8.1	8.8	
7-Sep-16	Cloudy	Moderate	15:29	Surface	1	28.0 28.1	28.1	7.7 7.7	7.7	28.0 27.9	28.0	96.1 95.6	95.9	6.4 6.4	6.4	6.4	4.6 4.3	4.5	6.4	12.3 8.7	10.5	9.1
				Middle	6.5	27.9 27.9	27.9	7.8 7.8	7.8	30.2 30.4	30.3	95.3 94.9	95.1	6.3 6.3	6.3		5.6 5.9	5.8		7.4 10.1	8.8	
				Bottom	12	27.6 27.6	27.6	7.8 7.8	7.8	33.1 33.0	33.1	95.9 95.9	95.9	6.3 6.3	6.3		8.7 8.8	8.8		8.4 7.5	8.0	
10-Sep-16	Rainy	Rough	07:09	Surface	1	28.3 28.3	28.3	7.8 7.8	7.8	23.7 23.6	23.7	95.2 95.6	95.4	6.5 6.5	6.5	6.3	4.6 4.9	4.8	8.5	2.4 2.2	2.3	2.4
				Middle	4	27.7 27.8	27.8	7.9 7.8	7.9	27.9 27.4	27.7	88.9 88.7	88.8	6.0 6.0	6.0		8.5 8.8	8.7		1.9 3.0	2.5	
				Bottom	7	27.6 27.6	27.6	7.9 7.9	7.9	28.3 28.1	28.2	78.6 78.3	78.5	5.3 5.3	5.3		12.4 11.4	11.9		1.8 3.2	2.5	
12-Sep-16	Sunny	Moderate	08:49	Surface	1	28.7 28.7	28.7	7.7 7.7	7.7	21.0 21.1	21.1	89.3 89.4	89.4	6.2 6.2	6.2	5.7	4.1 4.1	4.1	8.5	10.8 8.0	9.4	8.5
				Middle	6.5	27.0 27.0	27.0	7.7 7.7	7.7	26.6 26.5	26.6	73.8 73.8	73.8	5.1 5.1	5.1		4.9 4.9	4.9		9.2 6.8	8.0	
				Bottom	12	26.5 26.5	26.5	7.8 7.8	7.8	31.3 31.1	31.2	71.2 71.4	71.3	4.8 4.8	4.8		16.5 16.2	16.4		8.7 7.5	8.1	
14-Sep-16	Sunny	Moderate	10:58	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	25.8 25.8	25.8	75.7 74.8	75.3	5.2 5.2	5.2	5.2	6.9 7.0	7.0	7.4	11.3 11.6	11.5	10.8
				Middle	6.5	27.0 27.0	27.0	7.9 7.9	7.9	27.4 27.4	27.4	75.2 74.8	75.0	5.1 5.1	5.1		7.7 7.6	7.7		10.7 9.2	10.0	
				Bottom	12	27.0 27.0	27.0	7.9 7.9	7.9	27.5 27.5	27.5	75.2 75.1	75.2	5.1 5.1	5.1		7.9 7.1	7.5		10.6 11.0	10.8	
17-Sep-16	Sunny	Rough	14:06	Surface	1	28.8 28.6	28.7	7.9 7.9	7.9	23.4 23.8	23.6	87.4 87.2	87.3	5.9 5.9	5.9	5.8	10.2 11.4	10.8	12.1	7.3 7.8	7.6	7.8
				Middle	6	27.9 27.9	27.9	7.9 7.9	7.9	27.1 27.3	27.2	82.6 82.3	82.5	5.6 5.6	5.6		13.1 14.2	13.7		8.5 7.1	7.8	
				Bottom	11	27.7 27.7	27.7	7.9 7.9	7.9	28.3 28.4	28.4	78.2 77.7	78.0	5.3 5.2	5.3		11.2 12.5	11.9		7.1 8.8	8.0	
19-Sep-16	Sunny	Rough	13:50	Surface	1	28.4 28.4	28.4	7.9 7.9	7.9	19.0 18.9	19.0	102.5 101.6	102.1	7.2 7.1	7.2	7.3	6.4 6.7	6.6	7.2	7.1 6.9	7.0	7.3
				Middle	6.5	27.8 27.7	27.8	7.9 7.9	7.9	21.4 21.5	21.5	104.1 103.0	103.6	7.3 7.2	7.3		7.1 7.9	7.5		8.7 7.7	8.2	
				Bottom	12	27.3 27.3	27.3	7.9 7.9	7.9	23.5 23.6	23.6	97.7 98.6	98.2	6.8 6.9	6.9		7.9 7.0	7.5		7.9 5.5	6.7	

**Water Quality Monitoring Results at CS1 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	15:12	Surface	1	28.9 28.9	28.9	8.0 8.0	8.0	25.6 25.6	25.6	93.2 92.3	92.8	6.2 6.2	6.2	6.3	5.9 6.2	6.1	6.7	6.5 6.8	6.7	7.2		
				Middle	6.5	28.3 28.2	28.3	8.0 8.0	8.0	28.0 28.1	28.1	94.9 93.7	94.3	6.3 6.3	6.3		6.6 7.4			7.0			5.8 6.7	6.3
				Bottom	12	27.8 27.8	27.8	7.9 7.9	7.9	30.2 30.2	30.2	88.1 89.1	88.6	5.9 5.9	5.9		7.4 6.5			7.0			11.5 5.5	8.5
24-Sep-16	Sunny	Moderate	07:30	Surface	1	29.0 29.0	29.0	7.9 7.9	7.9	24.7 24.7	24.7	86.7 86.7	86.7	6.3 6.3	6.3	5.8	4.4 4.4	4.4	7.8	4.5 6.4	5.5	5.0		
				Middle	6.5	28.3 28.3	28.3	7.8 7.8	7.8	26.7 26.7	26.7	71.0 71.0	71.0	5.3 5.3	5.3		6.5 6.4			6.5			4.7 4.4	4.6
				Bottom	12	28.0 28.0	28.0	7.8 7.8	7.8	30.0 30.0	30.0	70.3 71.1	70.7	5.2 5.2	5.2		12.5 12.3			12.4			4.4 5.3	4.9
26-Sep-16	Fine	Moderate	09:46	Surface	1	27.0 27.0	27.0	7.6 7.6	7.6	24.2 24.2	24.2	95.8 93.2	94.5	6.7 6.5	6.6	6.6	6.2 5.9	6.1	8.3	6.5 6.1	6.3	6.1		
				Middle	5.5	26.8 26.8	26.8	7.6 7.5	7.6	26.1 26.1	26.1	94.2 93.3	93.8	6.5 6.5	6.5		8.1 8.6			8.4			6.7 5.8	6.3
				Bottom	10	26.6 26.7	26.7	7.6 7.5	7.6	29.4 29.4	29.4	87.0 86.3	86.7	5.9 5.9	5.9		10.1 10.5			10.3			6.8 4.5	5.7
26-Sep-16	Fine	Moderate	09:46	Surface	1	27.0 27.0	27.0	7.6 7.6	7.6	24.2 24.2	24.2	95.8 93.2	94.5	6.7 6.5	6.6	6.6	6.2 5.9	6.1	8.3	6.5 6.1	6.3	6.1		
				Middle	5.5	26.8 26.8	26.8	7.6 7.5	7.6	26.1 26.1	26.1	94.2 93.3	93.8	6.5 6.5	6.5		8.1 8.6			8.4			6.7 5.8	6.3
				Bottom	10	26.6 26.7	26.7	7.6 7.5	7.6	29.4 29.4	29.4	87.0 86.3	86.7	5.9 5.9	5.9		10.1 10.5			10.3			6.8 4.5	5.7
28-Sep-16	Cloudy	Rough	11:55	Surface	1	27.4 27.4	27.4	7.8 7.8	7.8	24.1 25.1	24.6	91.7 87.4	89.6	6.3 6.0	6.2	5.7	5.7 5.6	5.7	9.0	6.0 6.4	6.2	6.7		
				Middle	6.5	26.8 26.8	26.8	7.7 7.7	7.7	26.1 26.9	26.5	72.9 73.5	73.2	5.0 5.1	5.1		7.9 7.6			7.8			7.5 5.8	6.7
				Bottom	12	26.4 26.4	26.4	7.7 7.7	7.7	29.0 28.1	28.6	73.2 75.4	74.3	5.0 5.2	5.1		13.4 13.3			13.4			6.6 7.6	7.1
28-Sep-16	Cloudy	Rough	11:55	Surface	1	27.4 27.4	27.4	7.8 7.8	7.8	24.1 25.1	24.6	91.7 87.4	89.6	6.3 6.0	6.2	5.7	5.7 5.6	5.7	9.0	6.0 6.4	6.2	6.7		
				Middle	6.5	26.8 26.8	26.8	7.7 7.7	7.7	26.1 26.9	26.5	72.9 73.5	73.2	5.0 5.1	5.1		7.9 7.6			7.8			7.5 5.8	6.7
				Bottom	12	26.4 26.4	26.4	7.7 7.7	7.7	29.0 28.1	28.6	73.2 75.4	74.3	5.0 5.2	5.1		13.4 13.3			13.4			6.6 7.6	7.1
30-Sep-16	Cloudy	Rough	13:30	Surface	1	26.2 26.2	26.2	8.0 8.0	8.0	24.5 24.5	24.5	112.0 111.8	111.9	7.9 7.9	7.9	7.7	7.0 7.2	7.1	9.5	8.9 9.3	9.1	9.8		
				Middle	6	25.8 25.8	25.8	7.9 7.9	7.9	26.4 26.4	26.4	109.9 103.4	106.7	7.7 7.3	7.5		10.3 10.1			10.2			12.7 9.5	11.1
				Bottom	11	25.6 25.6	25.6	7.9 7.9	7.9	29.8 29.8	29.8	100.7 97.5	99.1	7.0 6.7	6.9		11.2 11.4			11.3			9.3 9.0	9.2

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



**Water Quality Monitoring Results at CS1 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
2-Sep-16	Fine	Rough	18:48	Surface	1	28.2 28.2	28.2	7.5 7.5	7.5	24.5 24.3	24.4	90.8 90.2	90.5	6.2 6.2	6.2	6.2	10.8 10.5	10.7	11.3	8.7 7.3	8.0	9.2		
				Middle	5.5	28.2 28.2	28.2	7.5 7.5	7.5	26.6 26.8	26.7	90.3 89.9	90.1	6.1 6.0	6.1		11.8 12.1			12.0			10.2 9.3	9.8
				Bottom	10	28.2 28.2	28.2	7.6 7.6	7.6	29.5 29.4	29.5	91.1 91.1	91.1	6.0 6.0	6.0		11.1 11.2			11.2			9.4 10.2	9.8
5-Sep-16	Cloudy	Moderate	09:29	Surface	1	27.6 27.6	27.6	7.6 7.6	7.6	22.2 22.2	22.2	77.9 79.4	78.7	5.4 5.5	5.5	5.5	1.7 1.8	1.8	5.5	7.1 7.4	7.3	7.9		
				Middle	6	27.0 27.0	27.0	7.7 7.7	7.7	28.3 28.2	28.3	80.2 80.6	80.4	5.5 5.5	5.5		8.4 7.4			7.9			7.1 7.5	7.3
				Bottom	11	27.1 27.1	27.1	7.7 7.7	7.7	27.7 27.8	27.8	81.0 79.0	80.0	5.5 5.4	5.5		6.7 6.9			6.8			9.5 8.5	9.0
7-Sep-16	Cloudy	Moderate	10:46	Surface	1	28.0 28.0	28.0	7.8 7.7	7.8	27.7 27.7	27.7	102.0 100.6	101.3	6.8 6.8	6.8	6.7	7.4 7.5	7.5	7.8	9.5 10.0	9.8	9.9		
				Middle	6.5	27.4 27.5	27.5	7.9 7.9	7.9	33.8 33.7	33.8	99.0 98.8	98.9	6.5 6.5	6.5		9.0 8.0			8.5			8.9 9.3	9.1
				Bottom	12	27.6 27.5	27.6	7.9 7.9	7.9	33.2 33.3	33.3	92.6 92.0	92.3	6.1 6.0	6.1		7.3 7.5			7.4			9.3 12.1	10.7
10-Sep-16	Rainy	Rough	14:11	Surface	1	28.4 28.5	28.5	7.8 7.8	7.8	25.4 25.6	25.5	93.0 92.9	93.0	6.3 6.3	6.3	6.2	5.4 5.2	5.3	7.8	2.2 2.6	2.4	2.5		
				Middle	4	27.8 27.9	27.9	7.9 7.9	7.9	28.1 28.2	28.2	87.9 88.7	88.3	5.9 6.0	6.0		8.5 8.2			8.4			2.8 2.4	2.6
				Bottom	7	27.8 27.9	27.9	7.8 7.7	7.8	28.9 29.1	29.0	81.7 83.4	82.6	5.5 5.6	5.6		9.6 9.6			9.6			2.3 2.4	2.4
12-Sep-16	Sunny	Moderate	16:12	Surface	1	29.1 29.1	29.1	7.8 7.8	7.8	21.7 21.7	21.7	89.2 89.0	89.1	6.1 6.1	6.1	5.7	5.7 5.5	5.6	9.3	9.4 8.9	9.2	10.4		
				Middle	6.5	27.4 27.3	27.4	7.7 7.7	7.7	24.5 25.8	25.2	76.2 75.6	75.9	5.3 5.2	5.3		6.6 6.5			6.6			9.8 11.9	10.9
				Bottom	12	26.6 26.6	26.6	7.7 7.7	7.7	31.4 31.4	31.4	73.0 73.1	73.1	4.9 4.9	4.9		15.8 15.8			15.8			8.5 13.5	11.0
14-Sep-16	Fine	Moderate	17:09	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	26.4 26.4	26.4	77.1 76.3	76.7	5.3 5.2	5.3	5.3	6.6 7.7	7.2	7.3	10.2 10.6	10.4	11.0		
				Middle	7	27.0 27.0	27.0	7.8 7.8	7.8	26.9 26.8	26.9	76.1 76.3	76.2	5.2 5.2	5.2		7.2 7.1			7.2			11.5 11.2	11.4
				Bottom	13	26.9 26.9	26.9	7.9 7.9	7.9	27.8 27.1	27.5	76.0 76.2	76.1	5.2 5.2	5.2		7.2 7.6			7.4			10.6 11.9	11.3
17-Sep-16	Fine	Rough	19:33	Surface	1	28.7 28.8	28.8	7.9 7.9	7.9	23.3 23.2	23.3	89.2 87.6	88.4	6.1 6.0	6.1	5.8	10.0 9.9	10.0	12.4	8.7 8.4	8.6	8.1		
				Middle	6	27.8 27.8	27.8	7.9 7.9	7.9	27.3 27.5	27.4	81.6 80.7	81.2	5.5 5.4	5.5		13.2 14.1			13.7			8.1 6.4	7.3
				Bottom	11	27.7 27.7	27.7	7.9 7.9	7.9	28.4 28.4	28.4	77.4 77.4	77.4	5.2 5.2	5.2		13.5 13.5			13.5			8.6 7.9	8.3
19-Sep-16	Sunny	Rough	08:52	Surface	1	27.8 27.8	27.8	7.8 7.8	7.8	20.0 20.0	20.0	85.2 85.6	85.4	6.0 6.0	6.0	6.0	7.5 7.5	7.5	8.8	7.3 7.3	7.3	7.9		
				Middle	6.5	27.2 27.2	27.2	7.8 7.8	7.8	22.1 22.1	22.1	84.1 84.6	84.4	5.9 5.9	5.9		9.1 9.6			9.4			7.9 9.0	8.5
				Bottom	12	26.8 26.8	26.8	7.8 7.8	7.8	23.9 24.0	24.0	80.1 79.4	79.8	5.6 5.6	5.6		9.6 9.1			9.4			7.7 7.8	7.8

### Water Quality Monitoring Results at CS1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	09:55	Surface	1	28.3 28.3	28.3	7.9 7.9	7.9	26.6 26.6	26.6	82.7 83.1	82.9	5.6 5.6	5.6	5.6	7.0 7.0	7.0	8.3	5.1 6.1	5.6	5.4
				Middle	6.5	27.7 27.7	27.7	7.9 7.9	7.9	28.7 28.7	28.7	81.5 82.1	81.8	5.5 5.5	5.5		8.6 9.1	8.9		6.1 4.3	5.2	
				Bottom	12	27.4 27.3	27.4	7.8 7.8	7.8	30.6 30.7	30.7	77.3 76.6	77.0	5.2 5.1	5.2		9.1 8.6	8.9		4.4 6.2	5.3	
24-Sep-16	Sunny	Moderate	14:07	Surface	1	27.8 27.8	27.8	7.9 7.9	7.9	24.0 24.0	24.0	83.2 81.9	82.6	6.2 6.1	6.2	5.9	5.9 6.0	6.0	8.9	5.7 5.2	5.5	5.0
				Middle	6.5	28.8 28.8	28.8	7.9 7.9	7.9	25.6 26.0	25.8	75.0 75.2	75.1	5.5 5.5	5.5		7.3 7.5	7.4		5.5 4.6	5.1	
				Bottom	12	28.0 28.0	28.0	7.8 7.8	7.8	29.9 29.9	29.9	69.5 69.8	69.7	5.1 5.1	5.1		13.2 13.4	13.3		4.8 3.9	4.4	
26-Sep-16	Fine	Moderate	16:55	Surface	1	27.1 27.0	27.1	7.6 7.4	7.5	23.4 23.3	23.4	93.7 92.8	93.3	6.5 6.5	6.5	6.4	7.0 7.0	7.0	9.2	4.1 4.2	4.2	5.2
				Middle	6	26.7 26.6	26.7	7.6 7.3	7.5	24.9 25.2	25.1	92.6 87.3	90.0	6.5 6.1	6.3		9.5 9.4	9.5		8.1 4.2	6.2	
				Bottom	11	26.4 26.4	26.4	7.7 7.4	7.6	29.2 29.1	29.2	83.3 81.9	82.6	5.7 5.6	5.7		11.2 11.0	11.1		5.7 4.5	5.1	
26-Sep-16	Fine	Moderate	16:55	Surface	1	27.1 27.0	27.1	7.6 7.4	7.5	23.4 23.3	23.4	93.7 92.8	93.3	6.5 6.5	6.5	6.4	7.0 7.0	7.0	9.2	4.1 4.2	4.2	5.2
				Middle	6	26.7 26.6	26.7	7.6 7.3	7.5	24.9 25.2	25.1	92.6 87.3	90.0	6.5 6.1	6.3		9.5 9.4	9.5		8.1 4.2	6.2	
				Bottom	11	26.4 26.4	26.4	7.7 7.4	7.6	29.2 29.1	29.2	83.3 81.9	82.6	5.7 5.6	5.7		11.2 11.0	11.1		5.7 4.5	5.1	
28-Sep-16	Cloudy	Rough	17:36	Surface	1	26.2 26.3	26.3	7.8 7.8	7.8	23.9 23.9	23.9	82.6 83.3	83.0	5.8 5.9	5.9	5.6	6.5 7.8	7.2	10.0	7.7 8.2	8.0	7.3
				Middle	6.5	27.2 27.2	27.2	7.8 7.8	7.8	25.8 24.8	25.3	77.6 77.3	77.5	5.3 5.3	5.3		8.2 8.8	8.5		7.2 5.9	6.6	
				Bottom	12	26.4 26.4	26.4	7.7 7.7	7.7	28.5 27.8	28.2	72.5 71.5	72.0	5.0 4.9	5.0		14.2 14.3	14.3		7.4 7.1	7.3	
28-Sep-16	Cloudy	Rough	17:36	Surface	1	26.2 26.3	26.3	7.8 7.8	7.8	23.9 23.9	23.9	82.6 83.3	83.0	5.8 5.9	5.9	5.6	6.5 7.8	7.2	10.0	7.7 8.2	8.0	7.3
				Middle	6.5	27.2 27.2	27.2	7.8 7.8	7.8	25.8 24.8	25.3	77.6 77.3	77.5	5.3 5.3	5.3		8.2 8.8	8.5		7.2 5.9	6.6	
				Bottom	12	26.4 26.4	26.4	7.7 7.7	7.7	28.5 27.8	28.2	72.5 71.5	72.0	5.0 4.9	5.0		14.2 14.3	14.3		7.4 7.1	7.3	
30-Sep-16	Cloudy	Rough	18:21	Surface	1	25.5 25.5	25.5	7.9 8.0	8.0	23.5 23.4	23.5	101.8 100.4	101.1	7.3 7.2	7.3	7.3	6.0 6.4	6.2	8.4	9.8 9.0	9.4	11.1
				Middle	5.5	25.3 25.4	25.4	7.9 7.9	7.9	25.0 25.4	25.2	101.9 100.4	101.2	7.3 7.1	7.2		8.2 8.7	8.5		14.7 11.2	13.0	
				Bottom	10	25.2 25.2	25.2	7.9 7.9	7.9	29.3 29.2	29.3	93.9 92.3	93.1	6.6 6.4	6.5		10.4 10.4	10.4		10.7 11.0	10.9	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at CS2 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Sunny	Rough	12:13	Surface	1	28.3 28.3	28.3	7.4 7.4	7.4	22.8 22.8	22.8	99.2 100.1	99.7	6.8 6.9	6.9	6.7	14.6 14.4	14.5	17.0	44.0 44.3	44.2	65.5
				Middle	4	28.0 28.0	28.0	7.5 7.5	7.5	27.3 27.8	27.6	94.8 93.7	94.3	6.4 6.3	6.4		19.2 19.0	19.1		79.3 82.0	80.7	
				Bottom	7	27.8 27.8	27.8	7.5 7.5	7.5	27.8 29.4	28.6	78.2 77.7	78.0	5.3 5.2	5.3		17.5 17.5	17.5		79.0 64.3	71.7	
5-Sep-16	Cloudy	Moderate	13:41	Surface	1	27.7 27.7	27.7	7.7 7.7	7.7	25.4 25.4	25.4	82.7 82.7	82.7	5.7 5.7	5.7	5.6	5.1 4.8	5.0	6.0	6.0 5.7	5.9	6.2
				Middle	4	27.4 27.4	27.4	7.7 7.7	7.7	26.4 26.3	26.4	79.0 78.8	78.9	5.4 5.4	5.4		6.2 6.1	6.2		6.5 6.9	6.7	
				Bottom	7	27.3 27.3	27.3	7.7 7.7	7.7	27.7 27.7	27.7	76.7 76.3	76.5	5.2 5.2	5.2		6.7 7.0	6.9		5.3 6.9	6.1	
7-Sep-16	Cloudy	Moderate	15:06	Surface	1	28.3 28.3	28.3	7.8 7.8	7.8	28.0 29.2	28.6	104.4 104.4	104.4	7.0 6.9	7.0	6.5	6.4 6.0	6.2	7.1	10.6 11.4	11.0	10.2
				Middle	4	28.1 28.1	28.1	7.7 7.7	7.7	31.0 30.9	31.0	89.1 89.2	89.2	5.9 5.9	5.9		6.6 7.3	7.0		10.1 9.9	10.0	
				Bottom	7	27.9 27.9	27.9	7.7 7.7	7.7	31.9 31.7	31.8	84.8 84.0	84.4	5.6 5.5	5.6		7.8 8.2	8.0		10.4 8.7	9.6	
10-Sep-16	Rainy	Rough	06:24	Surface	1	28.3 28.3	28.3	7.7 7.8	7.8	23.2 23.1	23.2	95.1 95.2	95.2	6.5 6.5	6.5	6.3	4.6 4.8	4.7	8.5	2.6 3.1	2.9	2.6
				Middle	3.5	27.8 27.8	27.8	7.8 7.8	7.8	28.0 27.6	27.8	89.4 89.0	89.2	6.0 6.0	6.0		8.6 8.7	8.7		1.8 3.2	2.5	
				Bottom	6	27.7 27.7	27.7	7.8 7.8	7.8	28.6 28.5	28.6	79.0 78.6	78.8	5.3 5.3	5.3		12.2 11.8	12.0		2.5 2.4	2.5	
12-Sep-16	Sunny	Moderate	08:51	Surface	1	28.5 28.4	28.5	7.8 7.7	7.8	21.1 20.9	21.0	80.6 78.5	79.6	5.6 5.4	5.5	5.6	5.1 5.9	5.5	6.8	4.5 4.3	4.4	4.3
				Middle	4	28.2 28.1	28.2	7.8 7.7	7.8	24.4 24.6	24.5	83.3 83.2	83.3	5.7 5.7	5.7		6.6 6.6	6.6		3.7 4.7	4.2	
				Bottom	7	27.6 27.6	27.6	7.8 7.7	7.8	29.1 29.1	29.1	82.4 82.6	82.5	5.5 5.5	5.5		8.4 8.4	8.4		4.2 4.4	4.3	
14-Sep-16	Sunny	Moderate	10:11	Surface	1	27.7 27.7	27.7	7.7 7.7	7.7	24.1 24.1	24.1	82.9 83.3	83.1	5.7 5.7	5.7	5.3	3.4 3.6	3.5	5.6	11.4 9.7	10.6	9.9
				Middle	4	27.1 27.1	27.1	7.7 7.7	7.7	26.4 25.9	26.2	71.8 71.1	71.5	4.9 4.9	4.9		5.3 5.0	5.2		8.7 10.4	9.6	
				Bottom	7	26.2 26.3	26.3	7.8 7.8	7.8	28.3 28.2	28.3	71.1 70.1	70.6	4.9 4.8	4.9		8.4 7.8	8.1		9.0 9.9	9.5	
17-Sep-16	Sunny	Rough	12:35	Surface	1	28.6 28.7	28.7	8.0 8.0	8.0	21.5 21.1	21.3	83.1 83.4	83.3	5.7 5.7	5.7	5.7	7.1 7.2	7.2	9.2	7.8 5.3	6.6	6.1
				Middle	4	28.4 28.4	28.4	8.0 8.0	8.0	23.2 22.7	23.0	81.2 83.1	82.2	5.6 5.7	5.7		8.7 8.8	8.8		4.8 5.6	5.2	
				Bottom	7	28.4 28.5	28.5	8.0 8.0	8.0	23.9 23.5	23.7	78.7 79.4	79.1	5.4 5.4	5.4		11.9 11.4	11.7		5.7 7.2	6.5	
19-Sep-16	Sunny	Rough	13:17	Surface	1	28.5 28.4	28.5	7.8 7.8	7.8	17.9 17.9	17.9	90.0 90.0	90.0	6.3 6.3	6.3	6.2	7.4 7.1	7.3	9.5	7.2 8.1	7.7	7.3
				Middle	4	28.1 28.1	28.1	7.8 7.8	7.8	19.0 19.3	19.2	87.1 87.1	87.1	6.1 6.1	6.1		9.9 9.7	9.8		6.4 6.9	6.7	
				Bottom	7	27.9 27.9	27.9	7.7 7.8	7.8	20.4 20.5	20.5	83.6 81.9	82.8	5.9 5.7	5.8		11.5 11.3	11.4		7.8 6.9	7.4	

### Water Quality Monitoring Results at CS2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	14:41	Surface	1	28.8 28.8	28.8	7.8 7.8	7.8	27.3 27.3	27.3	86.8 86.5	86.7	5.8 5.7	5.8	5.8	4.1 4.3	4.2	5.8	6.1 6.1	6.1	7.4
				Middle	4	28.4 28.4	28.4	7.9 7.9	7.9	28.7 28.6	28.7	86.1 86.2	86.2	5.7 5.7	5.7		5.5 5.3	5.4		8.8 6.9	7.9	
				Bottom	7	28.0 28.0	28.0	7.9 7.9	7.9	29.4 29.4	29.4	84.3 84.2	84.3	5.6 5.6	5.6	7.7 7.6	7.7	8.1 8.1	8.1			
24-Sep-16	Sunny	Moderate	06:31	Surface	1	28.8 28.8	28.8	8.0 8.1	8.1	24.7 24.7	24.7	84.7 88.9	86.8	6.2 6.5	6.4	5.9	4.7 4.8	4.8	8.0	6.4 5.5	6.0	5.5
				Middle	3.5	28.1 28.1	28.1	8.0 7.7	7.9	26.6 26.7	26.7	70.2 72.3	71.3	5.2 5.4	5.3		7.0 6.8	6.9		5.3 5.0	5.2	
				Bottom	6	27.7 27.8	27.8	7.8 7.9	7.9	30.0 30.0	30.0	67.6 70.9	69.3	5.0 5.3	5.2	12.5 11.9	12.2	5.4 5.1	5.3			
26-Sep-16	Fine	Moderate	08:37	Surface	1	26.5 26.4	26.5	7.6 7.5	7.6	24.2 24.2	24.2	94.0 93.6	93.8	6.6 6.6	6.6	6.6	5.9 5.7	5.8	7.6	6.9 5.0	6.0	6.1
				Middle	4	26.2 26.3	26.3	7.6 7.5	7.6	26.0 26.2	26.1	92.0 92.9	92.5	6.4 6.5	6.5		7.4 8.0	7.7		6.4 6.4	6.4	
				Bottom	7	26.2 26.1	26.2	7.6 7.5	7.6	29.4 29.4	29.4	85.4 84.8	85.1	5.9 5.8	5.9	9.1 9.7	9.4	5.8 6.0	5.9			
26-Sep-16	Fine	Moderate	08:37	Surface	1	26.5 26.4	26.5	7.6 7.5	7.6	24.2 24.2	24.2	94.0 93.6	93.8	6.6 6.6	6.6	6.6	5.9 5.7	5.8	7.6	6.9 5.0	6.0	6.1
				Middle	4	26.2 26.3	26.3	7.6 7.5	7.6	26.0 26.2	26.1	92.0 92.9	92.5	6.4 6.5	6.5		7.4 8.0	7.7		6.4 6.4	6.4	
				Bottom	7	26.2 26.1	26.2	7.6 7.5	7.6	29.4 29.4	29.4	85.4 84.8	85.1	5.9 5.8	5.9	9.1 9.7	9.4	5.8 6.0	5.9			
28-Sep-16	Cloudy	Rough	10:42	Surface	1	26.9 27.0	27.0	7.9 7.9	7.9	24.2 25.1	24.7	89.4 84.9	87.2	6.2 5.9	6.1	5.6	5.1 5.2	5.2	8.3	6.6 6.4	6.5	5.4
				Middle	4	26.3 26.2	26.3	7.7 7.6	7.7	26.1 26.9	26.5	71.0 73.4	72.2	5.0 5.1	5.1		7.5 6.6	7.1		4.7 4.2	4.5	
				Bottom	7	26.0 25.9	26.0	7.7 7.6	7.7	29.0 28.2	28.6	72.9 73.3	73.1	5.0 5.1	5.1	12.5 12.8	12.7	6.3 4.3	5.3			
28-Sep-16	Cloudy	Rough	10:42	Surface	1	26.9 27.0	27.0	7.9 7.9	7.9	24.2 25.1	24.7	89.4 84.9	87.2	6.2 5.9	6.1	5.6	5.1 5.2	5.2	8.3	6.6 6.4	6.5	5.4
				Middle	4	26.3 26.2	26.3	7.7 7.6	7.7	26.1 26.9	26.5	71.0 73.4	72.2	5.0 5.1	5.1		7.5 6.6	7.1		4.7 4.2	4.5	
				Bottom	7	26.0 25.9	26.0	7.7 7.6	7.7	29.0 28.2	28.6	72.9 73.3	73.1	5.0 5.1	5.1	12.5 12.8	12.7	6.3 4.3	5.3			
30-Sep-16	Cloudy	Rough	12:10	Surface	1	26.1 26.0	26.1	7.9 8.0	8.0	24.4 24.5	24.5	113.3 110.3	111.8	8.0 7.8	7.9	7.8	6.4 6.3	6.4	9.1	7.7 8.0	7.9	7.4
				Middle	4	25.6 25.6	25.6	7.9 7.9	7.9	26.5 26.5	26.5	111.5 101.7	106.6	7.9 7.2	7.6		9.8 9.2	9.5		6.5 7.9	7.2	
				Bottom	7	25.4 25.4	25.4	7.8 7.8	7.8	29.7 29.8	29.8	99.8 98.2	99.0	6.9 6.8	6.9	11.3 11.5	11.4	5.8 8.4	7.1			

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at CS2 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	18:23	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	26.0 26.0	26.0	96.2 96.2	96.2	6.5 6.5	6.5	6.4	13.6 14.1	13.9	15.1	59.0 35.3	47.2	41.0
				Middle	4	27.7 27.7	27.7	7.5 7.5	7.5	27.3 28.4	27.9	92.6 92.3	92.5	6.3 6.2	6.3		15.0 14.9	15.0		40.3 34.0	37.2	
				Bottom	7	27.8 27.7	27.8	7.5 7.5	7.5	28.2 27.1	27.7	80.5 80.5	80.5	5.4 5.4	5.4	16.6 16.1	16.4	41.3 35.7		38.5		
5-Sep-16	Cloudy	Moderate	08:20	Surface	1	28.3 28.3	28.3	7.5 7.5	7.5	23.5 23.5	23.5	78.8 77.6	78.2	5.4 5.3	5.4	5.4	3.1 3.1	3.1	5.7	4.7 7.8	6.3	5.7
				Middle	4	27.8 27.8	27.8	7.6 7.6	7.6	26.3 26.2	26.3	77.6 77.4	77.5	5.3 5.3	5.3		7.0 6.7	6.9		5.8 6.0	5.9	
				Bottom	7	27.8 27.8	27.8	7.6 7.6	7.6	27.0 27.0	27.0	76.1 76.0	76.1	5.2 5.1	5.2	6.4 7.8	7.1	5.0 4.5		4.8		
7-Sep-16	Cloudy	Moderate	09:44	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	25.4 25.4	25.4	98.7 100.0	99.4	6.7 6.8	6.8	6.3	8.5 8.4	8.5	9.3	9.5 8.5	9.0	9.0
				Middle	4	28.0 28.0	28.0	7.8 7.8	7.8	29.9 31.7	30.8	86.9 86.6	86.8	5.8 5.7	5.8		8.9 7.8	8.4		8.7 8.6	8.7	
				Bottom	7	27.9 27.9	27.9	7.8 7.8	7.8	32.3 32.3	32.3	79.4 79.6	79.5	5.2 5.2	5.2	10.6 11.6	11.1	10.4 8.0		9.2		
10-Sep-16	Rainy	Rough	13:21	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	24.9 25.1	25.0	93.1 92.6	92.9	6.3 6.3	6.3	6.2	5.4 5.2	5.3	7.9	2.3 2.9	2.6	2.9
				Middle	3.5	27.8 27.9	27.9	7.8 7.8	7.8	27.9 28.1	28.0	88.1 88.7	88.4	5.9 6.0	6.0		8.6 8.5	8.6		2.6 3.3	3.0	
				Bottom	6	27.8 27.8	27.8	7.7 7.7	7.7	28.7 28.7	28.7	81.4 83.4	82.4	5.5 5.6	5.6	9.8 10.0	9.9	3.4 2.7		3.1		
12-Sep-16	Sunny	Moderate	15:34	Surface	1	28.3 28.3	28.3	7.7 7.7	7.7	22.9 23.0	23.0	85.9 86.6	86.3	5.9 5.9	5.9	6.1	4.3 4.9	4.6	6.5	4.8 6.2	5.5	4.3
				Middle	4	28.0 28.0	28.0	7.7 7.7	7.7	26.0 25.8	25.9	91.9 91.5	91.7	6.2 6.2	6.2		5.5 6.0	5.8		3.8 4.8	4.3	
				Bottom	7	27.3 27.4	27.4	7.7 7.7	7.7	27.7 27.6	27.7	81.8 81.7	81.8	5.6 5.5	5.6	9.2 9.0	9.1	4.0 2.4		3.2		
14-Sep-16	Fine	Moderate	16:33	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	25.1 25.1	25.1	90.2 90.0	90.1	6.1 6.1	6.1	5.7	5.5 5.3	5.4	6.8	9.4 12.7	11.1	11.2
				Middle	4	27.9 27.9	27.9	7.8 7.8	7.8	27.2 26.7	27.0	77.4 76.7	77.1	5.2 5.2	5.2		7.1 6.8	7.0		10.6 11.8	11.2	
				Bottom	7	27.4 27.5	27.5	7.9 7.9	7.9	29.0 28.9	29.0	76.7 75.7	76.2	5.2 5.1	5.2	7.8 8.0	7.9	10.7 11.8		11.3		
17-Sep-16	Fine	Rough	18:11	Surface	1	28.8 28.8	28.8	7.9 7.9	7.9	23.0 23.1	23.1	100.8 101.6	101.2	6.9 6.9	6.9	6.8	5.3 4.8	5.1	6.8	6.3 4.4	5.4	5.3
				Middle	4	28.6 28.6	28.6	7.9 7.9	7.9	24.7 24.9	24.8	98.7 98.6	98.7	6.7 6.7	6.7		7.7 8.3	8.0		5.4 7.0	6.2	
				Bottom	7	28.4 28.4	28.4	7.9 7.9	7.9	26.4 26.4	26.4	97.6 97.8	97.7	6.6 6.6	6.6	7.6 7.1	7.4	3.8 4.5		4.2		
19-Sep-16	Sunny	Rough	07:59	Surface	1	27.9 28.0	28.0	7.8 7.8	7.8	18.9 19.1	19.0	93.2 92.8	93.0	6.6 6.5	6.6	6.5	6.8 6.8	6.8	8.4	7.0 6.8	6.9	7.6
				Middle	4	27.7 27.7	27.7	7.8 7.8	7.8	21.5 21.6	21.6	89.3 89.6	89.5	6.2 6.3	6.3		8.2 8.2	8.2		8.3 7.1	7.7	
				Bottom	7	27.4 27.5	27.5	7.6 7.6	7.6	23.0 23.0	23.0	83.3 84.3	83.8	5.8 5.9	5.9	10.3 10.1	10.2	9.4 7.1		8.3		

**Water Quality Monitoring Results at CS2 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	09:07	Surface	1	28.2 28.1	28.2	7.7 7.7	7.7	25.3 25.4	25.4	89.4 89.1	89.3	6.1 6.0	6.1	6.1	5.3 5.6	5.5	10.4	7.5 7.1	7.3	8.8		
				Middle	4	27.9 27.9	27.9	7.8 7.8	7.8	27.9 27.9	27.9	89.2 89.1	89.2	6.0 6.0	6.0		11.7 12.4			12.1			8.7 10.0	9.4
				Bottom	7	27.9 27.9	27.9	7.8 7.8	7.8	27.9 28.0	28.0	88.5 88.2	88.4	5.9 5.9	5.9		13.7 13.4			13.6			11.4 8.1	9.8
24-Sep-16	Sunny	Moderate	14:15	Surface	1	27.6 27.7	27.7	7.8 7.9	7.9	24.0 24.0	24.0	85.8 84.2	85.0	6.3 6.2	6.3	6.0	6.5 6.6	6.6	9.4	5.0 4.5	4.8	4.9		
				Middle	3.5	28.5 28.5	28.5	7.9 7.9	7.9	25.6 26.0	25.8	75.8 74.5	75.2	5.6 5.5	5.6		8.0 8.5			8.3			5.2 3.5	4.4
				Bottom	6	27.8 27.8	27.8	7.9 7.9	7.9	29.9 29.9	29.9	70.3 68.5	69.4	5.2 5.1	5.2		13.6 13.1			13.4			6.5 4.7	5.6
26-Sep-16	Fine	Moderate	15:59	Surface	1	26.6 26.5	26.6	7.5 7.3	7.4	23.4 23.3	23.4	94.8 91.1	93.0	6.7 6.4	6.6	6.4	6.6 6.2	6.4	8.6	6.3 5.0	5.7	5.2		
				Middle	4	26.2 26.1	26.2	7.6 7.3	7.5	24.9 25.2	25.1	90.8 86.0	88.4	6.4 6.0	6.2		8.7 9.6			9.2			5.2 5.5	5.4
				Bottom	7	25.8 25.9	25.9	7.7 7.3	7.5	29.2 29.0	29.1	83.7 80.2	82.0	5.8 5.5	5.7		10.1 10.0			10.1			4.6 4.1	4.4
26-Sep-16	Fine	Moderate	15:59	Surface	1	26.6 26.5	26.6	7.5 7.3	7.4	23.4 23.3	23.4	94.8 91.1	93.0	6.7 6.4	6.6	6.4	6.6 6.2	6.4	8.6	6.3 5.0	5.7	5.2		
				Middle	4	26.2 26.1	26.2	7.6 7.3	7.5	24.9 25.2	25.1	90.8 86.0	88.4	6.4 6.0	6.2		8.7 9.6			9.2			5.2 5.5	5.4
				Bottom	7	25.8 25.9	25.9	7.7 7.3	7.5	29.2 29.0	29.1	83.7 80.2	82.0	5.8 5.5	5.7		10.1 10.0			10.1			4.6 4.1	4.4
28-Sep-16	Cloudy	Rough	16:27	Surface	1	25.7 25.8	25.8	7.6 7.9	7.8	24.0 23.8	23.9	81.0 82.2	81.6	5.8 5.9	5.9	5.6	5.5 5.8	5.7	9.3	5.0 4.1	4.6	5.1		
				Middle	4	26.7 26.7	26.7	7.6 7.9	7.8	25.8 24.8	25.3	76.2 76.7	76.5	5.3 5.3	5.3		7.9 8.0			8.0			6.5 6.3	6.4
				Bottom	7	25.9 26.0	26.0	7.7 7.8	7.8	28.5 27.8	28.2	72.7 70.6	71.7	5.0 4.9	5.0		14.1 14.0			14.1			4.5 4.3	4.4
28-Sep-16	Cloudy	Rough	16:27	Surface	1	25.7 25.8	25.8	7.6 7.9	7.8	24.0 23.8	23.9	81.0 82.2	81.6	5.8 5.9	5.9	5.6	5.5 5.8	5.7	9.3	5.0 4.1	4.6	5.1		
				Middle	4	26.7 26.7	26.7	7.6 7.9	7.8	25.8 24.8	25.3	76.2 76.7	76.5	5.3 5.3	5.3		7.9 8.0			8.0			6.5 6.3	6.4
				Bottom	7	25.9 26.0	26.0	7.7 7.8	7.8	28.5 27.8	28.2	72.7 70.6	71.7	5.0 4.9	5.0		14.1 14.0			14.1			4.5 4.3	4.4
30-Sep-16	Cloudy	Rough	17:21	Surface	1	25.3 25.3	25.3	7.9 8.1	8.0	23.4 23.5	23.5	102.3 99.9	101.1	7.4 7.2	7.3	7.3	5.5 5.9	5.7	7.8	6.2 7.9	7.1	7.1		
				Middle	4	25.1 25.2	25.2	7.9 8.0	8.0	25.1 25.4	25.3	100.8 101.0	100.9	7.2 7.2	7.2		7.8 8.4			8.1			10.0 7.6	8.8
				Bottom	7	25.0 25.0	25.0	7.9 8.0	8.0	29.3 29.3	29.3	91.6 94.4	93.0	6.4 6.6	6.5		9.3 9.7			9.5			5.9 5.0	5.5

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at IS1 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Sunny	Rough	13:17	Surface	1	28.3 28.3	28.3	7.5 7.5	7.5	23.1 23.1	23.1	100.3 101.6	101.0	6.9 7.0	7.0	6.7	13.8 14.0	13.9	15.7	32.3 33.3	32.8	35.7
				Middle	5	27.9 27.9	27.9	7.4 7.4	7.4	27.7 29.4	28.6	93.5 93.4	93.5	6.3 6.2	6.3		14.5 14.8	14.7		42.3 36.0	39.2	
				Bottom	9	27.8 27.8	27.8	7.4 7.4	7.4	30.0 30.0	30.0	90.8 90.8	90.8	6.0 6.0	6.0		18.4 18.6	18.5		41.7 28.7	35.2	
5-Sep-16	Cloudy	Moderate	14:50	Surface	1	27.5 27.5	27.5	7.7 7.7	7.7	25.2 25.3	25.3	81.8 81.7	81.8	5.6 5.6	5.6	5.5	5.7 5.8	5.8	7.5	4.3 5.7	5.0	6.1
				Middle	5	27.4 27.4	27.4	7.7 7.7	7.7	26.9 26.9	26.9	78.0 77.4	77.7	5.3 5.3	5.3		7.7 8.0	7.9		5.7 8.1	6.9	
				Bottom	9	27.3 27.3	27.3	7.7 7.7	7.7	27.5 27.6	27.6	76.1 75.3	75.7	5.2 5.1	5.2		8.7 9.1	8.9		7.3 5.5	6.4	
7-Sep-16	Cloudy	Moderate	16:16	Surface	1	28.2 28.2	28.2	7.8 7.8	7.8	29.3 29.3	29.3	104.5 104.6	104.6	6.9 6.9	6.9	6.6	7.9 8.1	8.0	9.3	11.3 9.2	10.3	12.2
				Middle	5	27.9 27.9	27.9	7.8 7.8	7.8	31.0 30.9	31.0	94.9 94.4	94.7	6.3 6.2	6.3		9.6 9.2	9.4		13.1 15.3	14.2	
				Bottom	9	27.9 27.9	27.9	7.8 7.8	7.8	31.4 30.3	30.9	91.1 90.9	91.0	6.0 6.0	6.0		10.4 10.8	10.6		12.6 11.8	12.2	
10-Sep-16	Rainy	Rough	07:25	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	23.5 23.5	23.5	98.6 98.9	98.8	6.7 6.8	6.8	6.4	6.4 6.2	6.3	8.7	1.5 1.7	1.6	2.1
				Middle	4.5	27.9 27.9	27.9	7.7 7.8	7.8	26.4 26.4	26.4	87.5 88.3	87.9	5.9 6.0	6.0		9.6 9.2	9.4		2.4 2.2	2.3	
				Bottom	8	27.8 27.7	27.8	7.8 7.8	7.8	29.7 29.8	29.8	80.2 80.3	80.3	5.3 5.4	5.4		10.2 10.6	10.4		2.3 2.7	2.5	
12-Sep-16	Sunny	Moderate	09:52	Surface	1	28.6 28.7	28.7	7.8 7.8	7.8	19.1 18.9	19.0	79.5 79.1	79.3	5.5 5.5	5.5	5.4	4.8 4.4	4.6	7.8	3.5 3.2	3.4	3.7
				Middle	5	27.4 27.4	27.4	7.8 7.8	7.8	29.9 30.0	30.0	78.4 78.0	78.2	5.3 5.2	5.3		9.1 9.7	9.4		4.1 3.6	3.9	
				Bottom	9	27.5 27.5	27.5	7.9 7.9	7.9	30.2 30.1	30.2	77.4 77.3	77.4	5.2 5.2	5.2		9.6 9.4	9.5		4.2 3.6	3.9	
14-Sep-16	Sunny	Moderate	11:19	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	24.9 24.9	24.9	86.8 86.8	86.8	5.9 5.9	5.9	5.5	6.0 6.3	6.2	7.1	12.6 10.5	11.6	10.6
				Middle	5	27.6 27.6	27.6	7.9 7.9	7.9	28.1 28.1	28.1	73.6 72.3	73.0	5.0 4.9	5.0		6.9 7.0	7.0		10.7 11.9	11.3	
				Bottom	9	26.8 26.8	26.8	7.9 7.9	7.9	29.1 29.1	29.1	73.5 71.9	72.7	5.0 4.9	5.0		8.2 7.8	8.0		8.7 9.3	9.0	
17-Sep-16	Sunny	Rough	13:40	Surface	1	28.9 28.9	28.9	8.0 8.0	8.0	21.5 21.6	21.6	93.0 96.0	94.5	6.4 6.6	6.5	6.5	6.0 6.1	6.1	7.6	6.3 6.3	6.3	6.1
				Middle	5	29.0 28.9	29.0	8.0 8.0	8.0	22.2 22.2	22.2	94.3 95.0	94.7	6.4 6.5	6.5		8.1 8.1	8.1		4.9 5.7	5.3	
				Bottom	9	27.5 27.6	27.6	7.8 7.8	7.8	31.3 31.1	31.2	76.6 77.2	76.9	5.1 5.1	5.1		8.5 8.9	8.7		5.9 7.4	6.7	
19-Sep-16	Sunny	Rough	14:40	Surface	1	28.6 28.5	28.6	7.8 7.8	7.8	19.1 19.2	19.2	87.8 86.9	87.4	6.1 6.1	6.1	6.0	6.9 7.1	7.0	9.0	6.8 6.3	6.6	6.7
				Middle	4.5	28.2 28.3	28.3	7.7 7.7	7.7	21.2 21.3	21.3	84.8 84.3	84.6	5.9 5.8	5.9		8.8 8.9	8.9		5.3 8.0	6.7	
				Bottom	8	27.8 27.9	27.9	7.6 7.6	7.6	23.1 23.1	23.1	81.3 81.9	81.6	5.6 5.7	5.7		10.9 11.1	11.0		7.6 6.0	6.8	

### Water Quality Monitoring Results at IS1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	15:45	Surface	1	28.7 28.7	28.7	7.9 7.9	7.9	29.0 29.0	29.0	83.2 82.9	83.1	5.5 5.5	5.5	5.5	4.0 4.5	4.3	8.3	9.5 5.7	7.6	7.7
				Middle	5	28.1 28.0	28.1	7.9 7.9	7.9	29.7 29.7	29.7	81.2 81.0	81.1	5.4 5.4	5.4		7.2 8.4	7.8		7.1 6.9	7.0	
				Bottom	9	28.0 28.0	28.0	7.9 7.9	7.9	29.9 29.9	29.9	79.8 79.7	79.8	5.3 5.3	5.3		12.7 12.8	12.8		10.7 6.1	8.4	
24-Sep-16	Sunny	Moderate	07:36	Surface	1	28.7 28.7	28.7	7.8 7.9	7.9	19.7 19.6	19.7	89.8 88.7	89.3	6.5 6.5	6.5	6.1	4.2 4.7	4.5	7.9	3.1 2.2	2.7	3.8
				Middle	4.5	27.7 27.8	27.8	7.9 7.7	7.8	25.8 25.8	25.8	76.2 75.6	75.9	5.6 5.6	5.6		7.1 7.4	7.3		4.8 4.1	4.5	
				Bottom	8	27.5 27.5	27.5	7.8 7.8	7.8	30.3 30.3	30.3	68.7 71.3	70.0	5.1 5.3	5.2		12.4 11.5	12.0		5.1 3.0	4.1	
26-Sep-16	Fine	Moderate	09:42	Surface	1	26.6 26.5	26.6	7.7 7.6	7.7	25.4 25.2	25.3	85.3 83.0	84.2	5.9 5.8	5.9	6.0	4.8 5.4	5.1	5.2	5.6 4.7	5.2	5.1
				Middle	5	26.2 26.1	26.2	7.6 7.7	7.7	29.5 29.6	29.6	86.9 87.9	87.4	6.0 6.0	6.0		5.1 4.9	5.0		6.0 4.7	5.4	
				Bottom	9	26.4 26.5	26.5	7.5 7.5	7.5	19.2 19.2	19.2	76.9 75.6	76.3	5.6 5.5	5.6		5.9 4.9	5.4		5.1 4.4	4.8	
26-Sep-16	Fine	Moderate	09:42	Surface	1	26.6 26.5	26.6	7.7 7.6	7.7	25.4 25.2	25.3	85.3 83.0	84.2	5.9 5.8	5.9	6.0	4.8 5.4	5.1	5.2	5.6 4.7	5.2	5.1
				Middle	5	26.2 26.1	26.2	7.6 7.7	7.7	29.5 29.6	29.6	86.9 87.9	87.4	6.0 6.0	6.0		5.1 4.9	5.0		6.0 4.7	5.4	
				Bottom	9	26.4 26.5	26.5	7.5 7.5	7.5	19.2 19.2	19.2	76.9 75.6	76.3	5.6 5.5	5.6		5.9 4.9	5.4		5.1 4.4	4.8	
28-Sep-16	Cloudy	Rough	11:47	Surface	1	25.8 25.9	25.9	7.8 7.7	7.8	26.1 24.7	25.4	78.9 77.8	78.4	5.5 5.5	5.5	5.4	7.9 7.0	7.5	8.1	6.1 5.3	5.7	5.1
				Middle	5	25.6 25.7	25.7	7.7 7.7	7.7	28.0 28.8	28.4	72.6 74.7	73.7	5.1 5.2	5.2		11.5 12.3	11.9		5.0 5.2	5.1	
				Bottom	9	26.9 26.8	26.9	7.7 7.9	7.8	19.7 19.6	19.7	89.0 88.5	88.8	6.4 6.3	6.4		4.7 5.1	4.9		4.6 4.5	4.6	
28-Sep-16	Cloudy	Rough	11:47	Surface	1	25.8 25.9	25.9	7.8 7.7	7.8	26.1 24.7	25.4	78.9 77.8	78.4	5.5 5.5	5.5	5.4	7.9 7.0	7.5	8.1	6.1 5.3	5.7	5.1
				Middle	5	25.6 25.7	25.7	7.7 7.7	7.7	28.0 28.8	28.4	72.6 74.7	73.7	5.1 5.2	5.2		11.5 12.3	11.9		5.0 5.2	5.1	
				Bottom	9	26.9 26.8	26.9	7.7 7.9	7.8	19.7 19.6	19.7	89.0 88.5	88.8	6.4 6.3	6.4		4.7 5.1	4.9		4.6 4.5	4.6	
30-Sep-16	Cloudy	Rough	13:15	Surface	1	25.8 25.7	25.8	8.3 8.3	8.3	25.7 25.5	25.6	100.2 95.1	97.7	7.1 6.7	6.9	7.0	5.5 5.5	5.5	5.8	6.4 3.9	5.2	5.9
				Middle	5	25.7 25.6	25.7	8.0 8.1	8.1	30.1 30.0	30.1	102.1 99.9	101.0	7.0 6.9	7.0		5.7 6.3	6.0		8.6 4.5	6.6	
				Bottom	9	25.9 25.9	25.9	8.3 8.2	8.3	19.4 19.5	19.5	88.6 88.6	88.6	6.5 6.5	6.5		6.1 5.5	5.8		5.4 6.1	5.8	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



**Water Quality Monitoring Results at IS1 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	19:24	Surface	1	27.9 27.9	27.9	7.5 7.5	7.5	26.1 27.4	26.8	101.2 101.5	101.4	6.9 6.8	6.9	6.6	15.6 15.4	15.5	17.0	38.0 39.7	38.9	36.9
				Middle	5	27.9 27.9	27.9	7.5 7.5	7.5	27.6 27.6	27.6	92.8 93.1	93.0	6.2 6.3	6.3		18.6 18.8	18.7		31.3 35.0	33.2	
				Bottom	9	27.6 27.6	27.6	7.6 7.6	7.6	30.7 29.0	29.9	77.6 77.5	77.6	5.2 5.2	5.2	17.0 16.7	16.9	40.3 36.7		38.5		
5-Sep-16	Cloudy	Moderate	09:19	Surface	1	28.2 28.2	28.2	7.6 7.6	7.6	22.2 22.2	22.2	81.3 81.1	81.2	5.6 5.6	5.6	5.3	3.4 3.5	3.5	5.5	5.7 7.2	6.5	5.3
				Middle	5.5	27.6 27.6	27.6	7.7 7.7	7.7	28.0 28.0	28.0	73.3 72.4	72.9	4.9 4.9	4.9		5.3 5.5	5.4		5.8 5.0	5.4	
				Bottom	10	27.6 27.6	27.6	7.7 7.7	7.7	28.1 28.1	28.1	72.0 72.3	72.2	4.9 4.9	4.9	7.4 7.6	7.5	3.8 4.2		4.0		
7-Sep-16	Cloudy	Moderate	10:45	Surface	1	28.5 28.5	28.5	7.6 7.6	7.6	25.1 25.2	25.2	92.7 92.7	92.7	6.3 6.3	6.3	6.3	7.8 8.8	8.3	8.5	10.1 11.8	11.0	10.2
				Middle	5	28.2 28.2	28.2	7.7 7.7	7.7	27.2 27.2	27.2	93.6 94.0	93.8	6.3 6.3	6.3		7.5 7.0	7.3		11.1 10.4	10.8	
				Bottom	9	27.9 28.0	28.0	7.8 7.8	7.8	31.0 30.9	31.0	87.8 87.3	87.6	5.8 5.8	5.8	9.8 10.0	9.9	9.9 7.9		8.9		
10-Sep-16	Rainy	Rough	14:20	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	24.6 24.6	24.6	98.5 96.9	97.7	6.7 6.6	6.7	6.4	7.0 7.1	7.1	8.5	3.4 2.3	2.9	2.9
				Middle	5	27.8 27.9	27.9	7.8 7.8	7.8	26.8 26.9	26.9	87.4 88.3	87.9	5.9 6.0	6.0		8.8 9.2	9.0		2.2 3.1	2.7	
				Bottom	9	27.8 27.8	27.8	7.9 7.9	7.9	30.4 30.4	30.4	74.3 74.9	74.6	4.9 5.0	5.0	9.4 9.2	9.3	3.3 3.1		3.2		
12-Sep-16	Sunny	Moderate	16:39	Surface	1	27.9 27.9	27.9	7.7 7.7	7.7	23.5 23.5	23.5	84.6 84.6	84.6	5.8 5.8	5.8	5.7	5.5 5.8	5.7	7.2	3.1 4.2	3.7	3.9
				Middle	5	26.7 26.7	26.7	7.7 7.7	7.7	28.9 28.8	28.9	82.5 81.8	82.2	5.6 5.6	5.6		7.0 6.9	7.0		3.9 3.5	3.7	
				Bottom	9	26.6 26.6	26.6	7.7 7.7	7.7	29.5 29.6	29.6	80.0 80.3	80.2	5.4 5.5	5.5	8.9 8.9	8.9	4.0 4.3		4.2		
14-Sep-16	Fine	Moderate	17:35	Surface	1	28.8 28.8	28.8	7.7 7.7	7.7	26.0 26.0	26.0	89.7 89.1	89.4	6.0 6.0	6.0	5.9	5.8 5.4	5.6	7.3	8.9 14.5	11.7	10.8
				Middle	5	27.9 27.9	27.9	7.8 7.8	7.8	26.6 26.6	26.6	83.9 84.5	84.2	5.7 5.7	5.7		7.1 7.5	7.3		9.7 11.1	10.4	
				Bottom	9	27.2 27.2	27.2	7.9 7.9	7.9	29.8 29.8	29.8	77.5 77.4	77.5	5.2 5.2	5.2	9.2 8.6	8.9	11.6 9.2		10.4		
17-Sep-16	Fine	Rough	19:10	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	26.4 24.8	25.6	97.7 98.5	98.1	6.6 6.7	6.7	6.8	7.5 8.3	7.9	7.5	7.1 4.8	6.0	5.6
				Middle	5	28.7 28.5	28.6	7.9 7.9	7.9	23.0 26.4	24.7	101.4 97.8	99.6	6.9 6.6	6.8		6.0 6.2	6.1		4.8 5.4	5.1	
				Bottom	9	28.4 28.4	28.4	8.0 7.9	8.0	26.5 26.5	26.5	99.7 99.3	99.5	6.7 6.7	6.7	8.6 8.6	8.6	5.6 5.8		5.7		
19-Sep-16	Sunny	Rough	09:12	Surface	1	28.2 28.2	28.2	7.9 7.9	7.9	17.7 17.7	17.7	88.1 89.2	88.7	6.2 6.3	6.3	6.2	7.8 8.5	8.2	9.4	9.3 6.1	7.7	7.7
				Middle	4.5	28.0 28.0	28.0	7.9 7.8	7.9	19.4 19.5	19.5	84.8 83.7	84.3	6.0 5.9	6.0		9.5 9.4	9.5		7.3 8.3	7.8	
				Bottom	8	27.8 27.7	27.8	7.8 7.8	7.8	20.7 20.7	20.7	79.9 79.8	79.9	5.6 5.6	5.6	10.6 10.4	10.5	8.0 7.0		7.5		

### Water Quality Monitoring Results at IS1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	10:08	Surface	1	28.1 28.1	28.1	7.9 7.9	7.9	28.6 28.6	28.6	91.7 91.6	91.7	6.1 6.1	6.1	6.1	8.6 9.0	8.8	11.8	11.0 10.6	10.8	13.8
				Middle	5	28.1 28.1	28.1	7.9 7.9	7.9	28.8 28.8	28.8	90.2 90.1	90.2	6.0 6.0	6.0		11.6 11.5	11.6		12.5	18.9	
				Bottom	9	28.0 28.0	28.0	7.9 7.9	7.9	29.1 29.2	29.2	89.4 89.3	89.4	6.0 5.9	6.0		15.1 14.7	14.9		13.4 9.7	11.6	
24-Sep-16	Sunny	Moderate	15:13	Surface	1	28.7 28.7	28.7	8.1 8.1	8.1	19.8 19.7	19.8	91.0 90.3	90.7	6.6 6.6	6.6	6.3	5.4 5.2	5.3	7.5	3.3 4.1	3.7	3.8
				Middle	4.5	27.9 28.0	28.0	7.9 7.9	7.9	24.8 24.9	24.9	81.6 80.4	81.0	6.0 5.9	6.0		7.4 7.4	7.4		5.0 3.7	4.4	
				Bottom	8	27.4 27.5	27.5	7.6 7.9	7.8	30.6 30.5	30.6	70.5 69.7	70.1	5.2 5.2	5.2		9.6 9.9	9.8		3.1 3.3	3.2	
26-Sep-16	Fine	Moderate	16:58	Surface	1	26.4 26.3	26.4	7.5 7.7	7.6	24.4 24.2	24.3	82.0 78.5	80.3	5.8 5.5	5.7	5.8	5.6 5.8	5.7	5.6	5.1 4.1	4.6	5.8
				Middle	5	26.1 26.3	26.2	7.6 7.7	7.7	29.7 29.7	29.7	85.3 84.4	84.9	5.8 5.8	5.8		5.5 5.6	5.6		6.1 5.8	6.0	
				Bottom	9	26.5 26.4	26.5	7.7 7.6	7.7	19.2 19.2	19.2	72.0 73.8	72.9	5.2 5.3	5.3		5.4 5.5	5.5		8.2 5.1	6.7	
26-Sep-16	Fine	Moderate	16:58	Surface	1	26.4 26.3	26.4	7.5 7.7	7.6	24.4 24.2	24.3	82.0 78.5	80.3	5.8 5.5	5.7	5.8	5.6 5.8	5.7	5.6	5.1 4.1	4.6	5.8
				Middle	5	26.1 26.3	26.2	7.6 7.7	7.7	29.7 29.7	29.7	85.3 84.4	84.9	5.8 5.8	5.8		5.5 5.6	5.6		6.1 5.8	6.0	
				Bottom	9	26.5 26.4	26.5	7.7 7.6	7.7	19.2 19.2	19.2	72.0 73.8	72.9	5.2 5.3	5.3		5.4 5.5	5.5		8.2 5.1	6.7	
28-Sep-16	Cloudy	Rough	17:26	Surface	1	26.1 26.2	26.2	7.6 7.8	7.7	24.4 24.2	24.3	81.2 78.2	79.7	5.7 5.5	5.6	5.3	8.5 8.2	8.4	8.1	5.2 4.4	4.8	5.2
				Middle	5	25.6 25.6	25.6	7.8 7.6	7.7	29.3 27.9	28.6	72.1 69.6	70.9	5.0 4.9	5.0		9.9 11.0	10.5		7.3 6.3	6.8	
				Bottom	9	28.4 28.4	28.4	8.1 7.8	8.0	20.5 19.8	20.2	88.9 92.8	90.9	6.2 6.5	6.4		5.4 5.5	5.5		4.7 3.1	3.9	
28-Sep-16	Cloudy	Rough	17:26	Surface	1	26.1 26.2	26.2	7.6 7.8	7.7	24.4 24.2	24.3	81.2 78.2	79.7	5.7 5.5	5.6	5.3	8.5 8.2	8.4	8.1	5.2 4.4	4.8	5.2
				Middle	5	25.6 25.6	25.6	7.8 7.6	7.7	29.3 27.9	28.6	72.1 69.6	70.9	5.0 4.9	5.0		9.9 11.0	10.5		7.3 6.3	6.8	
				Bottom	9	28.4 28.4	28.4	8.1 7.8	8.0	20.5 19.8	20.2	88.9 92.8	90.9	6.2 6.5	6.4		5.4 5.5	5.5		4.7 3.1	3.9	
30-Sep-16	Cloudy	Rough	18:20	Surface	1	25.3 25.4	25.4	8.0 7.9	8.0	24.4 24.2	24.3	94.8 92.0	93.4	6.8 6.6	6.7	6.6	5.0 5.1	5.1	5.3	7.5 9.4	8.5	7.6
				Middle	5	25.0 25.0	25.0	7.9 8.0	8.0	29.9 29.8	29.9	93.1 90.4	91.8	6.5 6.3	6.4		5.3 5.5	5.4		6.4 10.7	8.6	
				Bottom	9	25.2 25.1	25.2	7.9 8.0	8.0	19.4 19.4	19.4	81.3 82.3	81.8	6.0 6.1	6.1		5.7 5.0	5.4		7.2 4.1	5.7	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at IS2 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Sunny	Rough	13:29	Surface	1	28.5	28.5	7.4	7.4	26.4	26.4	94.1	94.1	6.3	6.3	5.9	15.6	15.3	16.1	38.0	46.7	36.9
				Middle	3	27.9	27.9	7.4	7.4	29.0	29.0	81.6	80.7	5.4	5.4		16.7	16.5		32.7	31.7	
				Bottom	5	27.9	27.9	7.4	7.4	29.1	29.1	82.2	82.2	5.5	5.5		16.2	16.5		30.7	32.4	
						27.9	27.9	7.4	7.4	29.1	29.1	82.1	82.2	5.5	5.5		16.8	16.5		34.0	32.4	
5-Sep-16	Cloudy	Moderate	15:04	Surface	1	27.7	27.7	7.7	7.7	23.8	23.8	84.0	83.7	5.8	5.8	5.7	3.9	3.9	4.7	4.0	5.3	5.2
				Middle	3.5	27.6	27.6	7.7	7.7	24.6	24.6	80.7	80.6	5.6	5.6		4.6	4.6		6.8	6.1	
				Bottom	6	27.4	27.4	7.7	7.7	26.0	26.0	79.3	79.1	5.4	5.4		5.6	5.7		5.2	4.3	
						27.4	27.4	7.7	7.7	26.0	26.0	78.8	79.1	5.4	5.4		5.8	5.7		3.3	4.3	
7-Sep-16	Cloudy	Moderate	16:31	Surface	1	28.1	28.1	7.9	7.9	29.9	29.3	98.1	98.5	6.5	6.6	6.2	6.5	6.4	6.6	10.6	10.4	9.8
				Middle	3.5	27.6	27.6	7.9	7.9	34.1	33.3	87.0	86.7	5.7	5.7		7.8	7.9		9.7	9.3	
				Bottom	6	27.6	27.6	7.8	7.8	34.5	34.5	79.6	79.6	5.2	5.2		5.3	5.4		10.0	9.6	
						28.1	28.1	7.9	7.9	28.6	29.3	98.9	98.5	6.6	6.6		6.3	6.4		10.2	10.4	
10-Sep-16	Rainy	Rough	07:38	Surface	1	28.4	28.4	7.8	7.8	23.5	23.5	93.1	93.1	6.4	6.4	5.9	5.0	5.1	8.0	2.7	3.1	2.7
				Middle	3.5	27.9	27.9	7.9	7.9	26.7	26.8	79.4	79.3	5.4	5.4		8.4	8.5		2.1	2.6	
				Bottom	6	27.8	27.8	7.9	7.9	29.4	29.4	76.5	76.3	5.1	5.1		10.3	10.3		2.1	2.4	
						28.4	28.4	7.8	7.8	23.5	23.5	93.1	93.1	6.4	6.4		5.2	5.1		3.4	3.1	
12-Sep-16	Sunny	Moderate	10:04	Surface	1	28.9	28.9	7.8	7.8	18.7	18.7	82.9	83.7	5.8	5.9	5.7	5.5	5.1	7.5	4.0	4.1	4.3
				Middle	3	28.8	28.8	7.8	7.8	19.4	19.6	79.5	79.8	5.5	5.5		8.4	8.2		4.2	4.7	
				Bottom	5	27.6	27.6	7.8	7.8	27.6	27.6	83.2	83.3	5.6	5.6		9.1	9.2		3.9	4.0	
						28.9	28.9	7.8	7.8	18.7	18.7	84.5	83.7	5.9	5.9		4.6	5.1		4.1	4.1	
14-Sep-16	Sunny	Moderate	11:34	Surface	1	27.9	27.9	7.8	7.8	24.1	24.2	85.3	85.4	5.9	5.9	5.8	4.0	4.1	5.8	9.4	11.4	10.7
				Middle	3	27.2	27.2	7.8	7.8	24.9	24.9	81.1	81.2	5.6	5.6		5.5	5.8		10.2	11.2	
				Bottom	5	26.8	26.9	7.9	7.9	26.5	26.5	74.9	74.9	5.2	5.2		7.4	7.6		10.0	9.6	
						27.8	27.9	7.8	7.8	24.2	24.2	85.4	85.4	5.9	5.9		4.1	4.1		13.3	11.4	
17-Sep-16	Sunny	Rough	13:54	Surface	1	28.9	28.9	8.0	8.0	21.6	21.6	92.9	94.5	6.4	6.5	6.5	5.8	5.9	7.5	7.0	6.3	5.1
				Middle	3.5	28.9	28.9	8.0	8.0	22.2	22.2	94.2	94.7	6.4	6.5		8.2	8.2		3.2	3.9	
				Bottom	6	27.5	27.6	7.8	7.8	31.3	31.2	77.2	77.5	5.1	5.2		8.4	8.5		4.4	5.1	
						28.9	28.9	8.0	8.0	21.6	21.6	96.0	94.5	6.6	6.5		6.0	5.9		5.5	6.3	
19-Sep-16	Sunny	Rough	14:56	Surface	1	28.6	28.6	7.9	7.9	18.6	18.6	86.0	85.6	6.0	6.0	5.9	8.3	8.3	10.2	6.9	7.5	6.9
				Middle	3	28.3	28.3	7.8	7.8	20.1	20.1	82.1	82.3	5.7	5.7		10.7	10.5		6.8	6.3	
				Bottom	5	28.2	28.2	7.7	7.7	20.0	21.2	80.4	80.2	5.6	5.6		11.9	11.7		7.3	6.9	
						28.6	28.6	7.8	7.9	18.6	18.6	85.2	85.6	6.0	6.0		8.3	8.3		8.1	7.5	

### Water Quality Monitoring Results at IS2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	16:07	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	29.2 29.2	29.2	82.7 81.7	82.2	5.5 5.4	5.5	5.4	4.7 4.7	4.7	6.0	8.1 5.1	6.6	8.7
				Middle	3	28.4 28.3	28.4	7.9 7.9	7.9	29.3 29.4	29.4	80.8 80.6	80.7	5.3 5.3	5.3		5.4 5.6	5.5		7.5 7.2	7.4	
				Bottom	5	28.1 28.1	28.1	7.9 7.9	7.9	29.6 29.6	29.6	79.9 79.2	79.6	5.3 5.3	5.3		7.7 8.1	7.9		14.5 9.5	12.0	
24-Sep-16	Sunny	Moderate	07:50	Surface	1	28.4 28.4	28.4	7.9 7.8	7.9	25.4 25.4	25.4	83.1 85.6	84.4	6.1 6.2	6.2	6.0	5.3 5.2	5.3	8.9	4.6 4.4	4.5	4.8
				Middle	3.5	27.8 27.8	27.8	7.9 7.8	7.9	26.7 26.8	26.8	75.8 78.0	76.9	5.6 5.7	5.7		7.7 7.3	7.5		4.3 5.5	4.9	
				Bottom	6	27.8 27.7	27.8	7.8 7.8	7.8	30.3 30.5	30.4	73.5 71.3	72.4	5.4 5.3	5.4		14.0 13.6	13.8		6.4 3.4	4.9	
26-Sep-16	Fine	Moderate	09:56	Surface	1	26.6 26.6	26.6	7.6 7.7	7.7	19.6 19.6	19.6	94.3 91.0	92.7	6.8 6.5	6.7	6.6	5.9 6.6	6.3	8.1	7.1 6.2	6.7	6.6
				Middle	3.5	26.4 26.4	26.4	7.6 7.7	7.7	26.0 26.1	26.1	92.9 91.9	92.4	6.5 6.4	6.5		7.5 8.6	8.1		7.0 6.0	6.5	
				Bottom	6	26.0 26.0	26.0	7.8 7.5	7.7	29.6 29.8	29.7	83.4 83.7	83.6	5.7 5.7	5.7		10.0 9.6	9.8		6.7 6.5	6.6	
26-Sep-16	Fine	Moderate	09:56	Surface	1	26.6 26.6	26.6	7.6 7.7	7.7	19.6 19.6	19.6	94.3 91.0	92.7	6.8 6.5	6.7	6.6	5.9 6.6	6.3	8.1	7.1 6.2	6.7	6.6
				Middle	3.5	26.4 26.4	26.4	7.6 7.7	7.7	26.0 26.1	26.1	92.9 91.9	92.4	6.5 6.4	6.5		7.5 8.6	8.1		7.0 6.0	6.5	
				Bottom	6	26.0 26.0	26.0	7.8 7.5	7.7	29.6 29.8	29.7	83.4 83.7	83.6	5.7 5.7	5.7		10.0 9.6	9.8		6.7 6.5	6.6	
28-Sep-16	Cloudy	Rough	12:01	Surface	1	26.7 26.6	26.7	7.7 7.6	7.7	19.8 19.5	19.7	81.0 82.8	81.9	5.8 6.0	5.9	5.5	8.3 7.6	8.0	9.4	4.5 4.4	4.5	4.6
				Middle	3.5	26.2 26.3	26.3	7.9 7.7	7.8	26.1 26.9	26.5	73.1 73.4	73.3	5.1 5.1	5.1		7.1 7.0	7.1		4.4 4.7	4.6	
				Bottom	6	25.9 25.9	25.9	7.6 7.9	7.8	29.4 31.1	30.3	79.0 73.0	76.0	5.4 5.0	5.2		13.5 12.7	13.1		5.2 4.2	4.7	
28-Sep-16	Cloudy	Rough	12:01	Surface	1	26.7 26.6	26.7	7.7 7.6	7.7	19.8 19.5	19.7	81.0 82.8	81.9	5.8 6.0	5.9	5.5	8.3 7.6	8.0	9.4	4.5 4.4	4.5	4.6
				Middle	3.5	26.2 26.3	26.3	7.9 7.7	7.8	26.1 26.9	26.5	73.1 73.4	73.3	5.1 5.1	5.1		7.1 7.0	7.1		4.4 4.7	4.6	
				Bottom	6	25.9 25.9	25.9	7.6 7.9	7.8	29.4 31.1	30.3	79.0 73.0	76.0	5.4 5.0	5.2		13.5 12.7	13.1		5.2 4.2	4.7	
30-Sep-16	Cloudy	Rough	13:29	Surface	1	25.8 25.8	25.8	8.1 8.1	8.1	19.9 19.9	19.9	108.2 106.4	107.3	7.9 7.7	7.8	7.7	5.4 5.7	5.6	8.7	7.2 5.9	6.6	7.3
				Middle	3	25.6 25.6	25.6	7.9 7.9	7.9	26.4 26.5	26.5	109.8 103.1	106.5	7.7 7.3	7.5		10.3 10.0	10.2		6.0 6.3	6.2	
				Bottom	5	24.7 24.6	24.7	7.9 7.9	7.9	29.9 30.2	30.1	97.5 99.5	98.5	6.8 7.0	6.9		10.4 10.3	10.4		9.7 8.4	9.1	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at IS2 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	19:39	Surface	1	28.2 28.2	28.2	7.6 7.6	7.6	24.9 26.1	25.5	95.1 95.1	95.1	6.5 6.4	6.5	6.3	14.6 14.6	14.6	15.5	30.3 37.0	33.7	36.4
				Middle	3.5	28.0 28.0	28.0	7.6 7.6	7.6	27.9 27.8	27.9	89.9 90.0	90.0	6.0 6.0	6.0		14.9 14.7	14.8		44.3 42.7	43.5	
				Bottom	6	27.8 27.8	27.8	7.6 7.6	7.6	28.7 28.6	28.7	90.2 89.3	89.8	6.0 6.0	6.0		16.9 17.1	17.0		36.7 27.0	31.9	
5-Sep-16	Cloudy	Moderate	09:34	Surface	1	28.1 28.1	28.1	7.6 7.6	7.6	24.0 23.9	24.0	78.0 77.7	77.9	5.3 5.3	5.3	5.3	4.8 4.8	4.8	6.1	6.2 5.4	5.8	5.6
				Middle	3.5	27.9 27.9	27.9	7.7 7.7	7.7	24.5 24.6	24.6	76.8 76.5	76.7	5.3 5.2	5.3		5.4 5.6	5.5		5.9 6.0	6.0	
				Bottom	6	27.8 27.8	27.8	7.7 7.7	7.7	26.5 26.5	26.5	76.1 74.3	75.2	5.2 5.0	5.1		7.9 7.9	7.9		5.0 4.8	4.9	
7-Sep-16	Cloudy	Moderate	10:57	Surface	1	28.6 28.6	28.6	7.8 7.8	7.8	28.6 28.6	28.6	102.5 102.5	102.5	6.8 6.8	6.8	6.4	5.5 5.1	5.3	6.7	9.5 11.0	10.3	11.6
				Middle	3.5	28.0 28.0	28.0	7.8 7.8	7.8	31.2 31.2	31.2	89.9 88.1	89.0	5.9 5.8	5.9		6.0 6.6	6.3		13.2 12.5	12.9	
				Bottom	6	28.0 28.0	28.0	7.8 7.8	7.8	31.4 31.4	31.4	86.0 85.8	85.9	5.7 5.6	5.7		8.4 8.8	8.6		12.4 10.8	11.6	
10-Sep-16	Rainy	Rough	14:34	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	24.7 24.9	24.8	94.2 93.9	94.1	6.4 6.4	6.4	6.2	5.2 5.4	5.3	7.1	2.0 2.2	2.1	2.3
				Middle	3.5	27.9 27.9	27.9	7.8 7.8	7.8	27.3 27.3	27.3	86.7 89.0	87.9	5.8 6.0	5.9		7.2 7.5	7.4		2.1 2.6	2.4	
				Bottom	6	27.8 27.8	27.8	7.8 7.8	7.8	30.3 30.3	30.3	83.8 83.4	83.6	5.6 5.5	5.6		8.6 8.5	8.6		2.9 2.1	2.5	
12-Sep-16	Sunny	Moderate	16:53	Surface	1	28.3 28.4	28.4	7.7 7.7	7.7	23.3 23.3	23.3	81.5 81.1	81.3	5.6 5.5	5.6	5.5	4.6 4.8	4.7	6.5	3.6 4.9	4.3	4.0
				Middle	3.5	26.7 26.7	26.7	7.7 7.6	7.7	29.2 29.3	29.3	78.6 78.4	78.5	5.3 5.3	5.3		4.9 5.2	5.1		3.7 4.2	4.0	
				Bottom	6	26.7 26.7	26.7	7.6 7.6	7.6	29.8 29.7	29.8	77.7 78.1	77.9	5.3 5.3	5.3		9.3 9.9	9.6		4.2 2.9	3.6	
14-Sep-16	Fine	Moderate	17:51	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	26.4 26.4	26.4	88.0 88.0	88.0	5.9 5.9	5.9	5.8	7.0 7.4	7.2	8.1	8.8 12.5	10.7	10.9
				Middle	3.5	27.7 27.7	27.7	7.9 7.8	7.9	27.1 27.2	27.2	83.3 82.9	83.1	5.6 5.6	5.6		7.9 8.1	8.0		9.6 12.3	11.0	
				Bottom	6	27.4 27.4	27.4	8.0 8.0	8.0	27.6 27.5	27.6	75.8 75.6	75.7	5.1 5.1	5.1		9.2 8.9	9.1		11.4 10.3	10.9	
17-Sep-16	Fine	Rough	19:22	Surface	1	28.4 28.6	28.5	7.9 7.9	7.9	26.4 24.8	25.6	97.6 98.6	98.1	6.6 6.7	6.7	6.8	7.6 8.2	7.9	7.7	5.3 4.3	4.8	4.8
				Middle	3	28.7 28.4	28.6	7.9 7.9	7.9	23.0 26.4	24.7	101.4 97.8	99.6	6.9 6.6	6.8		6.5 6.5	6.5		4.4 3.4	3.9	
				Bottom	5	28.4 28.4	28.4	7.9 7.9	7.9	26.5 26.5	26.5	99.6 99.3	99.5	6.7 6.7	6.7		8.6 8.7	8.7		6.5 4.8	5.7	
19-Sep-16	Sunny	Rough	09:29	Surface	1	28.3 28.3	28.3	7.9 7.9	7.9	18.4 17.9	18.2	87.1 86.4	86.8	6.1 6.1	6.1	6.0	8.3 8.1	8.2	9.9	6.5 6.4	6.5	6.7
				Middle	3	28.1 28.1	28.1	7.8 7.8	7.8	19.6 19.7	19.7	83.2 82.3	82.8	5.8 5.8	5.8		10.0 9.7	9.9		7.2 5.8	6.5	
				Bottom	5	28.0 28.0	28.0	7.7 7.7	7.7	21.5 21.5	21.5	79.4 79.1	79.3	5.5 5.5	5.5		11.6 11.4	11.5		7.5 6.8	7.2	

### Water Quality Monitoring Results at IS2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	10:23	Surface	1	28.2 28.2	28.2	7.9 7.9	7.9	28.3 28.3	28.3	92.0 91.6	91.8	6.1 6.1	6.1	6.1	7.7 7.8	7.8	11.3	12.9 9.8	11.4	11.5
				Middle	3.5	28.0 28.1	28.1	7.9 7.9	7.9	28.7 28.7	28.7	91.5 91.4	91.5	6.1 6.1	6.1		12.2 11.6	11.9		11.6 11.0	11.3	
				Bottom	6	28.0 28.0	28.0	7.9 7.9	7.9	28.8 28.8	28.8	91.1 90.9	91.0	6.1 6.1	6.1		14.2 14.4	14.3		14.2 9.1	11.7	
24-Sep-16	Sunny	Moderate	15:25	Surface	1	28.6 28.4	28.5	8.0 8.0	8.0	25.1 25.1	25.1	88.1 88.8	88.5	6.4 6.5	6.5	6.2	5.9 6.1	6.0	8.5	3.9 3.7	3.8	3.6
				Middle	3.5	27.5 27.5	27.5	8.0 7.8	7.9	26.7 26.8	26.8	79.9 80.1	80.0	5.9 5.9	5.9		8.6 8.2	8.4		4.2 3.9	4.1	
				Bottom	6	27.4 27.5	27.5	7.8 7.8	7.8	29.7 29.0	29.4	68.9 70.2	69.6	5.1 5.2	5.2		11.0 10.9	11.0		2.4 3.1	2.8	
26-Sep-16	Fine	Moderate	17:11	Surface	1	26.1 26.2	26.2	7.6 7.7	7.7	18.4 18.5	18.5	91.8 92.7	92.3	6.7 6.8	6.8	6.6	5.3 5.3	5.3	8.5	5.8 4.9	5.4	5.2
				Middle	3.5	26.2 26.2	26.2	7.4 7.3	7.4	24.9 25.3	25.1	91.0 88.8	89.9	6.4 6.2	6.3		9.2 9.6	9.4		5.7 5.1	5.4	
				Bottom	6	25.3 25.2	25.3	7.6 7.5	7.6	29.0 28.3	28.7	81.4 83.2	82.3	5.7 5.8	5.8		11.2 10.2	10.7		5.1 4.7	4.9	
26-Sep-16	Fine	Moderate	17:11	Surface	1	26.1 26.2	26.2	7.6 7.7	7.7	18.4 18.5	18.5	91.8 92.7	92.3	6.7 6.8	6.8	6.6	5.3 5.3	5.3	8.5	5.8 4.9	5.4	5.2
				Middle	3.5	26.2 26.2	26.2	7.4 7.3	7.4	24.9 25.3	25.1	91.0 88.8	89.9	6.4 6.2	6.3		9.2 9.6	9.4		5.7 5.1	5.4	
				Bottom	6	25.3 25.2	25.3	7.6 7.5	7.6	29.0 28.3	28.7	81.4 83.2	82.3	5.7 5.8	5.8		11.2 10.2	10.7		5.1 4.7	4.9	
28-Sep-16	Cloudy	Rough	17:38	Surface	1	28.0 28.0	28.0	7.8 7.5	7.7	19.0 19.1	19.1	90.4 87.2	88.8	6.4 6.1	6.3	5.9	6.8 6.9	6.9	9.0	5.1 4.3	4.7	4.8
				Middle	3.5	26.6 26.7	26.7	7.8 7.8	7.8	25.9 24.8	25.4	77.4 77.1	77.3	5.4 5.4	5.4		8.5 8.3	8.4		4.6 3.5	4.1	
				Bottom	6	25.6 25.5	25.6	7.6 7.6	7.6	28.1 28.7	28.4	73.6 73.6	73.6	5.1 5.1	5.1		11.5 12.1	11.8		6.5 4.8	5.7	
28-Sep-16	Cloudy	Rough	17:38	Surface	1	28.0 28.0	28.0	7.8 7.5	7.7	19.0 19.1	19.1	90.4 87.2	88.8	6.4 6.1	6.3	5.9	6.8 6.9	6.9	9.0	5.1 4.3	4.7	4.8
				Middle	3.5	26.6 26.7	26.7	7.8 7.8	7.8	25.9 24.8	25.4	77.4 77.1	77.3	5.4 5.4	5.4		8.5 8.3	8.4		4.6 3.5	4.1	
				Bottom	6	25.6 25.5	25.6	7.6 7.6	7.6	28.1 28.7	28.4	73.6 73.6	73.6	5.1 5.1	5.1		11.5 12.1	11.8		6.5 4.8	5.7	
30-Sep-16	Cloudy	Rough	18:32	Surface	1	25.3 25.4	25.4	8.3 8.1	8.2	18.4 18.4	18.4	101.5 103.3	102.4	7.5 7.6	7.6	7.4	5.8 6.3	6.1	8.1	7.4 7.4	7.4	6.9
				Middle	3.5	25.0 25.3	25.2	8.0 8.0	8.0	25.0 25.3	25.2	102.3 98.8	100.6	7.3 7.0	7.2		7.3 8.2	7.8		7.2 7.1	7.2	
				Bottom	6	24.8 24.9	24.9	8.0 7.8	7.9	29.2 28.4	28.8	93.1 92.0	92.6	6.5 6.5	6.5		10.2 10.3	10.3		6.0 5.9	6.0	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at IS3 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
2-Sep-16	Sunny	Rough	13:04	Surface	1	28.2 28.2	28.2	7.6 7.6	7.6	26.6 26.6	26.6	106.1 103.5	104.8	7.1 7.0	7.1	7.1	9.9 10.0	10.0	9.5	7.0 7.3	7.2	7.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.6	28.2 28.2	28.2	7.6 7.6	7.6	27.9 27.9	27.9	97.9 98.3	98.1	6.5 6.6	6.6		9.0 9.0	9.0		8.1 7.9	8.0				
5-Sep-16	Cloudy	Moderate	14:45	Surface	1	27.6 27.6	27.6	7.6 7.6	7.6	24.6 24.6	24.6	77.1 79.2	78.2	5.3 5.5	5.4	5.4	3.7 3.5	3.6	6.5	7.5 7.9	7.7	7.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.4 27.4	27.4	7.6 7.6	7.6	25.4 25.3	25.4	77.7 79.4	78.6	5.3 5.5	5.4		9.3 9.5	9.4		7.7 7.4	7.6				
7-Sep-16	Cloudy	Moderate	15:51	Surface	1	28.0 28.0	28.0	7.7 7.7	7.7	30.1 30.1	30.1	99.6 97.4	98.5	6.6 6.5	6.6	6.6	4.3 4.1	4.2	7.1	8.1 9.3	8.7	8.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.9 27.9	27.9	7.7 7.7	7.7	30.9 30.8	30.9	97.2 97.4	97.3	6.4 6.4	6.4		9.9 10.1	10.0		8.0 8.8	8.4				
10-Sep-16	Rainy	Rough	06:56	Surface	1	28.3 28.4	28.4	7.8 7.8	7.8	24.0 24.0	24.0	98.3 99.4	98.9	6.7 6.8	6.8	6.8	6.5 6.3	6.4	7.9	2.2 2.8	2.5	2.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	27.9 27.9	27.9	7.8 7.8	7.8	26.2 26.1	26.2	87.2 88.1	87.7	5.9 6.0	6.0		9.4 9.1	9.3		2.1 2.7	2.4				
12-Sep-16	Sunny	Moderate	08:36	Surface	1	27.9 28.0	28.0	7.7 7.7	7.7	21.3 21.6	21.5	82.3 82.5	82.4	5.7 5.7	5.7	5.7	5.1 5.4	5.3	7.8	8.0 7.8	7.9	8.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.7 27.8	27.8	7.9 7.9	7.9	21.7 22.0	21.9	80.5 78.5	79.5	5.6 5.5	5.6		10.0 10.3	10.2		9.4 9.0	9.2				
14-Sep-16	Sunny	Moderate	10:26	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	25.8 25.8	25.8	75.5 74.6	75.1	5.2 5.1	5.2	5.2	5.5 5.5	5.5	6.3	9.9 10.5	10.2	10.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.1 27.1	27.1	7.8 7.8	7.8	25.8 25.8	25.8	73.2 73.7	73.5	5.0 5.1	5.1		6.8 7.2	7.0		11.4 8.6	10.0				
17-Sep-16	Sunny	Rough	13:30	Surface	1	28.9 29.0	29.0	7.9 7.9	7.9	23.6 23.6	23.6	94.4 94.1	94.3	6.4 6.4	6.4	6.4	5.2 5.1	5.2	10.9	8.7 6.8	7.8	7.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	28.7 28.7	28.7	7.9 7.9	7.9	23.8 23.8	23.8	93.7 93.7	93.7	6.4 6.4	6.4		15.2 17.7	16.5		8.0 7.2	7.6				
19-Sep-16	Sunny	Rough	14:10	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	18.6 18.6	18.6	109.1 109.4	109.3	7.6 7.7	7.7	7.7	6.2 6.5	6.4	8.0	6.3 6.7	6.5	6.9			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	27.6 27.7	27.7	7.9 7.9	7.9	21.6 21.6	21.6	104.4 104.7	104.6	7.3 7.3	7.3		9.4 9.6	9.5		6.3 8.1	7.2				

### Water Quality Monitoring Results at IS3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	15:32	Surface	1	29.0 29.0	29.0	7.9 7.9	7.9	25.3 25.3	25.3	100.2 100.5	100.4	6.7 6.7	6.7	6.7	5.7 6.0	5.9	7.5	6.3 7.2	6.8	6.3		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.6	28.2 28.2	28.2	7.9 7.9	7.9	28.3 28.2	28.3	95.2 95.5	95.4	6.4 6.4	6.4	6.4	6.4	6.4		8.9 9.1	9.0		5.7 5.7	5.7
24-Sep-16	Sunny	Moderate	07:05	Surface	1	27.9 28.0	28.0	7.8 7.8	7.8	25.9 25.7	25.8	76.4 76.2	76.3	5.7 5.7	5.7	5.7	6.7 6.7	6.7	9.1	4.7 5.3	5.0	4.3		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.6	27.7 27.7	27.7	7.8 7.8	7.8	30.3 30.3	30.3	70.7 70.7	70.7	5.2 5.2	5.2	5.2	5.2	11.5 11.3		11.4	4.0 3.2		3.6	
26-Sep-16	Fine	Moderate	09:13	Surface	1	27.0 27.0	27.0	7.7 7.7	7.7	25.4 25.1	25.3	87.3 85.1	86.2	6.0 5.9	6.0	6.0	5.2 5.5	5.4	5.5	7.3 6.3	6.8	6.7		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.4	26.7 26.6	26.7	7.7 7.7	7.7	29.6 29.6	29.6	86.9 86.6	86.8	5.9 5.9	5.9	5.9	5.9	5.4 5.6		5.5	8.0 4.9		6.5	
26-Sep-16	Fine	Moderate	09:13	Surface	1	27.0 27.0	27.0	7.7 7.7	7.7	25.4 25.1	25.3	87.3 85.1	86.2	6.0 5.9	6.0	6.0	5.2 5.5	5.4	5.5	7.3 6.3	6.8	6.7		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.4	26.7 26.6	26.7	7.7 7.7	7.7	29.6 29.6	29.6	86.9 86.6	86.8	5.9 5.9	5.9	5.9	5.9	5.4 5.6		5.5	8.0 4.9		6.5	
28-Sep-16	Cloudy	Rough	11:20	Surface	1	26.3 26.4	26.4	7.7 7.7	7.7	26.1 24.6	25.4	78.7 78.4	78.6	5.5 5.5	5.5	5.5	8.2 7.8	8.0	10.5	5.5 5.3	5.4	5.7		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.6	26.2 26.2	26.2	7.7 7.7	7.7	28.1 28.8	28.5	72.1 74.2	73.2	5.0 5.1	5.1	5.1	5.1	12.7 13.0		12.9	6.7 5.3		6.0	
28-Sep-16	Cloudy	Rough	11:20	Surface	1	26.3 26.4	26.4	7.7 7.7	7.7	26.1 24.6	25.4	78.7 78.4	78.6	5.5 5.5	5.5	5.5	8.2 7.8	8.0	10.5	5.5 5.3	5.4	5.7		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.6	26.2 26.2	26.2	7.7 7.7	7.7	28.1 28.8	28.5	72.1 74.2	73.2	5.0 5.1	5.1	5.1	5.1	12.7 13.0		12.9	6.7 5.3		6.0	
30-Sep-16	Cloudy	Rough	12:55	Surface	1	26.0 26.0	26.0	8.2 8.2	8.2	25.7 25.5	25.6	98.0 96.0	97.0	6.9 6.8	6.9	6.9	5.9 5.6	5.8	6.2	12.7 10.0	11.4	10.8		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.3	25.8 25.9	25.9	8.2 8.2	8.2	30.0 30.0	30.0	102.3 99.0	100.7	7.0 6.8	6.9	6.9	6.9	6.1 6.8		6.5	10.6 9.7		10.2	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



**Water Quality Monitoring Results at IS3 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
2-Sep-16	Fine	Rough	19:08	Surface	1	28.2 28.2	28.2	7.5 7.5	7.5	26.5 26.5	26.5	94.2 92.1	93.2	6.3 6.2	6.3	6.3	10.5 10.3	10.4	11.4	8.2 9.3	8.8	9.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.6	28.2 28.2	28.2	7.5 7.5	7.5	27.3 27.2	27.3	92.1 92.3	92.2	6.2 6.2	6.2		6.2	12.3 12.5		12.4	9.0 9.7		9.4		
5-Sep-16	Cloudy	Moderate	09:10	Surface	1	27.5 27.5	27.5	7.6 7.6	7.6	24.6 24.7	24.7	73.2 80.0	76.6	5.0 5.5	5.3	5.3	3.1 3.2	3.2	2.7	9.1 8.5	8.8	8.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.3 27.3	27.3	7.7 7.7	7.7	26.0 26.0	26.0	75.0 80.5	77.8	5.1 5.5	5.3		5.3	2.2 2.2		2.2	8.7 8.2		8.5		
7-Sep-16	Cloudy	Moderate	10:27	Surface	1	27.9 27.9	27.9	7.8 7.8	7.8	30.2 30.2	30.2	111.5 108.8	110.2	7.4 7.2	7.3	7.3	8.7 8.8	8.8	8.3	9.4 9.8	9.6	9.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.7 27.7	27.7	7.8 7.8	7.8	31.5 31.5	31.5	102.9 103.2	103.1	6.8 6.8	6.8		6.8	7.8 7.8		7.8	9.4 8.8		9.1		
10-Sep-16	Rainy	Rough	14:00	Surface	1	28.5 28.4	28.5	7.8 7.8	7.8	25.0 24.9	25.0	98.7 96.9	97.8	6.7 6.6	6.7	6.7	7.0 6.9	7.0	8.0	2.3 2.3	2.3	2.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.8 27.8	27.8	7.8 7.9	7.9	27.1 27.2	27.2	87.3 88.8	88.1	5.9 6.0	6.0		6.0	8.4 9.3		8.9	2.6 2.5		2.6		
12-Sep-16	Sunny	Moderate	15:59	Surface	1	28.1 28.0	28.1	7.7 7.7	7.7	20.3 20.3	20.3	81.0 81.0	81.0	5.7 5.7	5.7	5.7	4.7 4.7	4.7	7.7	10.8 9.7	10.3	10.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.8	28.0 27.7	27.9	7.7 7.7	7.7	22.2 22.7	22.5	79.2 77.0	78.1	5.5 5.3	5.4		5.4	9.5 11.7		10.6	10.6 8.6		9.6		
14-Sep-16	Fine	Moderate	18:04	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	25.9 26.1	26.0	72.9 72.4	72.7	5.3 5.3	5.3	5.3	6.4 6.5	6.5	6.4	11.9 13.3	12.6	12.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.0 27.0	27.0	7.8 7.8	7.8	27.0 27.0	27.0	73.1 73.1	73.1	5.3 5.3	5.3		5.3	5.8 6.8		6.3	12.0 10.7		11.4		
17-Sep-16	Fine	Rough	19:07	Surface	1	29.0 29.0	29.0	7.9 7.9	7.9	23.6 23.6	23.6	94.0 94.0	94.0	6.4 6.4	6.4	6.4	5.2 5.4	5.3	11.1	7.1 7.6	7.4	7.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	28.7 28.7	28.7	7.9 7.9	7.9	23.8 23.8	23.8	93.6 93.6	93.6	6.3 6.3	6.3		6.3	17.2 16.5		16.9	7.8 7.7		7.8		
19-Sep-16	Sunny	Rough	08:31	Surface	1	27.8 27.8	27.8	7.7 7.7	7.7	19.8 19.8	19.8	97.8 98.1	98.0	6.9 6.9	6.9	6.9	7.9 7.9	7.9	8.6	7.7 7.7	7.7	8.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	27.0 27.1	27.1	7.7 7.7	7.7	22.7 22.7	22.7	97.4 98.9	98.2	6.8 6.9	6.9		6.9	9.1 9.4		9.3	9.2 7.7		8.5		

### Water Quality Monitoring Results at IS3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)						
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*				
21-Sep-16	Cloudy	Moderate	09:35	Surface	1	28.3 28.3	28.3	7.8 7.8	7.8	26.4 26.4	26.4	95.8 96.1	96.0	6.4 6.5	6.5	6.5	7.4 7.4	7.4	8.1	7.8 5.6	6.7	6.4				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	-
				Bottom	4.6	27.6 27.6	27.6	7.8 7.8	7.8	29.4 29.3	29.4	95.4 97.0	96.2	6.4 6.5	6.5		6.5	8.6 8.9		8.8	6.5 5.6		6.1			
24-Sep-16	Sunny	Moderate	13:39	Surface	1	28.2 28.2	28.2	7.8 7.8	7.8	24.9 24.9	24.9	78.9 77.9	78.4	5.9 5.8	5.9	5.9	7.5 7.2	7.4	8.7	3.6 4.4	4.0	4.6				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	
				Bottom	4.8	27.7 27.7	27.7	7.8 7.8	7.8	30.5 30.5	30.5	70.9 70.9	70.9	5.2 5.2	5.2		5.2	9.8 10.0		9.9	5.1 5.0		5.1			
26-Sep-16	Fine	Moderate	16:26	Surface	1	26.8 26.8	26.8	7.7 7.7	7.7	24.4 24.2	24.3	83.6 80.2	81.9	5.8 5.6	5.7	5.7	6.0 6.3	6.2	6.1	5.7 4.9	5.3	4.8				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	
				Bottom	4.3	26.7 26.7	26.7	7.6 7.7	7.7	29.7 29.7	29.7	85.5 83.9	84.7	5.8 5.7	5.8		5.8	5.9 6.0		6.0	5.4 3.2		4.3			
26-Sep-16	Fine	Moderate	16:26	Surface	1	26.8 26.8	26.8	7.7 7.7	7.7	24.4 24.2	24.3	83.6 80.2	81.9	5.8 5.6	5.7	5.7	6.0 6.3	6.2	6.1	5.7 4.9	5.3	4.8				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	
				Bottom	4.3	26.7 26.7	26.7	7.6 7.7	7.7	29.7 29.7	29.7	85.5 83.9	84.7	5.8 5.7	5.8		5.8	5.9 6.0		6.0	5.4 3.2		4.3			
28-Sep-16	Cloudy	Rough	17:01	Surface	1	26.7 26.7	26.7	7.7 7.7	7.7	24.3 24.2	24.3	81.8 79.3	80.6	5.7 5.6	5.7	5.7	8.9 8.3	8.6	10.1	9.6 7.6	8.6	8.3				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	
				Bottom	4.6	26.1 26.1	26.1	7.7 7.7	7.7	29.3 27.9	28.6	73.0 71.1	72.1	5.0 4.9	5.0		5.0	11.3 11.6		11.5	9.6 6.3		8.0			
28-Sep-16	Cloudy	Rough	17:01	Surface	1	26.7 26.7	26.7	7.7 7.7	7.7	24.3 24.2	24.3	81.8 79.3	80.6	5.7 5.6	5.7	5.7	8.9 8.3	8.6	10.1	9.6 7.6	8.6	8.3				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	
				Bottom	4.6	26.1 26.1	26.1	7.7 7.7	7.7	29.3 27.9	28.6	73.0 71.1	72.1	5.0 4.9	5.0		5.0	11.3 11.6		11.5	9.6 6.3		8.0			
30-Sep-16	Cloudy	Rough	17:51	Surface	1	25.6 25.5	25.6	8.0 8.1	8.1	24.4 24.3	24.4	94.7 92.2	93.5	6.8 6.6	6.7	6.7	5.3 5.4	5.4	5.6	10.8 11.3	11.1	11.6				
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-	
				Bottom	4.4	25.2 25.2	25.2	8.0 8.0	8.0	29.8 29.8	29.8	93.3 92.6	93.0	6.5 6.4	6.5		6.5	5.8 5.6		5.7	14.1 10.0		12.1			

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at IS4 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)				Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average
2-Sep-16	Sunny	Rough	13:41	Surface	1	28.4 28.4	28.4	7.6 7.5	7.6	24.8 24.8	24.8	100.1 100.9	100.5	6.8 6.8	6.8	6.4	14.7 15.0	14.9	17.6	65.6 71.7	68.7	58.7	
				Middle	3	28.2 28.2	28.2	7.5 7.5	7.5	26.6 26.7	26.7	87.5 87.8	87.7	5.9 5.9	5.9		19.6 19.4	19.5		51.6 50.8	51.2		
				Bottom	5	28.0 28.0	28.0	7.4 7.4	7.4	27.1 28.9	28.0	80.8 80.5	80.7	5.4 5.4	5.4	18.7 18.3	18.5	74.3 38.3		56.3			
5-Sep-16	Cloudy	Moderate	15:17	Surface	1	27.7 27.7	27.7	7.7 7.7	7.7	24.1 24.1	24.1	83.0 82.5	82.8	5.7 5.7	5.7	5.6	4.9 5.3	5.1	5.7	5.0 6.8	5.9	5.5	
				Middle	3.5	27.5 27.5	27.5	7.7 7.7	7.7	24.9 24.9	24.9	79.9 79.6	79.8	5.5 5.5	5.5		5.9 5.8	5.9		7.3 5.4	6.4		
				Bottom	6	27.4 27.4	27.4	7.7 7.7	7.7	26.9 26.9	26.9	77.5 76.9	77.2	5.3 5.2	5.3	6.0 6.2	6.1	3.7 4.6		4.2			
7-Sep-16	Cloudy	Moderate	16:44	Surface	1	28.0 28.0	28.0	8.0 8.0	8.0	29.2 30.5	29.9	100.6 100.8	100.7	6.7 6.7	6.7	6.4	7.5 7.9	7.7	7.9	9.2 12.0	10.6	9.5	
				Middle	3	28.1 28.1	28.1	7.9 7.9	7.9	30.7 30.7	30.7	92.1 92.4	92.3	6.1 6.1	6.1		6.9 7.4	7.2		7.5 8.7	8.1		
				Bottom	5	27.7 27.7	27.7	7.9 7.9	7.9	33.8 32.2	33.0	82.4 82.1	82.3	5.4 5.4	5.4	9.1 8.6	8.9	9.7 9.8		9.8			
10-Sep-16	Rainy	Rough	07:52	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	23.8 23.7	23.8	95.8 96.1	96.0	6.5 6.6	6.6	6.2	5.4 5.5	5.5	8.8	2.3 1.9	2.1	2.1	
				Middle	3.5	27.9 27.9	27.9	7.8 7.8	7.8	26.5 26.5	26.5	85.1 85.1	85.1	5.8 5.8	5.8		9.8 9.4	9.6		2.5 1.5	2.0		
				Bottom	6	27.8 27.8	27.8	7.8 7.8	7.8	29.8 29.6	29.7	75.9 75.8	75.9	5.1 5.1	5.1	11.0 11.4	11.2	2.2 2.4		2.3			
12-Sep-16	Sunny	Moderate	10:14	Surface	1	28.7 28.7	28.7	7.9 7.9	7.9	19.5 19.5	19.5	84.6 83.8	84.2	5.9 5.8	5.9	5.8	3.6 3.9	3.8	6.1	4.0 4.2	4.1	3.8	
				Middle	3	27.9 27.8	27.9	7.9 7.9	7.9	21.2 21.1	21.2	79.7 79.6	79.7	5.6 5.6	5.6		7.7 7.6	7.7		2.7 4.2	3.5		
				Bottom	5	28.6 28.6	28.6	7.8 7.8	7.8	27.6 27.6	27.6	80.7 80.7	80.7	5.4 5.4	5.4	7.0 6.3	6.7	4.1 3.5		3.8			
14-Sep-16	Sunny	Moderate	11:46	Surface	1	27.5 27.5	27.5	7.8 7.8	7.8	23.2 23.2	23.2	85.4 85.4	85.4	5.9 5.9	5.9	5.8	4.9 5.4	5.2	6.8	9.0 7.8	8.4	9.5	
				Middle	3	26.8 26.7	26.8	7.8 7.8	7.8	24.0 24.1	24.1	80.7 78.7	79.7	5.6 5.5	5.6		7.3 7.0	7.2		9.3 10.5	9.9		
				Bottom	5	26.3 26.3	26.3	7.9 7.9	7.9	26.2 26.2	26.2	73.3 73.1	73.2	5.1 5.1	5.1	8.2 7.9	8.1	9.5 10.8		10.2			
17-Sep-16	Sunny	Rough	14:07	Surface	1	28.9 28.9	28.9	8.0 8.0	8.0	21.6 21.6	21.6	92.9 95.9	94.4	6.4 6.6	6.5	6.5	5.9 6.0	6.0	7.6	3.9 4.2	4.1	4.6	
				Middle	3.5	29.0 28.9	29.0	8.0 8.0	8.0	22.2 22.1	22.2	94.3 95.1	94.7	6.4 6.5	6.5		8.0 8.1	8.1		4.5 3.3	3.9		
				Bottom	6	27.5 27.6	27.6	7.8 7.8	7.8	31.3 31.1	31.2	80.5 79.2	79.9	5.3 5.3	5.3	8.5 8.8	8.7	5.0 6.5		5.8			
19-Sep-16	Sunny	Rough	15:09	Surface	1	28.5 28.5	28.5	7.8 7.8	7.8	17.8 18.1	18.0	83.7 83.2	83.5	5.9 5.8	5.9	5.8	7.0 7.5	7.3	9.0	6.5 7.7	7.1	6.8	
				Middle	3	28.2 28.2	28.2	7.7 7.7	7.7	20.1 20.0	20.1	80.2 81.0	80.6	5.6 5.7	5.7		8.9 8.7	8.8		6.2 7.0	6.6		
				Bottom	5	28.0 28.0	28.0	7.7 7.7	7.7	21.5 21.8	21.7	77.7 78.0	77.9	5.4 5.4	5.4	10.8 10.7	10.8	7.1 6.5		6.8			

**Water Quality Monitoring Results at IS4 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	16:18	Surface	1	28.0 28.0	28.0	7.9 7.9	7.9	28.9 29.0	29.0	78.4 78.1	78.3	5.2 5.2	5.2	5.2	12.2 12.8	12.5	13.4	20.4 21.8	21.1	27.3
				Middle	3	28.1 28.1	28.1	7.9 7.9	7.9	29.1 29.1	29.1	77.9 77.7	77.8	5.2 5.2	5.2		12.7 12.9	12.8		34.1 23.5	28.8	
				Bottom	5	28.1 28.1	28.1	7.9 7.9	7.9	29.1 29.1	29.1	77.8 77.8	77.8	5.2 5.2	5.2		14.8 15.1	15.0		37.0 27.0	32.0	
24-Sep-16	Sunny	Moderate	08:04	Surface	1	28.7 28.8	28.8	7.9 7.8	7.9	24.8 24.7	24.8	85.6 88.0	86.8	6.3 6.4	6.4	5.9	5.0 5.0	5.0	8.3	5.4 5.1	5.3	4.2
				Middle	3.5	28.1 28.1	28.1	8.0 7.9	8.0	26.6 26.7	26.7	71.1 70.8	71.0	5.3 5.3	5.3		7.2 6.7	7.0		4.8 3.5	4.2	
				Bottom	6	27.8 27.8	27.8	7.9 7.8	7.9	30.1 30.1	30.1	69.7 70.2	70.0	5.2 5.2	5.2		13.1 12.8	13.0		2.4 3.7	3.1	
26-Sep-16	Fine	Moderate	10:09	Surface	1	26.3 26.3	26.3	7.6 7.5	7.6	24.8 24.8	24.8	91.3 91.9	91.6	6.4 6.5	6.5	6.5	5.7 5.9	5.8	6.4	5.0 4.9	5.0	5.5
				Middle	3	26.3 26.3	26.3	7.5 7.5	7.5	26.1 26.1	26.1	92.1 91.7	91.9	6.4 6.4	6.4		8.2 7.8	8.0		5.9 5.3	5.6	
				Bottom	5	26.4 26.3	26.4	7.7 7.6	7.7	28.3 28.4	28.4	85.6 81.6	83.6	5.9 5.6	5.8		5.3 5.4	5.4		6.0 6.0	6.0	
26-Sep-16	Fine	Moderate	10:09	Surface	1	26.3 26.3	26.3	7.6 7.5	7.6	24.8 24.8	24.8	91.3 91.9	91.6	6.4 6.5	6.5	6.5	5.7 5.9	5.8	6.4	5.0 4.9	5.0	5.5
				Middle	3	26.3 26.3	26.3	7.5 7.5	7.5	26.1 26.1	26.1	92.1 91.7	91.9	6.4 6.4	6.4		8.2 7.8	8.0		5.9 5.3	5.6	
				Bottom	5	26.4 26.3	26.4	7.7 7.6	7.7	28.3 28.4	28.4	85.6 81.6	83.6	5.9 5.6	5.8		5.3 5.4	5.4		6.0 6.0	6.0	
28-Sep-16	Cloudy	Rough	12:14	Surface	1	26.5 26.6	26.6	7.9 7.7	7.8	26.3 25.9	26.1	85.5 88.9	87.2	5.9 6.2	6.1	5.6	5.7 5.9	5.8	8.9	4.3 5.2	4.8	5.2
				Middle	3	26.3 26.3	26.3	7.8 7.6	7.7	26.1 26.8	26.5	72.8 73.8	73.3	5.1 5.1	5.1		7.6 6.7	7.2		5.0 4.6	4.8	
				Bottom	5	25.7 25.8	25.8	7.6 7.8	7.7	28.1 28.2	28.2	70.7 70.4	70.6	4.9 4.9	4.9		14.7 12.6	13.7		6.0 5.7	5.9	
28-Sep-16	Cloudy	Rough	12:14	Surface	1	26.5 26.6	26.6	7.9 7.7	7.8	26.3 25.9	26.1	85.5 88.9	87.2	5.9 6.2	6.1	5.6	5.7 5.9	5.8	8.9	4.3 5.2	4.8	5.2
				Middle	3	26.3 26.3	26.3	7.8 7.6	7.7	26.1 26.8	26.5	72.8 73.8	73.3	5.1 5.1	5.1		7.6 6.7	7.2		5.0 4.6	4.8	
				Bottom	5	25.7 25.8	25.8	7.6 7.8	7.7	28.1 28.2	28.2	70.7 70.4	70.6	4.9 4.9	4.9		14.7 12.6	13.7		6.0 5.7	5.9	
30-Sep-16	Cloudy	Rough	13:42	Surface	1	26.0 26.1	26.1	8.2 8.5	8.4	25.1 25.2	25.2	112.0 110.2	111.1	7.9 7.8	7.9	7.8	5.7 5.9	5.8	7.0	5.7 5.3	5.5	7.0
				Middle	3	25.6 25.6	25.6	8.0 7.7	7.9	26.4 26.4	26.4	111.0 104.1	107.6	7.8 7.3	7.6		9.6 9.4	9.5		5.0 12.2	8.6	
				Bottom	5	25.5 25.5	25.5	8.1 8.3	8.2	28.8 28.8	28.8	99.8 95.8	97.8	6.9 6.7	6.8		6.0 5.4	5.7		6.5 7.3	6.9	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at IS4 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	19:50	Surface	1	28.1 28.1	28.1	7.6 7.6	7.6	25.7 25.7	25.7	89.6 89.6	89.6	6.1 6.1	6.1	6.0	16.3 16.3	16.3	18.0	28.0 30.8	29.4	28.2
				Middle	3.5	27.8 27.8	27.8	7.5 7.5	7.5	27.5 27.5	27.5	87.8 87.4	87.6	5.9 5.9	5.9		17.6 18.0	17.8		29.2 25.2	27.2	
				Bottom	6	27.7 27.7	27.7	7.5 7.5	7.5	28.4 28.4	28.4	85.9 86.0	86.0	5.8 5.8	5.8	19.7 19.8	19.8	32.7 23.0		27.9		
5-Sep-16	Cloudy	Moderate	09:45	Surface	1	28.1 28.1	28.1	7.6 7.6	7.6	23.5 23.5	23.5	80.2 79.9	80.1	5.5 5.5	5.5	5.4	3.7 3.9	3.8	5.4	5.2 6.3	5.8	5.4
				Middle	3.5	28.0 28.0	28.0	7.6 7.6	7.6	24.3 24.2	24.3	77.2 76.7	77.0	5.3 5.3	5.3		4.7 4.8	4.8		5.7 4.3	5.0	
				Bottom	6	27.8 27.8	27.8	7.7 7.7	7.7	26.2 26.2	26.2	75.2 74.8	75.0	5.1 5.1	5.1	7.3 8.1	7.7	5.9 5.0		5.5		
7-Sep-16	Cloudy	Moderate	11:07	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	27.1 27.1	27.1	98.4 99.3	98.9	6.6 6.6	6.6	6.5	8.4 7.4	7.9	6.9	11.1 8.5	9.8	10.4
				Middle	3.5	28.3 28.3	28.3	7.8 7.8	7.8	28.9 29.0	29.0	95.9 96.2	96.1	6.4 6.4	6.4		5.2 5.3	5.3		9.4 10.6	10.0	
				Bottom	6	28.1 28.1	28.1	7.8 7.8	7.8	31.4 31.2	31.3	74.6 74.2	74.4	4.9 4.9	4.9	6.9 8.1	7.5	11.1 11.7		11.4		
10-Sep-16	Rainy	Rough	14:49	Surface	1	28.5 28.5	28.5	7.8 7.8	7.8	24.7 24.8	24.8	86.6 86.5	86.6	5.9 5.9	5.9	5.9	6.8 6.8	6.8	8.4	2.3 2.5	2.4	2.7
				Middle	3.5	27.8 27.8	27.8	7.8 7.8	7.8	26.5 26.6	26.6	86.1 85.5	85.8	5.8 5.8	5.8		7.8 7.6	7.7		2.6 3.2	2.9	
				Bottom	6	27.8 27.8	27.8	7.8 7.8	7.8	29.9 29.9	29.9	80.9 82.1	81.5	5.4 5.5	5.5	10.8 10.8	10.8	2.3 3.0		2.7		
12-Sep-16	Sunny	Moderate	17:04	Surface	1	27.7 27.8	27.8	7.7 7.7	7.7	24.8 24.7	24.8	85.1 84.7	84.9	5.8 5.8	5.8	5.7	8.5 8.1	8.3	7.2	4.0 3.7	3.9	3.6
				Middle	3.5	26.9 26.9	26.9	7.6 7.6	7.6	28.0 28.2	28.1	81.6 81.2	81.4	5.6 5.5	5.6		5.9 5.1	5.5		3.3 4.6	4.0	
				Bottom	6	26.6 26.6	26.6	7.6 7.6	7.6	29.7 29.6	29.7	79.7 79.6	79.7	5.4 5.4	5.4	8.1 7.6	7.9	2.7 2.8		2.8		
14-Sep-16	Fine	Moderate	18:04	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	24.9 25.0	25.0	86.0 86.2	86.1	5.9 5.9	5.9	5.9	6.3 6.0	6.2	7.3	10.2 12.3	11.3	10.7
				Middle	3.5	27.6 27.6	27.6	7.8 7.8	7.8	25.5 25.5	25.5	85.0 85.0	85.0	5.8 5.8	5.8		7.6 7.3	7.5		11.1 11.9	11.5	
				Bottom	6	27.5 27.5	27.5	7.9 7.9	7.9	28.0 28.0	28.0	74.6 74.3	74.5	5.0 5.0	5.0	8.2 8.4	8.3	10.3 8.4		9.4		
17-Sep-16	Fine	Rough	19:34	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	26.4 24.8	25.6	97.6 98.5	98.1	6.6 6.7	6.7	6.8	7.7 8.3	8.0	7.5	6.0 6.4	6.2	5.7
				Middle	3.5	28.8 28.5	28.7	7.9 8.0	8.0	23.0 26.4	24.7	101.5 97.8	99.7	6.9 6.6	6.8		5.9 6.0	6.0		6.0 6.6	6.3	
				Bottom	6	28.4 28.4	28.4	7.9 7.9	7.9	26.4 26.5	26.5	99.7 99.3	99.5	6.7 6.7	6.7	8.6 8.6	8.6	4.4 5.0		4.7		
19-Sep-16	Sunny	Rough	09:49	Surface	1	28.2 28.2	28.2	7.9 7.8	7.9	18.4 18.4	18.4	85.6 87.1	86.4	6.0 6.1	6.1	6.0	8.1 8.2	8.2	10.3	9.0 6.6	7.8	7.0
				Middle	3	28.1 28.0	28.1	7.8 7.8	7.8	20.2 20.2	20.2	85.1 83.5	84.3	6.0 5.8	5.9		10.3 10.4	10.4		6.3 6.1	6.2	
				Bottom	5	27.9 27.9	27.9	7.6 7.6	7.6	22.1 22.0	22.1	82.0 81.2	81.6	5.7 5.6	5.7	12.3 12.0	12.2	7.5 6.2		6.9		

### Water Quality Monitoring Results at IS4 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	10:35	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	27.0 27.0	27.0	87.8 87.6	87.7	5.9 5.9	5.9	5.9	9.3 10.3	9.8	10.5	9.4 8.9	9.2	13.2
				Middle	3.5	28.1 28.0	28.1	7.8 7.8	7.8	27.1 27.1	27.1	87.1 87.1	87.1	5.9 5.9	5.9		10.4 11.1	10.8		12.1 10.9	11.5	
				Bottom	6	28.0 28.0	28.0	7.8 7.8	7.8	27.2 27.2	27.2	86.8 87.1	87.0	5.8 5.9	5.9		10.0 11.6	10.8		18.7 18.8	18.8	
24-Sep-16	Sunny	Moderate	15:36	Surface	1	27.5 27.6	27.6	8.0 8.0	8.0	24.0 24.0	24.0	86.3 85.5	85.9	6.3 6.2	6.3	6.0	5.8 6.9	6.4	9.1	5.0 3.7	4.4	4.3
				Middle	3.5	28.5 28.5	28.5	7.8 7.9	7.9	25.6 26.0	25.8	75.6 75.9	75.8	5.6 5.6	5.6		7.9 7.5	7.7		4.4 5.0	4.7	
				Bottom	6	27.8 27.8	27.8	7.9 7.6	7.8	29.9 29.9	29.9	68.8 69.0	68.9	5.1 5.1	5.1		13.1 13.2	13.2		4.0 3.4	3.7	
26-Sep-16	Fine	Moderate	17:21	Surface	1	26.5 26.6	26.6	7.4 7.7	7.6	24.5 24.4	24.5	92.1 92.3	92.2	6.5 6.5	6.5	6.4	6.5 6.1	6.3	7.0	3.7 3.2	3.5	4.2
				Middle	3	26.2 26.1	26.2	7.6 7.4	7.5	25.0 25.3	25.2	90.7 84.2	87.5	6.4 5.9	6.2		8.7 9.3	9.0		5.4 5.3	5.4	
				Bottom	5	26.1 26.1	26.1	7.6 7.6	7.6	28.4 28.2	28.3	87.9 83.6	85.8	6.1 5.8	6.0		5.8 5.5	5.7		3.7 3.9	3.8	
26-Sep-16	Fine	Moderate	17:21	Surface	1	26.5 26.6	26.6	7.4 7.7	7.6	24.5 24.4	24.5	92.1 92.3	92.2	6.5 6.5	6.5	6.4	6.5 6.1	6.3	7.0	3.7 3.2	3.5	4.2
				Middle	3	26.2 26.1	26.2	7.6 7.4	7.5	25.0 25.3	25.2	90.7 84.2	87.5	6.4 5.9	6.2		8.7 9.3	9.0		5.4 5.3	5.4	
				Bottom	5	26.1 26.1	26.1	7.6 7.6	7.6	28.4 28.2	28.3	87.9 83.6	85.8	6.1 5.8	6.0		5.8 5.5	5.7		3.7 3.9	3.8	
28-Sep-16	Cloudy	Rough	17:49	Surface	1	26.7 26.7	26.7	7.8 7.7	7.8	25.2 25.5	25.4	85.5 91.1	88.3	6.0 6.3	6.2	5.8	6.0 6.4	6.2	9.7	5.5 4.5	5.0	4.5
				Middle	3	26.7 26.6	26.7	7.9 7.7	7.8	25.8 24.8	25.3	75.5 76.4	76.0	5.2 5.3	5.3		8.3 8.5	8.4		6.5 3.0	4.8	
				Bottom	5	25.7 25.8	25.8	7.5 7.7	7.6	27.7 27.9	27.8	71.8 71.0	71.4	5.0 4.9	5.0		14.6 14.5	14.6		4.7 2.5	3.6	
28-Sep-16	Cloudy	Rough	17:49	Surface	1	26.7 26.7	26.7	7.8 7.7	7.8	25.2 25.5	25.4	85.5 91.1	88.3	6.0 6.3	6.2	5.8	6.0 6.4	6.2	9.7	5.5 4.5	5.0	4.5
				Middle	3	26.7 26.6	26.7	7.9 7.7	7.8	25.8 24.8	25.3	75.5 76.4	76.0	5.2 5.3	5.3		8.3 8.5	8.4		6.5 3.0	4.8	
				Bottom	5	25.7 25.8	25.8	7.5 7.7	7.6	27.7 27.9	27.8	71.8 71.0	71.4	5.0 4.9	5.0		14.6 14.5	14.6		4.7 2.5	3.6	
30-Sep-16	Cloudy	Rough	18:43	Surface	1	25.3 25.2	25.3	7.8 8.1	8.0	24.6 24.6	24.6	101.8 98.9	100.4	7.3 7.1	7.2	7.3	6.2 5.9	6.1	6.7	6.7 6.2	6.5	8.7
				Middle	3.5	25.0 25.2	25.1	8.0 7.9	8.0	25.0 25.4	25.2	103.9 99.8	101.9	7.5 7.1	7.3		7.9 8.8	8.4		14.4 7.2	10.8	
				Bottom	6	25.2 25.2	25.2	8.3 8.1	8.2	28.4 28.3	28.4	95.2 93.1	94.2	6.7 6.5	6.6		5.3 5.8	5.6		9.5 8.2	8.9	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



### Water Quality Monitoring Results at SR1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)	Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
21-Sep-16	Cloudy	Moderate	14:42	Surface	-	-	-	-	-	-	-	-	-	-	-	5.6	-	-	5.9	-	-	6.3
				Middle	1.1	28.8 28.8	28.8	8.0 8.0	8.0	26.0 26.0	26.0	83.1 83.1	83.1	5.6 5.6	5.6	6.0 5.8	5.9	6.1 6.4	6.3	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-16	Sunny	Moderate	08:08	Surface	-	-	-	-	-	-	-	-	-	-	6.5	-	-	4.1	-	-	4.6	
				Middle	1.2	28.9 28.9	28.9	7.9 7.9	7.9	19.6 19.6	19.6	87.1 86.7	86.9	6.5 6.5	6.5	4.0 4.1	4.1	5.4 3.7	4.6	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	09:31	Surface	-	-	-	-	-	-	-	-	-	-	5.6	-	-	5.7	-	-	5.6	
				Middle	1.1	26.9 26.9	26.9	7.6 7.6	7.6	19.2 19.2	19.2	77.5 76.9	77.2	5.6 5.5	5.6	6.0 5.4	5.7	5.9 5.2	5.6	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	09:31	Surface	-	-	-	-	-	-	-	-	-	-	5.6	-	-	5.7	-	-	5.6	
				Middle	1.1	26.9 26.9	26.9	7.6 7.6	7.6	19.2 19.2	19.2	77.5 76.9	77.2	5.6 5.5	5.6	6.0 5.4	5.7	5.9 5.2	5.6	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	11:42	Surface	-	-	-	-	-	-	-	-	-	-	6.3	-	-	5.3	-	-	5.6	
				Middle	1.2	27.4 27.4	27.4	7.8 7.8	7.8	19.8 19.6	19.7	89.2 89.2	89.2	6.3 6.3	6.3	5.1 5.4	5.3	5.6 5.6	5.6	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	11:42	Surface	-	-	-	-	-	-	-	-	-	-	6.3	-	-	5.3	-	-	5.6	
				Middle	1.2	27.4 27.4	27.4	7.8 7.8	7.8	19.8 19.6	19.7	89.2 89.2	89.2	6.3 6.3	6.3	5.1 5.4	5.3	5.6 5.6	5.6	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Sep-16	Cloudy	Rough	13:14	Surface	-	-	-	-	-	-	-	-	-	-	6.4	-	-	6.1	0.0 0.0	0.0	10.5	
				Middle	1.2	26.1 26.1	26.1	8.3 8.2	8.3	19.4 19.5	19.5	88.4 87.8	88.1	6.4 6.4	6.4	6.2 6.0	6.1	10.7 10.3	10.5	-	-	-
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.





### Water Quality Monitoring Results at SR1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	10:25	Surface	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	7.2	-	-	4.6
				Middle	1.1	28.3 28.3	28.3	7.8 7.8	7.8	26.7 26.7	26.7	95.2 93.6	94.4	6.4 6.3	6.4		7.2 7.1	7.2		4.6 4.5	4.6	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
24-Sep-16	Sunny	Moderate	14:48	Surface	-	-	-	-	-	-	-	-	-	-	6.5	-	-	4.7	-	-	4.7	
				Middle	1.2	28.9 28.9	28.9	7.9 7.9	7.9	19.8 19.8	19.8	87.5 87.3	87.4	6.5 6.5		6.5	4.7 4.7		4.7	4.9 4.4		4.7
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
26-Sep-16	Fine	Moderate	16:42	Surface	-	-	-	-	-	-	-	-	-	-	5.3	-	-	6.0	-	-	3.5	
				Middle	1.2	27.0 26.9	27.0	7.6 7.7	7.7	19.3 19.2	19.3	73.5 73.9	73.7	5.3 5.3		5.3	5.8 6.2		6.0	4.1 2.9		3.5
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
26-Sep-16	Fine	Moderate	16:42	Surface	-	-	-	-	-	-	-	-	-	-	5.3	-	-	6.0	-	-	3.5	
				Middle	1.2	27.0 26.9	27.0	7.6 7.7	7.7	19.3 19.2	19.3	73.5 73.9	73.7	5.3 5.3		5.3	5.8 6.2		6.0	4.1 2.9		3.5
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
28-Sep-16	Cloudy	Rough	17:23	Surface	-	-	-	-	-	-	-	-	-	-	6.3	-	-	6.0	-	-	6.7	
				Middle	1.2	28.9 28.9	28.9	7.8 7.8	7.8	20.5 19.8	20.2	91.1 91.2	91.2	6.3 6.3		6.3	6.0 5.9		6.0	6.3 7.1		6.7
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
28-Sep-16	Cloudy	Rough	17:23	Surface	-	-	-	-	-	-	-	-	-	-	6.3	-	-	6.0	-	-	6.7	
				Middle	1.2	28.9 28.9	28.9	7.8 7.8	7.8	20.5 19.8	20.2	91.1 91.2	91.2	6.3 6.3		6.3	6.0 5.9		6.0	6.3 7.1		6.7
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
30-Sep-16	Cloudy	Rough	18:08	Surface	-	-	-	-	-	-	-	-	-	-	6.1	-	-	5.9	-	-	9.1	
				Middle	1.1	25.4 25.4	25.4	8.0 8.0	8.0	19.3 19.3	19.3	83.1 83.2	83.2	6.1 6.1		6.1	6.1 5.7		5.9	8.7 9.4		9.1
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



### Water Quality Monitoring Results at SR2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	15:47	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	29.0 29.2	29.1	7.9 7.9	7.9	25.3 24.9	25.1	84.5 85.0	84.8	5.7 5.7	5.7	5.7	5.7	5.7	8.5 8.1	8.3	8.3	6.9 5.8	6.4	6.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-16	Sunny	Moderate	06:54	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.1	27.9 27.9	27.9	7.8 7.8	7.8	23.5 23.4	23.5	73.7 73.7	73.7	5.6 5.6	5.6	5.6	5.6	8.9 8.9	8.9	8.9	5.5 4.2	4.9	4.9	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	09:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1	27.0 27.1	27.1	7.7 7.7	7.7	23.0 22.9	23.0	81.7 80.5	81.1	5.7 5.6	5.7	5.7	5.7	5.9 5.7	5.8	5.8	5.1 4.1	4.6	4.6	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	09:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1	27.0 27.1	27.1	7.7 7.7	7.7	23.0 22.9	23.0	81.7 80.5	81.1	5.7 5.6	5.7	5.7	5.7	5.9 5.7	5.8	5.8	5.1 4.1	4.6	4.6	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	11:08	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	26.4 26.4	26.4	7.7 7.7	7.7	22.5 23.0	22.8	75.9 75.3	75.6	5.4 5.3	5.4	5.4	10.3 10.1	10.2	10.2	5.5 6.0	5.8	5.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	11:08	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	26.4 26.4	26.4	7.7 7.7	7.7	22.5 23.0	22.8	75.9 75.3	75.6	5.4 5.3	5.4	5.4	10.3 10.1	10.2	10.2	5.5 6.0	5.8	5.8		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Sep-16	Cloudy	Rough	12:41	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0 0.0	0.0	
				Middle	1.1	26.0 26.1	26.1	8.2 8.2	8.2	23.2 23.2	23.2	93.8 90.8	92.3	6.7 6.5	6.6	6.6	5.7 6.0	5.9	5.9	9.4 12.3	10.9	10.9		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



### Water Quality Monitoring Results at SR2 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	09:20	Surface	-	-	-	-	-	-	-	-	-	-	-	5.9	-	-	8.1	-	-	6.1
				Middle	1.1	29.3	29.3	7.9	7.9	26.6	26.6	89.0	89.4	5.9	5.9		8.0	8.1		6.1	6.1	
				Bottom	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-	
24-Sep-16	Sunny	Moderate	13:26	Surface	-	-	-	-	-	-	-	-	-	-	5.6	-	-	9.4	-	-	5.0	
				Middle	1.1	28.0	28.0	7.8	7.8	24.4	24.5	74.5	74.4	5.6		5.6	9.2		9.4	4.7		5.0
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
26-Sep-16	Fine	Moderate	16:14	Surface	-	-	-	-	-	-	-	-	-	-	5.7	-	-	5.6	-	-	5.6	
				Middle	1.1	26.9	26.9	7.6	7.6	23.9	24.0	81.6	80.7	5.7		5.7	5.6		5.6	5.9		5.6
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
26-Sep-16	Fine	Moderate	16:14	Surface	-	-	-	-	-	-	-	-	-	-	5.7	-	-	5.6	-	-	5.6	
				Middle	1.1	26.9	26.9	7.6	7.6	23.9	24.0	81.6	80.7	5.7		5.7	5.6		5.6	5.9		5.6
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
28-Sep-16	Cloudy	Rough	16:49	Surface	-	-	-	-	-	-	-	-	-	-	5.4	-	-	10.5	-	-	7.8	
				Middle	1	26.4	26.4	7.7	7.7	23.3	23.6	76.8	77.0	5.4		5.4	10.3		10.5	8.0		7.8
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
28-Sep-16	Cloudy	Rough	16:49	Surface	-	-	-	-	-	-	-	-	-	-	5.4	-	-	10.5	-	-	7.8	
				Middle	1	26.4	26.4	7.7	7.7	23.3	23.6	76.8	77.0	5.4		5.4	10.3		10.5	8.0		7.8
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-
30-Sep-16	Cloudy	Rough	17:39	Surface	-	-	-	-	-	-	-	-	-	-	6.3	-	-	6.0	-	-	9.2	
				Middle	1.1	25.5	25.5	8.1	8.1	23.9	24.0	88.6	88.4	6.3		6.3	6.1		6.0	8.7		9.2
				Bottom	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



### Water Quality Monitoring Results at SR3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	16:07	Surface	-	-	-	-	-	-	-	-	-	-	-	-	6.9	-	-	-	-	-	-	
				Middle	0.9	29.8 29.8	29.8	8.0 8.0	8.0	26.0 26.0	26.0	103.5 104.8	104.2	6.8 6.9	6.9	-	-	-	7.3 7.0	7.2	-	-	5.1 6.2	5.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-16	Sunny	Moderate	06:29	Surface	-	-	-	-	-	-	-	-	-	-	-	-	6.3	-	-	-	-	-	-	
				Middle	1	29.0 29.0	29.0	7.9 7.9	7.9	19.0 18.9	19.0	90.5 89.5	90.0	6.3 6.2	6.3	-	-	-	5.7 5.7	5.7	-	-	4.4 4.8	4.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	08:35	Surface	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	-	-	-	-	
				Middle	1.1	27.1 27.1	27.1	7.8 7.8	7.8	18.6 18.6	18.6	101.5 101.3	101.4	7.3 7.3	7.3	-	-	-	8.3 8.0	8.2	-	-	5.8 5.1	5.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	08:35	Surface	-	-	-	-	-	-	-	-	-	-	-	-	7.3	-	-	-	-	-	-	
				Middle	1.1	27.1 27.1	27.1	7.8 7.8	7.8	18.6 18.6	18.6	101.5 101.3	101.4	7.3 7.3	7.3	-	-	-	8.3 8.0	8.2	-	-	5.8 5.1	5.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	10:42	Surface	-	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	-	-	-	-	
				Middle	1	27.4 27.4	27.4	7.8 7.8	7.8	19.4 18.9	19.2	86.2 89.1	87.7	6.1 6.3	6.2	-	-	-	6.9 6.8	6.9	-	-	6.0 5.9	6.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	10:42	Surface	-	-	-	-	-	-	-	-	-	-	-	-	6.2	-	-	-	-	-	-	
				Middle	1	27.4 27.4	27.4	7.8 7.8	7.8	19.4 18.9	19.2	86.2 89.1	87.7	6.1 6.3	6.2	-	-	-	6.9 6.8	6.9	-	-	6.0 5.9	6.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Sep-16	Cloudy	Rough	12:15	Surface	-	-	-	-	-	-	-	-	-	-	-	-	7.8	-	-	-	-	-	-	
				Middle	1.1	26.2 26.2	26.2	8.1 8.2	8.2	18.8 18.8	18.8	106.1 108.4	107.3	7.7 7.9	7.8	-	-	-	9.5 9.4	9.5	-	-	0.0 0.0	0.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.





### Water Quality Monitoring Results at SR3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
21-Sep-16	Cloudy	Moderate	09:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1.2	28.1 28.0	28.1	7.7 7.7	7.7	27.5 27.9	27.7	80.9 80.7	80.8	5.4 5.4	5.4	5.4	5.4	5.4	5.4	11.6 11.6	11.6	11.6	6.8 6.5	6.7	6.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-16	Sunny	Moderate	13:02	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1	28.9 28.9	28.9	7.8 7.8	7.8	18.7 18.7	18.7	86.5 86.0	86.3	6.5 6.5	6.5	6.5	6.5	6.5	6.5	7.1 6.9	7.0	7.0	9.7 5.3	7.5	7.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	15:52	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1.1	27.2 27.0	27.1	7.5 7.6	7.6	18.2 18.3	18.3	99.7 104.1	101.9	7.2 7.5	7.4	7.4	7.4	7.4	7.4	9.5 9.0	9.3	9.3	4.9 4.5	4.7	4.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26-Sep-16	Fine	Moderate	15:52	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1.1	27.2 27.0	27.1	7.5 7.6	7.6	18.2 18.3	18.3	99.7 104.1	101.9	7.2 7.5	7.4	7.4	7.4	7.4	7.4	9.5 9.0	9.3	9.3	4.9 4.5	4.7	4.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	16:24	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1	27.3 27.3	27.3	7.7 7.7	7.7	19.2 18.7	19.0	82.1 83.5	82.8	5.8 6.0	5.9	5.9	5.9	5.9	5.9	8.4 8.2	8.3	8.3	10.0 6.2	8.1	8.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28-Sep-16	Cloudy	Rough	16:24	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1	27.3 27.3	27.3	7.7 7.7	7.7	19.2 18.7	19.0	82.1 83.5	82.8	5.8 6.0	5.9	5.9	5.9	5.9	5.9	8.4 8.2	8.3	8.3	10.0 6.2	8.1	8.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-Sep-16	Cloudy	Rough	17:17	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1	25.6 25.5	25.6	8.2 8.2	8.2	18.3 18.3	18.3	97.7 97.3	97.5	7.2 7.2	7.2	7.2	7.2	7.2	7.2	8.8 8.6	8.7	8.7	11.7 8.9	10.3	10.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at SR6 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
2-Sep-16	Sunny	Rough	12:32	Surface	1	28.0 28.0	28.0	7.4 7.4	7.4	26.0 25.5	25.8	99.3 101.6	100.5	6.7 6.9	6.8	6.8	15.1 15.3	15.2	16.8	83.7 76.0	79.9	82.2			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.2	27.9 27.9	27.9	7.5 7.5	7.5	28.4 28.6	28.5	81.2 81.4	81.3	5.4 5.5	5.5		5.5	18.3 18.5		18.4	84.7 84.3		84.5		
5-Sep-16	Cloudy	Moderate	13:59	Surface	1	28.0 28.0	28.0	7.6 7.6	7.6	22.4 22.4	22.4	81.0 79.7	80.4	5.6 5.5	5.6	5.6	4.0 4.0	4.0	5.7	6.8 4.7	5.8	5.9			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.4	27.6 27.6	27.6	7.6 7.6	7.6	25.3 25.3	25.3	78.4 78.0	78.2	5.4 5.3	5.4		5.4	7.2 7.4		7.3	5.8 6.1		6.0		
7-Sep-16	Cloudy	Moderate	15:25	Surface	1	28.2 28.2	28.2	7.8 7.8	7.8	29.2 29.1	29.2	105.5 105.5	105.5	7.0 7.0	7.0	7.0	6.9 6.7	6.8	7.4	10.2 11.5	10.9	11.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	27.8 27.8	27.8	7.8 7.8	7.8	31.6 30.4	31.0	81.4 81.6	81.5	5.4 5.4	5.4		5.4	7.6 8.2		7.9	11.4 13.1		12.3		
10-Sep-16	Rainy	Rough	06:40	Surface	1	28.3 28.3	28.3	7.7 7.8	7.8	26.1 26.2	26.2	98.8 99.0	98.9	6.7 6.7	6.7	6.7	6.4 6.6	6.5	8.0	1.8 1.8	1.8	1.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4	27.8 27.8	27.8	7.8 7.8	7.8	28.5 28.5	28.5	85.8 85.6	85.7	5.8 5.7	5.8		5.8	9.6 9.2		9.4	1.7 1.8		1.8		
12-Sep-16	Sunny	Moderate	09:07	Surface	1	28.5 28.5	28.5	7.6 7.6	7.6	20.8 20.8	20.8	82.0 82.3	82.2	5.7 5.7	5.7	5.7	3.5 4.3	3.9	5.2	4.6 4.0	4.3	4.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	28.1 28.1	28.1	7.6 7.6	7.6	27.1 27.3	27.2	86.0 85.9	86.0	5.8 5.8	5.8		5.8	6.3 6.6		6.5	3.7 6.3		5.0		
14-Sep-16	Sunny	Moderate	10:29	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	24.7 24.8	24.8	93.7 90.9	92.3	6.4 6.2	6.3	6.3	5.0 5.4	5.2	5.9	9.6 9.0	9.3	9.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	27.3 27.5	27.4	7.9 7.9	7.9	25.8 25.8	25.8	81.0 80.5	80.8	5.6 5.5	5.6		5.6	6.4 6.7		6.6	8.2 12.3		10.3		
17-Sep-16	Sunny	Rough	12:55	Surface	1	28.7 28.7	28.7	8.0 8.0	8.0	20.5 20.4	20.5	83.9 83.3	83.6	5.8 5.8	5.8	5.8	7.3 7.6	7.5	6.7	7.3 5.6	6.5	7.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	28.9 28.9	28.9	8.0 8.0	8.0	23.7 23.8	23.8	95.3 95.1	95.2	6.4 6.4	6.4		6.4	5.6 5.9		5.8	4.1 11.0		7.6		
19-Sep-16	Sunny	Rough	13:37	Surface	1	28.5 28.5	28.5	7.8 7.8	7.8	18.7 19.0	18.9	86.7 88.0	87.4	6.1 6.1	6.1	6.1	9.8 9.2	9.5	10.2	7.5 7.5	7.5	6.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.5	28.3 28.2	28.3	7.7 7.7	7.7	20.4 20.6	20.5	81.4 80.3	80.9	5.7 5.6	5.7		5.7	11.0 10.6		10.8	4.9 6.6		5.8		

### Water Quality Monitoring Results at SR6 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
21-Sep-16	Cloudy	Moderate	14:57	Surface	1	28.8 28.8	28.8	7.8 7.8	7.8	26.9 26.9	26.9	82.4 81.6	82.0	5.5 5.4	5.5	5.5	3.3 3.2	3.3	6.3	5.9 5.1	5.5	5.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	27.9 27.9	27.9	7.8 7.8	7.8	28.4 28.4	28.4	77.7 77.4	77.6	5.2 5.2	5.2		9.0 9.3	9.2		5.2	9.0 9.3		9.2	5.2	5.1 5.9
24-Sep-16	Sunny	Moderate	06:51	Surface	1	28.8 28.8	28.8	7.9 7.8	7.9	18.9 19.0	19.0	94.1 90.9	92.5	6.8 6.6	6.7	6.7	6.3 6.0	6.2	8.0	4.9 4.0	4.5	4.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.1	27.7 27.7	27.7	7.9 7.9	7.9	23.5 23.5	23.5	74.7 75.2	75.0	5.5 5.6	5.6		9.5 10.0	9.8		5.6	9.5 10.0		9.8	5.6	4.7 4.5
26-Sep-16	Fine	Moderate	08:57	Surface	1	26.7 26.6	26.7	7.8 7.7	7.8	18.5 18.6	18.6	100.5 98.9	99.7	7.3 7.2	7.3	7.3	8.0 7.8	7.9	6.7	7.2 4.2	5.7	5.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.2	26.6 26.6	26.6	7.8 7.5	7.7	23.0 22.9	23.0	79.6 80.6	80.1	5.6 5.7	5.7		5.5 5.5	5.5		5.7	5.5 5.5		5.5	5.7	6.0 5.1
26-Sep-16	Fine	Moderate	08:57	Surface	1	26.7 26.6	26.7	7.8 7.7	7.8	18.5 18.6	18.6	100.5 98.9	99.7	7.3 7.2	7.3	7.3	8.0 7.8	7.9	6.7	7.2 4.2	5.7	5.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.2	26.6 26.6	26.6	7.8 7.5	7.7	23.0 22.9	23.0	79.6 80.6	80.1	5.6 5.7	5.7		5.5 5.5	5.5		5.7	5.5 5.5		5.5	5.7	6.0 5.1
28-Sep-16	Cloudy	Rough	11:02	Surface	1	26.9 26.9	26.9	7.9 7.7	7.8	19.3 18.9	19.1	88.1 91.7	89.9	6.3 6.6	6.5	6.5	6.4 5.9	6.2	8.0	7.1 4.1	5.6	5.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	25.8 25.9	25.9	7.7 7.6	7.7	22.5 22.9	22.7	75.8 74.2	75.0	5.4 5.3	5.4		9.8 9.7	9.8		5.4	9.8 9.7		9.8	5.4	6.0 4.2
28-Sep-16	Cloudy	Rough	11:02	Surface	1	26.9 26.9	26.9	7.9 7.7	7.8	19.3 18.9	19.1	88.1 91.7	89.9	6.3 6.6	6.5	6.5	6.4 5.9	6.2	8.0	7.1 4.1	5.6	5.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	25.8 25.9	25.9	7.7 7.6	7.7	22.5 22.9	22.7	75.8 74.2	75.0	5.4 5.3	5.4		9.8 9.7	9.8		5.4	9.8 9.7		9.8	5.4	6.0 4.2
30-Sep-16	Cloudy	Rough	12:30	Surface	1	26.0 26.1	26.1	8.0 8.1	8.1	18.8 18.8	18.8	108.2 108.2	108.2	7.9 7.9	7.9	7.9	9.2 9.4	9.3	7.3	7.0 9.0	8.0	8.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	25.9 25.9	25.9	8.1 8.3	8.2	23.2 23.2	23.2	93.9 90.5	92.2	6.7 6.5	6.6		5.3 5.2	5.3		6.6	5.3 5.2		5.3	6.6	8.6 9.1

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at SR6 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)					
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*			
2-Sep-16	Fine	Rough	18:39	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	26.2 26.2	26.2	93.9 94.1	94.0	6.4 6.4	6.4	6.4	14.9 14.9	14.9	17.0	35.0 34.0	34.5	35.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	27.8 27.8	27.8	7.5 7.5	7.5	27.9 27.8	27.9	78.7 78.3	78.5	5.3 5.3	5.3		5.3	18.9 19.0		19.0	39.7 32.7		36.2		
5-Sep-16	Cloudy	Moderate	08:36	Surface	1	28.3 28.3	28.3	7.5 7.5	7.5	22.2 22.2	22.2	77.2 76.4	76.8	5.3 5.3	5.3	5.3	4.9 4.9	4.9	6.2	4.8 6.4	5.6	5.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	28.0 28.0	28.0	7.6 7.6	7.6	24.9 24.9	24.9	74.3 73.7	74.0	5.1 5.0	5.1		5.1	7.7 7.2		7.5	4.4 6.3		5.4		
7-Sep-16	Cloudy	Moderate	10:02	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	25.1 25.1	25.1	97.4 98.3	97.9	6.6 6.6	6.6	6.6	6.6 6.9	6.8	7.7	9.4 10.1	9.8	9.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	28.1 28.1	28.1	7.8 7.8	7.8	29.6 30.0	29.8	83.1 81.9	82.5	5.5 5.4	5.5		5.5	8.3 8.7		8.5	7.7 9.9		8.8		
10-Sep-16	Rainy	Rough	13:37	Surface	1	28.4 28.4	28.4	7.8 7.7	7.8	26.4 26.4	26.4	92.4 90.1	91.3	6.2 6.1	6.2	6.2	6.2 6.6	6.4	7.6	1.3 0.9	1.1	1.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4	27.8 27.9	27.9	7.9 7.8	7.9	27.9 27.8	27.9	77.7 77.2	77.5	5.2 5.2	5.2		5.2	8.8 8.5		8.7	2.3 2.0		2.2		
12-Sep-16	Sunny	Moderate	15:50	Surface	1	28.5 28.5	28.5	7.7 7.7	7.7	23.4 23.5	23.5	81.5 82.3	81.9	5.6 5.6	5.6	5.6	4.3 4.1	4.2	5.5	3.2 5.0	4.1	4.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	27.8 27.8	27.8	7.7 7.7	7.7	26.1 26.1	26.1	84.8 85.6	85.2	5.8 5.8	5.8		5.8	6.7 6.9		6.8	4.1 3.8		4.0		
14-Sep-16	Fine	Moderate	16:51	Surface	1	27.5 27.7	27.6	7.6 7.6	7.6	25.6 25.7	25.7	92.4 89.6	91.0	6.3 6.1	6.2	6.2	6.8 7.0	6.9	7.5	10.7 15.6	13.2	13.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	27.0 27.2	27.1	7.9 7.9	7.9	26.6 26.6	26.6	80.1 82.4	81.3	5.5 5.6	5.6		5.6	8.2 7.9		8.1	12.7 12.9		12.8		
17-Sep-16	Fine	Rough	18:31	Surface	1	29.7 29.7	29.7	8.1 8.1	8.1	25.6 25.7	25.7	92.3 94.1	93.2	6.1 6.2	6.2	6.2	9.1 8.5	8.8	7.8	4.6 4.9	4.8	4.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.4	29.6 29.7	29.7	8.1 8.2	8.2	25.7 25.7	25.7	92.2 94.2	93.2	6.1 6.2	6.2		6.2	6.7 6.8		6.8	4.1 4.5		4.3		
19-Sep-16	Sunny	Rough	08:19	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	17.7 17.4	17.6	91.7 89.2	90.5	6.5 6.3	6.4	6.4	6.5 6.4	6.5	7.3	7.9 8.5	8.2	7.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.3	27.8 27.9	27.9	7.6 7.7	7.7	20.0 19.7	19.9	87.7 88.5	88.1	6.2 6.2	6.2		6.2	7.7 8.2		8.0	6.5 7.8		7.2		

### Water Quality Monitoring Results at SR6 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	09:22	Surface	1	28.3 28.3	28.3	7.6 7.6	7.6	24.0 24.0	24.0	83.3 83.3	83.3	5.7 5.7	5.7	5.7	6.1 6.1	6.1	10.2	9.8 6.8	8.3	7.4		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.3	28.1 28.1	28.1	7.6 7.6	7.6	24.5 24.5	24.5	82.4 82.5	82.5	5.6 5.6	5.6	5.6	5.6	5.6		13.5 14.9	14.2		9.2 3.6	6.4
24-Sep-16	Sunny	Moderate	14:34	Surface	1	28.7 28.7	28.7	7.7 7.8	7.8	18.6 18.7	18.7	88.2 88.1	88.2	6.4 6.4	6.4	6.4	7.9 7.5	7.7	8.6	5.8 3.8	4.8	4.9		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4	27.9 27.8	27.9	7.8 7.9	7.9	24.4 24.4	24.4	76.6 75.9	76.3	5.6 5.6	5.6	5.6	5.6	9.1 9.7		9.4	5.3 4.4		4.9	
26-Sep-16	Fine	Moderate	16:20	Surface	1	26.7 26.5	26.6	7.6 7.7	7.7	18.2 18.3	18.3	99.3 103.9	101.6	7.2 7.5	7.4	7.4	9.3 9.4	9.4	7.5	5.4 5.4	5.4	6.1		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.3	26.4 26.3	26.4	7.8 7.6	7.7	23.9 24.0	24.0	81.5 79.6	80.6	5.7 5.6	5.7	5.7	5.7	5.4 5.5		5.5	7.4 5.9		6.7	
26-Sep-16	Fine	Moderate	16:20	Surface	1	26.7 26.5	26.6	7.6 7.7	7.7	18.2 18.3	18.3	99.3 103.9	101.6	7.2 7.5	7.4	7.4	9.3 9.4	9.4	7.5	5.4 5.4	5.4	6.1		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.3	26.4 26.3	26.4	7.8 7.6	7.7	23.9 24.0	24.0	81.5 79.6	80.6	5.7 5.6	5.7	5.7	5.7	5.4 5.5		5.5	7.4 5.9		6.7	
28-Sep-16	Cloudy	Rough	16:47	Surface	1	26.8 26.9	26.9	7.5 7.6	7.6	19.2 18.7	19.0	86.0 87.5	86.8	6.2 6.3	6.3	6.3	8.3 8.3	8.3	9.1	4.9 5.7	5.3	5.1		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.1	25.9 25.9	25.9	7.7 7.9	7.8	23.3 23.7	23.5	76.2 74.9	75.6	5.4 5.3	5.4	5.4	5.4	9.1 10.7		9.9	4.8 4.7		4.8	
28-Sep-16	Cloudy	Rough	16:47	Surface	1	26.8 26.9	26.9	7.5 7.6	7.6	19.2 18.7	19.0	86.0 87.5	86.8	6.2 6.3	6.3	6.3	8.3 8.3	8.3	9.1	4.9 5.7	5.3	5.1		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.1	25.9 25.9	25.9	7.7 7.9	7.8	23.3 23.7	23.5	76.2 74.9	75.6	5.4 5.3	5.4	5.4	5.4	9.1 10.7		9.9	4.8 4.7		4.8	
30-Sep-16	Cloudy	Rough	17:41	Surface	1	25.4 25.3	25.4	8.2 8.3	8.3	18.3 18.3	18.3	94.9 95.7	95.3	7.0 7.1	7.1	7.1	8.1 8.4	8.3	7.0	8.2 7.8	8.0	7.5		
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-
				Bottom	4.3	25.3 25.4	25.4	8.0 8.2	8.1	23.9 24.1	24.0	86.2 87.3	86.8	6.2 6.3	6.3	6.3	6.3	6.0 5.4		5.7	7.5 6.5		7.0	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

### Water Quality Monitoring Results at SRA - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
2-Sep-16	Sunny	Rough	12:34	Surface	1	28.1 28.1	28.1	7.5 7.5	7.5	27.3 27.3	27.3	109.8 108.0	108.9	7.4 7.3	7.4	7.3	9.9 10.2	10.1	10.9	9.4 7.5	8.5	8.3		
				Middle	3.5	28.0 28.0	28.0	7.5 7.5	7.5	27.3 27.3	27.3	105.8 106.2	106.0	7.1 7.1	7.1		11.2 11.3			11.3			8.2 9.2	8.7
				Bottom	6	28.0 28.0	28.0	7.5 7.5	7.5	27.3 27.3	27.3	104.4 104.7	104.6	7.0 7.0	7.0		11.2 11.2			11.2			7.2 8.2	7.7
5-Sep-16	Cloudy	Moderate	15:10	Surface	1	27.6 27.6	27.6	7.6 7.6	7.6	25.8 25.8	25.8	83.7 84.9	84.3	5.7 5.8	5.8	5.6	6.6 5.9	6.3	6.4	7.2 7.5	7.4	7.5		
				Middle	4	27.6 27.6	27.6	7.6 7.6	7.6	25.9 25.9	25.9	76.8 78.8	77.8	5.2 5.4	5.3		6.5 6.4			6.5			6.5 8.9	7.7
				Bottom	7	27.6 27.6	27.6	7.6 7.6	7.6	25.9 25.9	25.9	73.2 74.0	73.6	5.0 5.1	5.1		6.1 6.5			6.3			7.4 7.6	7.5
7-Sep-16	Cloudy	Moderate	16:19	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	31.4 31.4	31.4	96.4 95.0	95.7	6.3 6.2	6.3	6.3	7.2 6.5	6.9	7.0	8.1 8.2	8.2	7.7		
				Middle	4	28.0 28.1	28.1	7.7 7.7	7.7	31.4 31.4	31.4	93.6 93.2	93.4	6.2 6.1	6.2		7.1 7.0			7.1			7.7 8.4	8.1
				Bottom	7	28.0 28.0	28.0	7.7 7.7	7.7	31.4 31.4	31.4	91.5 91.5	91.5	6.0 6.0	6.0		6.7 7.1			6.9			7.0 6.6	6.8
10-Sep-16	Rainy	Rough	06:36	Surface	1	28.3 28.4	28.4	7.7 7.7	7.7	24.0 24.1	24.1	98.9 99.9	99.4	6.7 6.8	6.8	6.3	5.9 6.0	6.0	7.4	2.6 4.0	3.3	2.7		
				Middle	3.5	27.8 27.8	27.8	7.7 7.7	7.7	26.8 27.7	27.3	85.5 86.0	85.8	5.8 5.8	5.8		6.9 6.5			6.7			2.5 2.4	2.5
				Bottom	6	27.6 27.7	27.7	7.9 7.9	7.9	28.6 28.7	28.7	79.8 80.1	80.0	5.4 5.4	5.4		9.2 9.7			9.5			2.5 2.3	2.4
12-Sep-16	Sunny	Moderate	08:08	Surface	1	28.2 28.3	28.3	7.6 7.6	7.6	21.3 21.6	21.5	93.0 88.8	90.9	6.4 6.1	6.3	5.8	3.2 3.0	3.1	4.6	9.0 8.9	9.0	9.3		
				Middle	4.5	27.5 27.4	27.5	7.7 7.7	7.7	24.7 24.5	24.6	78.7 75.4	77.1	5.4 5.2	5.3		3.6 3.5			3.6			9.6 9.8	9.7
				Bottom	8	26.8 26.8	26.8	7.7 7.8	7.8	28.8 28.9	28.9	71.2 71.9	71.6	4.8 4.9	4.9		7.1 7.2			7.2			8.7 9.9	9.3
14-Sep-16	Sunny	Moderate	10:02	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	25.7 25.7	25.7	81.6 81.3	81.5	5.6 5.6	5.6	5.6	7.3 7.3	7.3	6.4	11.2 12.2	11.7	11.3		
				Middle	3.5	27.1 27.1	27.1	7.8 7.8	7.8	25.8 25.8	25.8	79.9 80.3	80.1	5.5 5.5	5.5		5.4 5.8			5.6			10.3 10.9	10.6
				Bottom	6	27.1 27.1	27.1	7.8 7.8	7.8	25.8 25.8	25.8	79.5 79.2	79.4	5.5 5.5	5.5		6.2 6.2			6.2			11.8 11.2	11.5
17-Sep-16	Sunny	Rough	13:03	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	24.6 24.6	24.6	92.4 91.3	91.9	6.3 6.2	6.3	6.2	9.2 9.0	9.1	10.0	7.2 5.6	6.4	7.2		
				Middle	4.5	28.4 28.4	28.4	7.9 7.9	7.9	24.7 24.6	24.7	90.5 90.6	90.6	6.1 6.1	6.1		9.8 9.8			9.8			7.0 7.5	7.3
				Bottom	8	28.4 28.4	28.4	7.9 7.9	7.9	24.7 24.7	24.7	90.4 90.2	90.3	6.1 6.1	6.1		11.1 11.1			11.1			7.6 8.4	8.0
19-Sep-16	Sunny	Rough	14:35	Surface	1	28.6 28.6	28.6	7.8 7.8	7.8	18.8 18.9	18.9	96.0 96.1	96.1	6.7 6.7	6.7	6.7	6.6 6.4	6.5	8.2	6.5 6.5	6.5	6.2		
				Middle	4	27.9 27.9	27.9	7.8 7.8	7.8	20.6 20.4	20.5	93.2 93.8	93.5	6.5 6.6	6.6		7.9 8.0			8.0			6.0 5.8	5.9
				Bottom	7	27.6 27.6	27.6	7.8 7.8	7.8	21.5 21.5	21.5	91.4 91.2	91.3	6.4 6.4	6.4		10.3 10.1			10.2			5.8 6.6	6.2

### Water Quality Monitoring Results at SRA - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	15:57	Surface	1	29.1 29.1	29.1	7.9 7.9	7.9	25.5 25.5	25.5	86.4 86.5	86.5	5.8 5.8	5.8	5.7	8.2 8.0	8.1	9.8	5.2 5.8	5.5	5.5
				Middle	4	28.4 28.5	28.5	7.9 7.9	7.9	27.3 27.0	27.2	83.5 84.1	83.8	5.6 5.6	5.6		9.5 9.6	9.6		5.4 4.7	5.1	
				Bottom	7	28.1 28.1	28.1	7.9 7.9	7.9	28.1 28.1	28.1	81.6 81.4	81.5	5.5 5.4	5.5		11.9 11.7	11.8		5.9 5.9	5.9	
24-Sep-16	Sunny	Moderate	06:38	Surface	1	28.7 28.7	28.7	7.7 7.7	7.7	20.0 20.0	20.0	83.6 83.6	83.6	6.3 6.3	6.3	5.9	7.1 7.0	7.1	9.6	4.6 5.3	5.0	4.9
				Middle	4.5	28.0 28.0	28.0	7.7 7.7	7.7	24.0 24.0	24.0	71.3 71.3	71.3	5.4 5.4	5.4		9.4 9.3	9.4		5.1 4.6	4.9	
				Bottom	8	27.8 27.8	27.8	7.7 7.7	7.7	29.1 29.1	29.1	69.1 69.1	69.1	5.1 5.1	5.1		12.5 12.2	12.4		4.8 4.5	4.7	
26-Sep-16	Fine	Moderate	08:50	Surface	1	27.0 27.1	27.1	7.8 7.7	7.8	19.5 19.6	19.6	94.0 92.9	93.5	6.7 6.6	6.7	6.7	6.4 6.5	6.5	6.2	6.3 6.3	6.3	6.1
				Middle	4.5	27.0 27.0	27.0	7.7 7.7	7.7	23.4 23.5	23.5	93.8 96.0	94.9	6.6 6.7	6.7		6.2 6.1	6.2		7.8 5.8	6.8	
				Bottom	8	26.8 26.9	26.9	7.7 7.7	7.7	28.4 28.4	28.4	85.8 84.1	85.0	5.9 5.7	5.8		5.7 5.8	5.8		5.9 4.4	5.2	
26-Sep-16	Fine	Moderate	08:50	Surface	1	27.0 27.1	27.1	7.8 7.7	7.8	19.5 19.6	19.6	94.0 92.9	93.5	6.7 6.6	6.7	6.7	6.4 6.5	6.5	6.2	6.3 6.3	6.3	6.1
				Middle	4.5	27.0 27.0	27.0	7.7 7.7	7.7	23.4 23.5	23.5	93.8 96.0	94.9	6.6 6.7	6.7		6.2 6.1	6.2		7.8 5.8	6.8	
				Bottom	8	26.8 26.9	26.9	7.7 7.7	7.7	28.4 28.4	28.4	85.8 84.1	85.0	5.9 5.7	5.8		5.7 5.8	5.8		5.9 4.4	5.2	
28-Sep-16	Cloudy	Rough	10:52	Surface	1	27.1 27.1	27.1	7.6 7.6	7.6	19.8 19.5	19.7	82.2 83.6	82.9	5.9 6.0	6.0	5.6	8.5 8.1	8.3	11.0	5.4 6.9	6.2	6.7
				Middle	4.5	26.5 26.5	26.5	7.6 7.6	7.6	23.2 23.4	23.3	72.2 71.6	71.9	5.1 5.1	5.1		10.9 10.6	10.8		8.3 6.8	7.6	
				Bottom	8	26.2 26.2	26.2	7.6 7.6	7.6	28.1 28.3	28.2	71.3 71.5	71.4	4.9 4.9	4.9		14.0 13.5	13.8		6.2 6.3	6.3	
28-Sep-16	Cloudy	Rough	10:52	Surface	1	27.1 27.1	27.1	7.6 7.6	7.6	19.8 19.5	19.7	82.2 83.6	82.9	5.9 6.0	6.0	5.6	8.5 8.1	8.3	11.0	5.4 6.9	6.2	6.7
				Middle	4.5	26.5 26.5	26.5	7.6 7.6	7.6	23.2 23.4	23.3	72.2 71.6	71.9	5.1 5.1	5.1		10.9 10.6	10.8		8.3 6.8	7.6	
				Bottom	8	26.2 26.2	26.2	7.6 7.6	7.6	28.1 28.3	28.2	71.3 71.5	71.4	4.9 4.9	4.9		14.0 13.5	13.8		6.2 6.3	6.3	
30-Sep-16	Cloudy	Rough	12:30	Surface	1	26.0 26.0	26.0	8.1 8.2	8.2	19.8 19.8	19.8	107.8 108.3	108.1	7.8 7.9	7.9	7.9	5.7 5.8	5.8	6.0	8.1 9.8	9.0	8.9
				Middle	4.5	25.9 25.9	25.9	8.2 8.2	8.2	23.8 23.8	23.8	109.9 108.7	109.3	7.8 7.7	7.8		6.2 6.2	6.2		8.5 7.7	8.1	
				Bottom	8	25.8 25.8	25.8	8.2 8.2	8.2	28.8 28.8	28.8	99.4 95.3	97.4	6.9 6.6	6.8		6.1 5.8	6.0		9.5 9.5	9.5	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



**Water Quality Monitoring Results at SRA - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
2-Sep-16	Fine	Rough	19:26	Surface	1	28.3 28.2	28.3	7.5 7.5	7.5	27.8 27.8	27.8	91.0 89.6	90.3	6.1 6.0	6.1	6.0	13.4 12.7	13.1	13.2	9.3 8.5	8.9	8.8		
				Middle	4	28.2 28.1	28.2	7.5 7.5	7.5	27.8 27.8	27.8	88.3 87.7	88.0	5.9 5.9	5.9		13.3 13.2			13.3			7.3 8.9	8.1
				Bottom	7	28.1 28.3	28.2	7.5 7.5	7.5	27.8 27.8	27.8	86.0 86.3	86.2	5.8 5.8	5.8		12.9 13.3			13.1			10.5 8.2	9.4
5-Sep-16	Cloudy	Moderate	08:43	Surface	1	27.6 27.6	27.6	7.6 7.6	7.6	25.4 25.4	25.4	78.7 78.4	78.6	5.4 5.4	5.4	5.3	6.9 7.2	7.1	7.9	7.8 5.9	6.9	7.6		
				Middle	3.5	27.6 27.6	27.6	7.6 7.6	7.6	25.4 25.4	25.4	75.7 75.5	75.6	5.2 5.2	5.2		8.2 8.3			8.3			7.0 9.5	8.3
				Bottom	6	27.6 27.6	27.6	7.6 7.6	7.6	25.4 25.4	25.4	73.3 72.6	73.0	5.0 5.0	5.0		8.2 8.2			8.2			7.3 8.0	7.7
7-Sep-16	Cloudy	Moderate	10:01	Surface	1	28.0 28.0	28.0	7.7 7.7	7.7	30.9 30.9	30.9	115.6 113.8	114.7	7.6 7.5	7.6	7.5	7.5 7.8	7.7	8.5	7.4 9.4	8.4	8.2		
				Middle	3.5	28.0 28.0	28.0	7.7 7.7	7.7	30.9 30.9	30.9	111.7 112.1	111.9	7.4 7.4	7.4		8.8 8.9			8.9			8.6 6.4	7.5
				Bottom	6	28.0 28.0	28.0	7.7 7.7	7.7	30.9 30.9	30.9	110.3 110.7	110.5	7.3 7.3	7.3		8.8 8.8			8.8			9.5 8.1	8.8
10-Sep-16	Rainy	Rough	13:44	Surface	1	28.3 28.4	28.4	7.8 7.8	7.8	26.5 26.8	26.7	99.1 99.8	99.5	6.7 6.7	6.7	6.0	5.4 6.0	5.7	8.4	1.3 2.6	2.0	2.3		
				Middle	3.5	27.8 27.8	27.8	7.8 7.8	7.8	27.4 27.6	27.5	75.6 76.9	76.3	5.1 5.2	5.2		9.3 9.7			9.5			2.3 2.5	2.4
				Bottom	6	27.8 27.8	27.8	7.8 7.8	7.8	29.0 29.1	29.1	73.9 72.6	73.3	4.9 4.9	4.9		10.1 9.6			9.9			2.2 2.5	2.4
12-Sep-16	Sunny	Moderate	15:36	Surface	1	28.9 28.9	28.9	7.7 7.7	7.7	21.8 21.4	21.6	92.0 91.7	91.9	6.3 6.3	6.3	5.8	3.5 3.4	3.5	5.6	9.6 9.7	9.7	10.4		
				Middle	4.5	27.3 27.3	27.3	7.6 7.6	7.6	25.0 25.0	25.0	75.4 75.4	75.4	5.2 5.2	5.2		4.7 4.5			4.6			10.2 11.1	10.7
				Bottom	8	26.6 26.7	26.7	7.6 7.6	7.6	29.3 29.2	29.3	73.2 73.3	73.3	5.0 5.0	5.0		8.6 8.5			8.6			12.6 9.1	10.9
14-Sep-16	Fine	Moderate	18:24	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	26.5 26.6	26.6	72.3 71.6	72.0	5.3 5.2	5.3	5.3	6.8 6.8	6.8	6.9	9.0 14.3	11.7	11.1		
				Middle	4	27.1 27.1	27.1	7.8 7.8	7.8	25.9 26.4	26.2	71.5 70.8	71.2	5.2 5.2	5.2		6.8 6.8			6.8			11.5 10.2	10.9
				Bottom	7	27.1 27.1	27.1	7.8 7.8	7.8	26.4 25.9	26.2	70.2 71.2	70.7	5.1 5.2	5.2		7.2 7.2			7.2			11.4 9.9	10.7
17-Sep-16	Fine	Rough	18:39	Surface	1	28.5 28.5	28.5	7.9 7.9	7.9	24.6 24.6	24.6	90.9 90.9	90.9	6.2 6.2	6.2	6.2	8.9 8.7	8.8	10.0	7.8 9.4	8.6	8.3		
				Middle	4.5	28.4 28.4	28.4	7.9 7.9	7.9	24.7 24.7	24.7	90.3 90.5	90.4	6.1 6.1	6.1		10.1 10.3			10.2			6.9 7.6	7.3
				Bottom	8	28.4 28.4	28.4	7.9 7.9	7.9	24.7 24.7	24.7	90.4 90.4	90.4	6.1 6.1	6.1		11.0 11.0			11.0			8.6 9.1	8.9
19-Sep-16	Sunny	Rough	08:07	Surface	1	28.2 28.1	28.2	7.7 7.7	7.7	19.5 19.5	19.5	87.1 87.4	87.3	6.1 6.1	6.1	6.1	8.8 8.2	8.5	9.6	7.6 8.7	8.2	7.6		
				Middle	3.5	27.8 27.8	27.8	7.7 7.7	7.7	20.1 20.2	20.2	86.9 86.6	86.8	6.1 6.1	6.1		9.3 9.5			9.4			7.9 7.4	7.7
				Bottom	6	27.2 27.2	27.2	7.7 7.7	7.7	21.9 21.8	21.9	85.4 84.2	84.8	6.0 5.9	6.0		10.8 11.0			10.9			8.2 5.8	7.0

### Water Quality Monitoring Results at SRA - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)			
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
21-Sep-16	Cloudy	Moderate	09:10	Surface	1	28.7 28.7	28.7	7.8 7.8	7.8	26.1 26.2	26.2	84.6 84.9	84.8	5.7 5.7	5.7	5.7	8.3 7.7	8.0	9.1	5.3 6.7	6.0	6.4	
				Middle	3.5	28.4 28.3	28.4	7.8 7.8	7.8	26.8 26.9	26.9	84.4 84.1	84.3	5.7 5.6	5.7		8.8 9.0			8.9			6.9 6.3
				Bottom	6	27.7 27.7	27.7	7.8 7.8	7.8	28.5 28.5	28.5	82.8 81.6	82.2	5.6 5.5	5.6		10.3 10.5			10.4			6.3 6.8
24-Sep-16	Sunny	Moderate	13:09	Surface	1	30.0 30.0	30.0	7.8 7.8	7.8	18.8 18.8	18.8	87.0 87.0	87.0	6.4 6.4	6.4	6.0	6.4 6.6	6.5	9.3	3.9 4.5	4.2	5.0	
				Middle	4.5	28.0 28.0	28.0	7.7 7.7	7.7	24.1 24.1	24.1	73.6 73.6	73.6	5.5 5.5	5.5		7.9 7.2			7.6			5.0 4.8
				Bottom	8	27.8 27.8	27.8	7.7 7.7	7.7	29.0 28.9	29.0	70.6 70.6	70.6	5.2 5.2	5.2		13.6 13.8			13.7			7.8 3.7
26-Sep-16	Fine	Moderate	16:05	Surface	1	26.7 26.8	26.8	7.5 7.6	7.6	18.4 18.4	18.4	92.8 93.2	93.0	6.7 6.7	6.7	6.7	5.7 6.1	5.9	6.0	5.3 4.3	4.8	4.6	
				Middle	4.5	26.7 26.6	26.7	7.6 7.7	7.7	23.5 23.6	23.6	95.5 93.6	94.6	6.7 6.6	6.7		5.9 6.1			6.0			4.0 3.7
				Bottom	8	26.6 26.5	26.6	7.6 7.6	7.6	28.3 28.3	28.3	87.0 83.3	85.2	6.0 5.7	5.9		6.0 5.9			6.0			5.6 4.6
26-Sep-16	Fine	Moderate	16:05	Surface	1	26.7 26.8	26.8	7.5 7.6	7.6	18.4 18.4	18.4	92.8 93.2	93.0	6.7 6.7	6.7	6.7	5.7 6.1	5.9	6.0	5.3 4.3	4.8	4.6	
				Middle	4.5	26.7 26.6	26.7	7.6 7.7	7.7	23.5 23.6	23.6	95.5 93.6	94.6	6.7 6.6	6.7		5.9 6.1			6.0			4.0 3.7
				Bottom	8	26.6 26.5	26.6	7.6 7.6	7.6	28.3 28.3	28.3	87.0 83.3	85.2	6.0 5.7	5.9		6.0 5.9			6.0			5.6 4.6
28-Sep-16	Cloudy	Rough	16:34	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	19.1 19.1	19.1	89.8 88.0	88.9	6.3 6.2	6.3	5.9	7.4 8.0	7.7	10.4	7.4 6.5	7.0	7.4	
				Middle	4.5	26.5 26.5	26.5	7.6 7.6	7.6	23.3 24.2	23.8	72.9 77.6	75.3	5.2 5.5	5.4		9.0 8.4			8.7			7.4 6.7
				Bottom	8	26.3 26.3	26.3	7.6 7.6	7.6	27.8 27.8	27.8	73.8 71.7	72.8	5.1 5.0	5.1		14.9 14.8			14.9			7.4 8.5
28-Sep-16	Cloudy	Rough	16:34	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	19.1 19.1	19.1	89.8 88.0	88.9	6.3 6.2	6.3	5.9	7.4 8.0	7.7	10.4	7.4 6.5	7.0	7.4	
				Middle	4.5	26.5 26.5	26.5	7.6 7.6	7.6	23.3 24.2	23.8	72.9 77.6	75.3	5.2 5.5	5.4		9.0 8.4			8.7			7.4 6.7
				Bottom	8	26.3 26.3	26.3	7.6 7.6	7.6	27.8 27.8	27.8	73.8 71.7	72.8	5.1 5.0	5.1		14.9 14.8			14.9			7.4 8.5
30-Sep-16	Cloudy	Rough	17:30	Surface	1	25.6 25.6	25.6	8.1 8.1	8.1	18.4 18.4	18.4	103.1 101.8	102.5	7.6 7.5	7.6	7.6	6.2 6.7	6.5	6.2	15.3 9.2	12.3	9.9	
				Middle	4.5	25.5 25.5	25.5	8.1 8.1	8.1	23.6 23.6	23.6	103.5 106.1	104.8	7.4 7.6	7.5		6.1 6.2			6.2			8.6 8.9
				Bottom	8	25.4 25.4	25.4	8.1 8.1	8.1	28.4 28.3	28.4	93.4 91.4	92.4	6.5 6.4	6.5		5.9 5.8			5.9			10.2 6.9

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at ST1 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Sunny	Rough	13:03	Surface	1	28.4 28.4	28.4	7.5 7.5	7.5	24.2 23.1	23.7	99.4 100.1	99.8	6.8 6.9	6.9	6.4	16.9 16.7	16.8	16.9	29.0 36.3	32.7	37.0
				Middle	5	28.0 28.0	28.0	7.5 7.5	7.5	27.8 27.8	27.8	87.4 86.1	86.8	5.9 5.8	5.9		14.3 14.9	14.6		35.0 42.7	38.9	
				Bottom	9	27.8 27.8	27.8	7.5 7.4	7.5	30.1 30.1	30.1	85.4 84.2	84.8	5.7 5.6	5.7		19.1 19.6	19.4		38.7 40.3	39.5	
5-Sep-16	Cloudy	Moderate	14:34	Surface	1	27.8 27.8	27.8	7.6 7.6	7.6	22.4 22.4	22.4	84.4 84.4	84.4	5.9 5.9	5.9	5.5	3.3 3.2	3.3	6.8	7.2 5.3	6.3	6.6
				Middle	5	27.3 27.3	27.3	7.7 7.7	7.7	28.3 28.3	28.3	74.9 74.4	74.7	5.1 5.0	5.1		7.5 8.0	7.8		6.2 9.4	7.8	
				Bottom	9	27.2 27.2	27.2	7.7 7.7	7.7	28.4 28.4	28.4	73.3 73.1	73.2	5.0 5.0	5.0		9.5 9.1	9.3		5.8 5.3	5.6	
7-Sep-16	Cloudy	Moderate	16:01	Surface	1	28.2 28.2	28.2	7.8 7.8	7.8	28.8 28.8	28.8	100.2 100.2	100.2	6.7 6.7	6.7	6.3	7.2 7.5	7.4	8.3	11.9 9.1	10.5	11.1
				Middle	5	27.9 27.9	27.9	7.8 7.8	7.8	30.6 30.6	30.6	88.3 87.9	88.1	5.8 5.8	5.8		9.6 9.3	9.5		13.4 10.6	12.0	
				Bottom	9	27.8 27.8	27.8	7.8 7.8	7.8	31.6 31.5	31.6	81.8 81.9	81.9	5.4 5.4	5.4		7.7 8.1	7.9		9.8 11.7	10.8	
10-Sep-16	Rainy	Rough	07:11	Surface	1	28.4 28.4	28.4	7.7 7.7	7.7	23.6 23.6	23.6	98.7 99.6	99.2	6.7 6.8	6.8	6.3	6.0 6.2	6.1	7.4	2.4 2.4	2.4	2.5
				Middle	4.5	27.9 27.9	27.9	7.7 7.7	7.7	27.0 27.9	27.5	86.2 86.3	86.3	5.8 5.8	5.8		6.6 6.8	6.7		2.6 2.7	2.7	
				Bottom	8	27.7 27.7	27.7	7.8 7.8	7.8	29.2 29.4	29.3	80.2 80.3	80.3	5.4 5.4	5.4		9.4 9.4	9.4		1.7 3.0	2.4	
12-Sep-16	Sunny	Moderate	09:39	Surface	1	28.4 28.4	28.4	7.7 7.6	7.7	21.0 20.8	20.9	83.9 83.4	83.7	5.8 5.8	5.8	5.8	6.1 6.5	6.3	7.2	5.6 4.3	5.0	4.6
				Middle	5	27.8 27.8	27.8	7.6 7.6	7.6	27.0 26.7	26.9	83.9 83.9	83.9	5.7 5.7	5.7		6.3 5.7	6.0		4.2 4.9	4.6	
				Bottom	9	27.3 27.3	27.3	7.6 7.6	7.6	31.6 31.6	31.6	78.6 78.7	78.7	5.2 5.2	5.2		9.3 9.0	9.2		4.2 4.4	4.3	
14-Sep-16	Sunny	Moderate	11:04	Surface	1	28.3 28.3	28.3	7.7 7.7	7.7	25.0 25.0	25.0	86.9 86.5	86.7	5.9 5.9	5.9	5.5	4.1 3.7	3.9	5.1	10.1 9.4	9.8	10.7
				Middle	5	28.0 27.9	28.0	7.8 7.8	7.8	27.7 27.7	27.7	77.0 74.9	76.0	5.2 5.0	5.1		4.8 5.0	4.9		9.4 10.1	9.8	
				Bottom	9	26.8 26.8	26.8	7.9 7.9	7.9	29.1 29.1	29.1	73.6 73.7	73.7	5.0 5.0	5.0		6.3 6.6	6.5		11.9 13.0	12.5	
17-Sep-16	Sunny	Rough	13:26	Surface	1	28.9 29.0	29.0	7.9 8.0	8.0	23.4 23.0	23.2	107.3 105.0	106.2	7.3 7.1	7.2	6.9	5.0 5.4	5.2	6.5	7.4 6.9	7.2	5.8
				Middle	5	28.4 28.5	28.5	7.9 7.9	7.9	25.2 24.9	25.1	97.8 95.5	96.7	6.6 6.5	6.6		6.0 5.3	5.7		4.8 5.4	5.1	
				Bottom	9	27.5 27.6	27.6	7.8 7.8	7.8	31.4 31.1	31.3	80.6 81.0	80.8	5.3 5.4	5.4		8.3 8.9	8.6		5.4 5.0	5.2	
19-Sep-16	Sunny	Rough	14:23	Surface	1	28.5 28.6	28.6	7.8 7.9	7.9	19.9 19.8	19.9	85.3 85.4	85.4	5.9 5.9	5.9	5.8	9.6 9.3	9.5	10.8	5.7 6.4	6.1	6.4
				Middle	5	28.4 28.4	28.4	7.8 7.8	7.8	21.9 21.9	21.9	82.4 81.7	82.1	5.7 5.6	5.7		10.6 10.6	10.6		7.0 7.2	7.1	
				Bottom	9	28.3 28.2	28.3	7.7 7.7	7.7	24.7 24.4	24.6	80.5 79.9	80.2	5.5 5.4	5.5		12.8 11.9	12.4		7.3 4.9	6.1	

### Water Quality Monitoring Results at ST1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	15:31	Surface	1	28.3 28.3	28.3	7.9 7.9	7.9	28.9 28.9	28.9	86.3 86.0	86.2	5.7 5.7	5.7	5.7	5.0 5.0	5.0	6.9	9.1 7.2	8.2	8.4		
				Middle	5	28.1 28.1	28.1	7.9 7.9	7.9	29.2 29.2	29.2	85.7 85.5	85.6	5.7 5.7	5.7		5.8 5.9			5.9			7.6 8.0	7.8
				Bottom	9	28.0 28.0	28.0	7.9 7.9	7.9	29.5 29.5	29.5	84.9 84.6	84.8	5.6 5.6	5.6		9.4 10.2			9.8			10.0 8.3	9.2
24-Sep-16	Sunny	Moderate	07:22	Surface	1	28.5 28.5	28.5	7.9 7.6	7.8	19.9 20.0	20.0	85.8 85.9	85.9	6.3 6.3	6.3	5.9	7.2 7.7	7.5	10.0	3.2 3.4	3.3	3.8		
				Middle	4.5	27.8 27.9	27.9	7.9 7.8	7.9	24.0 24.0	24.0	73.4 72.8	73.1	5.4 5.4	5.4		10.0 9.3			9.7			3.3 4.1	3.7
				Bottom	8	27.5 27.5	27.5	7.6 7.7	7.7	29.1 29.1	29.1	68.4 68.2	68.3	5.1 5.1	5.1		13.3 12.5			12.9			4.4 4.2	4.3
26-Sep-16	Fine	Moderate	09:28	Surface	1	26.5 26.7	26.6	7.7 7.7	7.7	19.6 19.6	19.6	92.5 92.1	92.3	6.7 6.6	6.7	6.7	6.3 6.1	6.2	5.7	6.0 4.9	5.5	5.5		
				Middle	5	26.5 26.4	26.5	7.7 7.6	7.7	23.5 23.4	23.5	92.5 94.8	93.7	6.5 6.7	6.6		5.4 5.6			5.5			4.9 6.4	5.7
				Bottom	9	26.4 26.4	26.4	7.8 7.6	7.7	28.4 28.4	28.4	85.3 83.1	84.2	5.9 5.7	5.8		5.2 5.4			5.3			5.4 5.2	5.3
26-Sep-16	Fine	Moderate	09:28	Surface	1	26.5 26.7	26.6	7.7 7.7	7.7	19.6 19.6	19.6	92.5 92.1	92.3	6.7 6.6	6.7	6.7	6.3 6.1	6.2	5.7	6.0 4.9	5.5	5.5		
				Middle	5	26.5 26.4	26.5	7.7 7.6	7.7	23.5 23.4	23.5	92.5 94.8	93.7	6.5 6.7	6.6		5.4 5.6			5.5			4.9 6.4	5.7
				Bottom	9	26.4 26.4	26.4	7.8 7.6	7.7	28.4 28.4	28.4	85.3 83.1	84.2	5.9 5.7	5.8		5.2 5.4			5.3			5.4 5.2	5.3
28-Sep-16	Cloudy	Rough	11:33	Surface	1	26.6 26.7	26.7	7.7 7.6	7.7	19.8 19.5	19.7	80.8 83.2	82.0	5.8 6.0	5.9	5.6	8.0 7.8	7.9	10.4	5.3 4.5	4.9	4.9		
				Middle	5	26.0 26.0	26.0	7.6 7.6	7.6	23.2 23.4	23.3	73.0 72.4	72.7	5.2 5.2	5.2		9.9 10.2			10.1			5.1 4.2	4.7
				Bottom	9	25.7 25.7	25.7	7.7 7.6	7.7	28.2 28.4	28.3	69.3 70.2	69.8	4.8 4.9	4.9		12.8 13.3			13.1			5.6 4.7	5.2
28-Sep-16	Cloudy	Rough	11:33	Surface	1	26.6 26.7	26.7	7.7 7.6	7.7	19.8 19.5	19.7	80.8 83.2	82.0	5.8 6.0	5.9	5.6	8.0 7.8	7.9	10.4	5.3 4.5	4.9	4.9		
				Middle	5	26.0 26.0	26.0	7.6 7.6	7.6	23.2 23.4	23.3	73.0 72.4	72.7	5.2 5.2	5.2		9.9 10.2			10.1			5.1 4.2	4.7
				Bottom	9	25.7 25.7	25.7	7.7 7.6	7.7	28.2 28.4	28.3	69.3 70.2	69.8	4.8 4.9	4.9		12.8 13.3			13.1			5.6 4.7	5.2
30-Sep-16	Cloudy	Rough	13:01	Surface	1	25.8 25.9	25.9	8.0 8.1	8.1	19.8 19.9	19.9	107.3 107.0	107.2	7.8 7.8	7.8	7.9	5.3 5.3	5.3	5.7	5.3 5.8	5.6	5.4		
				Middle	4.5	25.7 25.7	25.7	8.2 8.3	8.3	23.8 23.8	23.8	109.8 110.3	110.1	7.8 7.9	7.9		6.1 5.9			6.0			6.3 4.5	5.4
				Bottom	8	25.6 25.5	25.6	8.2 8.3	8.3	28.7 28.8	28.8	98.3 96.8	97.6	6.8 6.7	6.8		6.1 5.2			5.7			4.8 5.6	5.2

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at ST1 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	19:11	Surface	1	28.0 28.0	28.0	7.6 7.6	7.6	26.7 25.4	26.1	98.7 99.5	99.1	6.7 6.8	6.8	6.0	15.6 14.9	15.3	16.3	36.7 39.7	38.2	36.7
				Middle	5	27.5 27.5	27.5	7.5 7.5	7.5	30.9 29.2	30.1	77.8 77.1	77.5	5.2 5.2	5.2		15.4 16.1	15.8		32.0 34.7	33.4	
				Bottom	9	27.5 27.5	27.5	7.5 7.5	7.5	31.3 31.3	31.3	75.0 74.9	75.0	5.0 5.0	5.0		17.7 17.8	17.8		37.0 39.7	38.4	
5-Sep-16	Cloudy	Moderate	09:06	Surface	1	27.9 27.9	27.9	7.7 7.7	7.7	25.3 25.3	25.3	78.4 77.9	78.2	5.3 5.3	5.3	5.1	5.0 4.8	4.9	6.9	6.2 4.9	5.6	5.2
				Middle	5.5	27.8 27.8	27.8	7.7 7.7	7.7	26.7 26.7	26.7	72.5 72.0	72.3	4.9 4.9	4.9		6.9 7.1	7.0		5.9 4.8	5.4	
				Bottom	10	27.7 27.7	27.7	7.7 7.7	7.7	27.3 27.3	27.3	71.6 71.3	71.5	4.8 4.8	4.8		8.6 8.7	8.7		3.9 5.3	4.6	
7-Sep-16	Cloudy	Moderate	10:33	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	27.8 28.2	28.0	99.9 97.6	98.8	6.7 6.5	6.6	6.3	7.1 6.0	6.6	6.8	8.7 8.5	8.6	8.5
				Middle	5	28.0 28.0	28.0	7.8 7.8	7.8	30.9 30.7	30.8	89.7 89.7	89.7	5.9 5.9	5.9		6.2 6.4	6.3		6.9 8.9	7.9	
				Bottom	9	27.9 27.9	27.9	7.8 7.8	7.8	32.1 31.7	31.9	86.7 86.0	86.4	5.7 5.7	5.7		7.8 7.1	7.5		7.8 9.9	8.9	
10-Sep-16	Rainy	Rough	14:07	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	26.1 26.2	26.2	98.9 99.5	99.2	6.7 6.7	6.7	6.0	5.6 6.0	5.8	8.4	2.6 2.2	2.4	2.8
				Middle	4.5	27.9 27.8	27.9	7.8 7.8	7.8	27.7 27.7	27.7	76.0 77.1	76.6	5.1 5.2	5.2		9.8 9.4	9.6		2.7 3.6	3.2	
				Bottom	8	27.8 27.8	27.8	7.8 7.8	7.8	29.5 29.5	29.5	74.4 75.7	75.1	5.0 5.1	5.1		9.8 9.8	9.8		2.8 3.0	2.9	
12-Sep-16	Sunny	Moderate	16:23	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	22.1 22.1	22.1	82.4 82.1	82.3	5.7 5.7	5.7	5.6	6.6 6.1	6.4	8.3	3.4 4.8	4.1	3.7
				Middle	5	26.8 26.8	26.8	7.8 7.8	7.8	26.6 26.5	26.6	78.6 78.7	78.7	5.4 5.4	5.4		8.7 9.2	9.0		4.6 3.9	4.3	
				Bottom	9	26.6 26.6	26.6	7.7 7.7	7.7	30.0 30.0	30.0	73.5 81.0	77.3	5.0 5.5	5.3		9.1 9.9	9.5		2.6 2.8	2.7	
14-Sep-16	Fine	Moderate	17:22	Surface	1	28.0 28.0	28.0	7.7 7.7	7.7	25.1 25.1	25.1	93.4 93.4	93.4	6.4 6.4	6.4	6.2	5.5 5.8	5.7	6.0	9.5 10.4	10.0	10.7
				Middle	5	27.9 27.9	27.9	7.8 7.8	7.8	26.2 26.1	26.2	87.0 86.9	87.0	5.9 5.9	5.9		6.7 6.4	6.6		12.1 11.1	11.6	
				Bottom	9	27.4 27.5	27.5	7.9 7.9	7.9	29.0 29.0	29.0	80.2 79.9	80.1	5.4 5.4	5.4		5.8 5.8	5.8		11.5 9.7	10.6	
17-Sep-16	Fine	Rough	18:57	Surface	1	28.7 28.8	28.8	7.9 8.0	8.0	23.0 23.0	23.0	104.1 105.0	104.6	7.1 7.1	7.1	7.0	6.8 7.2	7.0	8.2	7.2 6.9	7.1	5.9
				Middle	5	28.5 28.6	28.6	7.9 7.9	7.9	24.5 24.2	24.4	102.2 101.8	102.0	6.9 6.9	6.9		8.9 8.8	8.9		6.1 4.9	5.5	
				Bottom	9	28.5 28.4	28.5	7.9 7.9	7.9	26.5 26.5	26.5	99.9 99.2	99.6	6.7 6.7	6.7		8.6 8.6	8.6		5.8 4.3	5.1	
19-Sep-16	Sunny	Rough	08:58	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	21.0 21.0	21.0	93.4 93.4	93.4	6.5 6.5	6.5	6.4	8.4 8.1	8.3	10.1	8.8 8.0	8.4	8.8
				Middle	5	28.0 28.1	28.1	7.6 7.7	7.7	22.2 22.3	22.3	89.9 88.9	89.4	6.2 6.1	6.2		10.2 10.4	10.3		9.5 9.2	9.4	
				Bottom	9	27.9 27.9	27.9	7.5 7.4	7.5	23.9 23.9	23.9	86.2 85.6	85.9	5.9 5.9	5.9		12.0 11.5	11.8		10.4 7.0	8.7	

### Water Quality Monitoring Results at ST1 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	09:55	Surface	1	28.0 28.0	28.0	7.8 7.8	7.8	27.7 27.8	27.8	90.9 90.4	90.7	6.1 6.1	6.1	6.1	10.8 11.3	11.1	13.3	16.2 15.8	16.0	14.8
				Middle	5	27.9 27.9	27.9	7.8 7.8	7.8	28.1 28.1	28.1	89.9 89.9	89.9	6.0 6.0	6.0		12.1 12.3	12.2		16.0 12.0	14.0	
				Bottom	9	27.9 27.9	27.9	7.8 7.8	7.8	28.5 28.3	28.4	90.0 90.1	90.1	6.0 6.0	6.0		16.4 16.8	16.6		14.8 13.9	14.4	
24-Sep-16	Sunny	Moderate	15:01	Surface	1	29.8 29.7	29.8	8.0 7.8	7.9	18.7 18.7	18.7	86.9 87.3	87.1	6.3 6.4	6.4	6.0	7.1 7.0	7.1	9.7	3.0 3.6	3.3	4.2
				Middle	4.5	27.8 27.8	27.8	7.7 7.7	7.7	24.1 24.1	24.1	74.8 74.4	74.6	5.5 5.5	5.5		8.2 7.4	7.8		6.3 3.6	5.0	
				Bottom	8	27.6 27.5	27.6	7.7 7.8	7.8	29.0 28.9	29.0	71.0 68.4	69.7	5.3 5.1	5.2		13.4 14.9	14.2		4.5 4.3	4.4	
26-Sep-16	Fine	Moderate	16:46	Surface	1	26.3 26.2	26.3	7.5 7.6	7.6	18.3 18.5	18.4	92.1 92.8	92.5	6.7 6.8	6.8	6.7	5.6 5.8	5.7	5.5	5.7 6.3	6.0	5.9
				Middle	5	26.2 26.2	26.2	7.7 7.7	7.7	23.5 23.5	23.5	95.0 92.2	93.6	6.7 6.5	6.6		5.5 5.3	5.4		6.7 5.6	6.2	
				Bottom	9	26.1 26.0	26.1	7.6 7.7	7.7	28.2 28.2	28.2	84.1 84.3	84.2	5.8 5.8	5.8		5.4 5.5	5.5		5.5 5.6	5.6	
26-Sep-16	Fine	Moderate	16:46	Surface	1	26.3 26.2	26.3	7.5 7.6	7.6	18.3 18.5	18.4	92.1 92.8	92.5	6.7 6.8	6.8	6.7	5.6 5.8	5.7	5.5	5.7 6.3	6.0	5.9
				Middle	5	26.2 26.2	26.2	7.7 7.7	7.7	23.5 23.5	23.5	95.0 92.2	93.6	6.7 6.5	6.6		5.5 5.3	5.4		6.7 5.6	6.2	
				Bottom	9	26.1 26.0	26.1	7.6 7.7	7.7	28.2 28.2	28.2	84.1 84.3	84.2	5.8 5.8	5.8		5.4 5.5	5.5		5.5 5.6	5.6	
28-Sep-16	Cloudy	Rough	17:13	Surface	1	27.9 27.8	27.9	7.9 7.8	7.9	19.1 19.1	19.1	89.4 87.6	88.5	6.3 6.2	6.3	5.9	6.7 6.9	6.8	9.9	5.2 4.5	4.9	4.7
				Middle	5	26.0 25.9	26.0	7.5 7.6	7.6	23.3 24.2	23.8	73.6 77.4	75.5	5.2 5.5	5.4		8.8 8.1	8.5		5.5 4.6	5.1	
				Bottom	9	25.8 25.8	25.8	7.5 7.7	7.6	27.8 27.8	27.8	72.0 70.7	71.4	5.0 4.9	5.0		14.0 14.5	14.3		4.0 4.0	4.0	
28-Sep-16	Cloudy	Rough	17:13	Surface	1	27.9 27.8	27.9	7.9 7.8	7.9	19.1 19.1	19.1	89.4 87.6	88.5	6.3 6.2	6.3	5.9	6.7 6.9	6.8	9.9	5.2 4.5	4.9	4.7
				Middle	5	26.0 25.9	26.0	7.5 7.6	7.6	23.3 24.2	23.8	73.6 77.4	75.5	5.2 5.5	5.4		8.8 8.1	8.5		5.5 4.6	5.1	
				Bottom	9	25.8 25.8	25.8	7.5 7.7	7.6	27.8 27.8	27.8	72.0 70.7	71.4	5.0 4.9	5.0		14.0 14.5	14.3		4.0 4.0	4.0	
30-Sep-16	Cloudy	Rough	18:07	Surface	1	25.3 25.4	25.4	8.1 8.1	8.1	18.5 18.4	18.5	101.8 101.6	101.7	7.5 7.5	7.5	7.6	5.5 5.9	5.7	5.7	5.5 6.7	6.1	6.5
				Middle	5	25.2 25.4	25.3	8.2 8.2	8.2	23.6 23.7	23.7	104.7 106.1	105.4	7.5 7.6	7.6		5.7 5.9	5.8		8.2 8.0	8.1	
				Bottom	9	25.1 25.2	25.2	8.0 8.3	8.2	28.4 28.3	28.4	92.3 90.8	91.6	6.5 6.4	6.5		5.7 5.6	5.7		3.9 6.7	5.3	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at ST2 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)				Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*	
2-Sep-16	Sunny	Rough	12:49	Surface	1	28.4 28.4	28.4	7.4 7.4	7.4	22.8 22.9	22.9	99.6 99.5	99.6	6.8 6.8	6.8	6.8	14.0 13.9	14.0	15.9	45.7 43.7	44.7	43.1	
				Middle	4	28.1 28.1	28.1	7.6 7.6	7.6	24.9 24.9	24.9	100.2 100.6	100.4	6.8 6.8	6.8		15.3 15.1			15.2			44.0 41.0
				Bottom	7	27.8 27.9	27.9	7.7 7.7	7.7	28.7 28.6	28.7	78.9 78.5	78.7	5.3 5.3	5.3	18.7 18.3	18.5	40.3 43.7	42.0				
5-Sep-16	Cloudy	Moderate	14:17	Surface	1	27.9 27.9	27.9	7.6 7.6	7.6	24.8 24.8	24.8	87.2 87.0	87.1	6.0 5.9	6.0	5.9	3.7 3.2	3.5	6.0	5.8 6.2	6.0	6.0	
				Middle	4	27.5 27.5	27.5	7.6 7.6	7.6	25.6 25.6	25.6	83.2 82.9	83.1	5.7 5.7	5.7		5.1 4.9			5.0			6.3 7.0
				Bottom	7	27.4 27.4	27.4	7.6 7.6	7.6	27.2 27.2	27.2	78.9 78.4	78.7	5.4 5.3	5.4	9.1 9.7	9.4	5.2 5.4	5.3				
7-Sep-16	Cloudy	Moderate	15:43	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	29.9 28.6	29.3	99.1 99.8	99.5	6.6 6.7	6.7	6.3	7.4 7.0	7.2	8.2	10.9 9.7	10.3	9.9	
				Middle	4	27.6 27.6	27.6	7.8 7.8	7.8	34.1 32.4	33.3	88.4 87.7	88.1	5.8 5.8	5.8		8.1 8.3			8.2			8.9 13.1
				Bottom	7	27.6 27.6	27.6	7.7 7.7	7.7	34.5 34.5	34.5	80.7 80.9	80.8	5.3 5.3	5.3	9.3 9.2	9.3	8.5 8.5	8.5				
10-Sep-16	Rainy	Rough	06:55	Surface	1	28.4 28.4	28.4	7.9 7.9	7.9	23.8 23.7	23.8	96.5 96.5	96.5	6.6 6.6	6.6	6.2	5.6 5.2	5.4	8.3	2.3 3.3	2.8	2.4	
				Middle	3.5	27.9 27.9	27.9	7.9 7.9	7.9	25.4 25.5	25.5	83.0 83.3	83.2	5.7 5.7	5.7		9.4 9.2			9.3			2.2 2.0
				Bottom	6	27.8 27.8	27.8	7.9 7.9	7.9	28.8 28.9	28.9	78.5 78.7	78.6	5.3 5.3	5.3	10.1 10.2	10.2	2.4 2.4	2.4				
12-Sep-16	Sunny	Moderate	09:24	Surface	1	28.4 28.4	28.4	8.0 7.9	8.0	21.1 21.1	21.1	83.5 82.9	83.2	5.8 5.7	5.8	5.7	7.1 7.1	7.1	7.7	3.7 3.5	3.6	4.1	
				Middle	4	28.1 28.1	28.1	7.9 7.9	7.9	24.8 24.8	24.8	82.1 82.1	82.1	5.6 5.6	5.6		9.6 9.1			9.4			3.8 3.9
				Bottom	7	28.0 28.0	28.0	7.8 7.8	7.8	24.6 24.6	24.6	88.0 87.9	88.0	6.0 6.0	6.0	6.4 6.5	6.5	5.4 4.4	4.9				
14-Sep-16	Sunny	Moderate	10:48	Surface	1	28.4 28.4	28.4	7.6 7.6	7.6	23.8 23.8	23.8	85.3 85.3	85.3	5.8 5.8	5.8	5.6	6.0 6.3	6.2	8.1	11.5 9.6	10.6	11.0	
				Middle	4	27.3 27.3	27.3	7.9 7.9	7.9	24.9 24.9	24.9	78.4 78.3	78.4	5.4 5.4	5.4		8.5 8.0			8.3			9.4 11.0
				Bottom	7	26.9 26.9	26.9	7.9 7.9	7.9	27.9 27.9	27.9	71.6 71.2	71.4	4.9 4.9	4.9	9.7 9.9	9.8	11.1 13.0	12.1				
17-Sep-16	Sunny	Rough	13:11	Surface	1	28.6 28.6	28.6	7.9 8.0	8.0	20.7 20.8	20.8	86.1 86.3	86.2	6.0 6.0	6.0	5.8	5.7 5.6	5.7	7.1	4.9 5.1	5.0	5.1	
				Middle	4	28.4 28.3	28.4	7.9 7.9	7.9	23.0 23.8	23.4	79.2 80.3	79.8	5.4 5.5	5.5		6.6 6.9			6.8			4.8 4.3
				Bottom	7	28.2 28.2	28.2	7.9 7.9	7.9	24.9 24.7	24.8	75.1 78.0	76.6	5.1 5.3	5.2	8.6 8.9	8.8	5.0 6.6	5.8				
19-Sep-16	Sunny	Rough	14:02	Surface	1	28.6 28.6	28.6	7.8 7.8	7.8	18.0 18.2	18.1	88.3 87.2	87.8	6.2 6.1	6.2	6.1	8.4 8.8	8.6	9.6	5.9 6.5	6.2	6.3	
				Middle	4	28.3 28.4	28.4	7.7 7.7	7.7	20.4 20.6	20.5	85.6 84.6	85.1	6.0 5.9	6.0		9.8 9.8			9.8			6.8 5.3
				Bottom	7	27.9 28.0	28.0	7.6 7.7	7.7	23.0 23.2	23.1	81.9 82.7	82.3	5.7 5.7	5.7	10.6 10.4	10.5	5.9 7.0	6.5				

### Water Quality Monitoring Results at ST2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	15:14	Surface	1	28.3 28.2	28.3	7.8 7.8	7.8	28.3 28.3	28.3	80.3 79.9	80.1	5.3 5.3	5.3	5.3	5.4 5.5	5.5	6.9	9.5 7.5	8.5	9.3
				Middle	4	28.1 28.1	28.1	7.9 7.9	7.9	29.3 29.3	29.3	79.4 79.7	79.6	5.3 5.3	5.3		6.2 6.2	6.2		10.5 7.7	9.1	
				Bottom	7	28.1 28.1	28.1	7.9 7.9	7.9	29.7 29.7	29.7	80.0 80.0	80.0	5.3 5.3	5.3		8.7 9.2	9.0		10.4 9.9	10.2	
24-Sep-16	Sunny	Moderate	07:07	Surface	1	28.4 28.3	28.4	7.9 7.7	7.8	25.3 25.5	25.4	85.7 83.8	84.8	6.3 6.1	6.2	6.0	4.8 4.9	4.9	9.0	2.7 3.2	3.0	3.5
				Middle	3.5	27.8 27.8	27.8	7.8 8.0	7.9	26.7 26.7	26.7	75.6 77.0	76.3	5.6 5.7	5.7		7.8 7.2	7.5		4.0 4.0	4.0	
				Bottom	6	27.7 27.8	27.8	7.8 7.7	7.8	30.4 30.6	30.5	72.9 73.2	73.1	5.4 5.4	5.4		14.5 14.4	14.5		3.9 3.2	3.6	
26-Sep-16	Fine	Moderate	09:14	Surface	1	26.3 26.3	26.3	7.6 7.6	7.6	24.8 24.8	24.8	91.4 93.5	92.5	6.4 6.6	6.5	6.5	6.3 5.9	6.1	8.2	6.2 5.2	5.7	5.8
				Middle	4	26.1 26.1	26.1	7.7 7.5	7.6	26.1 26.1	26.1	93.9 90.4	92.2	6.6 6.3	6.5		8.6 8.3	8.5		6.2 6.1	6.2	
				Bottom	7	26.0 26.0	26.0	7.6 7.6	7.6	29.6 29.8	29.7	84.6 83.9	84.3	5.8 5.8	5.8		10.0 9.9	10.0		5.3 5.7	5.5	
26-Sep-16	Fine	Moderate	09:14	Surface	1	26.3 26.3	26.3	7.6 7.6	7.6	24.8 24.8	24.8	91.4 93.5	92.5	6.4 6.6	6.5	6.5	6.3 5.9	6.1	8.2	6.2 5.2	5.7	5.8
				Middle	4	26.1 26.1	26.1	7.7 7.5	7.6	26.1 26.1	26.1	93.9 90.4	92.2	6.6 6.3	6.5		8.6 8.3	8.5		6.2 6.1	6.2	
				Bottom	7	26.0 26.0	26.0	7.6 7.6	7.6	29.6 29.8	29.7	84.6 83.9	84.3	5.8 5.8	5.8		10.0 9.9	10.0		5.3 5.7	5.5	
28-Sep-16	Cloudy	Rough	11:18	Surface	1	26.5 26.5	26.5	7.7 7.6	7.7	26.4 25.8	26.1	86.7 87.5	87.1	6.0 6.1	6.1	5.9	5.4 5.4	5.4	9.3	5.4 3.7	4.6	4.8
				Middle	4	26.0 26.0	26.0	7.8 7.5	7.7	26.5 26.2	26.4	81.5 79.9	80.7	5.7 5.6	5.7		8.3 7.7	8.0		4.8 4.6	4.7	
				Bottom	7	25.9 25.9	25.9	7.8 7.9	7.9	29.5 31.2	30.4	76.7 73.1	74.9	5.3 5.0	5.2		15.0 13.7	14.4		6.2 4.1	5.2	
28-Sep-16	Cloudy	Rough	11:18	Surface	1	26.5 26.5	26.5	7.7 7.6	7.7	26.4 25.8	26.1	86.7 87.5	87.1	6.0 6.1	6.1	5.9	5.4 5.4	5.4	9.3	5.4 3.7	4.6	4.8
				Middle	4	26.0 26.0	26.0	7.8 7.5	7.7	26.5 26.2	26.4	81.5 79.9	80.7	5.7 5.6	5.7		8.3 7.7	8.0		4.8 4.6	4.7	
				Bottom	7	25.9 25.9	25.9	7.8 7.9	7.9	29.5 31.2	30.4	76.7 73.1	74.9	5.3 5.0	5.2		15.0 13.7	14.4		6.2 4.1	5.2	
30-Sep-16	Cloudy	Rough	12:46	Surface	1	25.9 26.0	26.0	8.3 8.2	8.3	25.2 25.2	25.2	110.4 108.2	109.3	7.8 7.6	7.7	7.6	6.2 6.0	6.1	8.2	5.2 5.4	5.3	5.8
				Middle	4	25.8 25.0	25.4	8.1 8.0	8.1	26.5 26.5	26.5	109.9 103.2	106.6	7.7 7.3	7.5		8.6 8.4	8.5		6.1 4.0	5.1	
				Bottom	7	24.6 24.7	24.7	8.0 8.1	8.1	30.1 30.3	30.2	98.4 98.9	98.7	6.9 6.9	6.9		10.5 9.3	9.9		6.6 7.6	7.1	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.



**Water Quality Monitoring Results at ST2 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	18:55	Surface	1	28.0 28.0	28.0	7.5 7.5	7.5	26.7 25.4	26.1	94.9 95.5	95.2	6.4 6.5	6.5	6.1	15.6 15.6	15.6	17.1	35.7 35.3	35.5	40.4
				Middle	4	27.5 27.5	27.5	7.4 7.4	7.4	30.9 29.2	30.1	84.1 83.5	83.8	5.6 5.6	5.6		16.9 16.7	16.8		31.3 44.0	37.7	
				Bottom	7	27.5 27.5	27.5	7.4 7.4	7.4	31.3 31.3	31.3	81.1 81.1	81.1	5.4 5.4	5.4		18.9 19.1	19.0		48.0 48.0	48.0	
5-Sep-16	Cloudy	Moderate	08:52	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	25.2 25.2	25.2	80.6 80.2	80.4	5.5 5.5	5.5	5.4	4.8 4.9	4.9	6.6	6.7 6.2	6.5	6.1
				Middle	4.5	27.8 27.8	27.8	7.7 7.7	7.7	25.7 25.8	25.8	77.0 76.7	76.9	5.2 5.2	5.2		6.3 6.2	6.3		6.6 6.9	6.8	
				Bottom	8	27.7 27.7	27.7	7.7 7.7	7.7	27.4 27.4	27.4	72.7 72.1	72.4	4.9 4.9	4.9		8.7 8.5	8.6		5.6 4.5	5.1	
7-Sep-16	Cloudy	Moderate	10:18	Surface	1	28.5 28.5	28.5	7.8 7.8	7.8	26.5 25.3	25.9	107.7 108.5	108.1	7.2 7.3	7.3	6.8	9.0 9.0	9.0	8.1	10.3 13.2	11.8	10.4
				Middle	4	28.1 28.1	28.1	7.7 7.7	7.7	30.0 30.1	30.1	95.8 94.5	95.2	6.3 6.3	6.3		7.5 7.0	7.3		13.4 8.8	11.1	
				Bottom	7	27.9 27.9	27.9	7.7 7.7	7.7	32.3 32.3	32.3	79.0 77.8	78.4	5.2 5.1	5.2		8.1 7.8	8.0		9.6 7.1	8.4	
10-Sep-16	Rainy	Rough	13:51	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	25.1 25.2	25.2	90.2 91.8	91.0	6.1 6.2	6.2	5.4	6.6 6.2	6.4	9.3	2.8 2.6	2.7	2.8
				Middle	3.5	27.9 27.9	27.9	7.8 7.8	7.8	25.2 25.2	25.2	67.3 67.2	67.3	4.6 4.6	4.6		9.6 10.2	9.9		1.9 3.4	2.7	
				Bottom	6	27.8 27.8	27.8	7.8 7.8	7.8	29.3 29.4	29.4	80.5 80.8	80.7	5.4 5.4	5.4		11.8 11.4	11.6		2.6 3.4	3.0	
12-Sep-16	Sunny	Moderate	16:07	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	21.1 21.1	21.1	92.1 91.6	91.9	6.4 6.4	6.4	6.3	5.0 5.3	5.2	7.0	3.6 4.7	4.2	4.1
				Middle	4	27.6 27.5	27.6	7.6 7.6	7.6	23.2 23.4	23.3	89.9 89.5	89.7	6.2 6.2	6.2		6.8 7.5	7.2		3.8 4.8	4.3	
				Bottom	7	26.5 26.5	26.5	7.6 7.6	7.6	29.4 29.3	29.4	86.8 86.2	86.5	5.9 5.9	5.9		8.5 8.8	8.7		3.5 4.2	3.9	
14-Sep-16	Fine	Moderate	17:07	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	23.9 24.0	24.0	89.9 90.0	90.0	6.2 6.2	6.2	6.1	4.4 4.9	4.7	6.3	9.1 16.0	12.6	11.9
				Middle	4	28.0 27.9	28.0	7.8 7.9	7.9	24.9 25.0	25.0	88.3 84.9	86.6	6.0 5.8	5.9		5.9 6.2	6.1		13.3 9.9	11.6	
				Bottom	7	27.1 27.1	27.1	7.9 7.9	7.9	26.9 27.0	27.0	75.6 75.7	75.7	5.2 5.2	5.2		8.5 7.6	8.1		11.0 12.0	11.5	
17-Sep-16	Fine	Rough	18:44	Surface	1	29.6 29.6	29.6	8.1 8.1	8.1	26.0 25.9	26.0	90.7 92.6	91.7	6.0 6.1	6.1	6.1	7.7 8.0	7.9	7.8	5.5 5.2	5.4	5.5
				Middle	4	29.3 29.4	29.4	8.0 8.0	8.0	26.5 26.4	26.5	92.2 92.1	92.2	6.1 6.1	6.1		6.1 6.6	6.4		6.5 5.5	6.0	
				Bottom	7	28.9 29.0	29.0	7.9 7.9	7.9	27.5 27.6	27.6	86.9 86.1	86.5	5.8 5.7	5.8		8.7 9.2	9.0		5.0 5.2	5.1	
19-Sep-16	Sunny	Rough	08:40	Surface	1	28.2 28.2	28.2	7.9 7.9	7.9	17.6 17.9	17.8	88.7 88.8	88.8	6.3 6.3	6.3	6.2	7.7 7.8	7.8	8.4	7.5 6.1	6.8	8.1
				Middle	4	28.0 28.0	28.0	7.8 7.8	7.8	19.5 19.6	19.6	85.5 85.8	85.7	6.0 6.0	6.0		8.4 8.1	8.3		7.4 9.9	8.7	
				Bottom	7	27.9 27.8	27.9	7.6 7.7	7.7	21.3 21.4	21.4	82.9 81.8	82.4	5.8 5.7	5.8		9.1 9.0	9.1		10.0 7.7	8.9	

**Water Quality Monitoring Results at ST2 - Mid-Flood Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
21-Sep-16	Cloudy	Moderate	09:41	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	27.9 27.9	27.9	88.4 88.0	88.2	5.9 5.9	5.9	5.9	6.2 6.1	6.2	11.1	10.9 10.1	10.5	10.5
				Middle	4	27.9 27.9	27.9	7.9 7.9	7.9	28.7 28.7	28.7	87.0 86.9	87.0	5.8 5.8	5.8		13.0 12.8	12.9		10.5 10.9	10.7	
				Bottom	7	27.8 27.8	27.8	7.9 7.9	7.9	28.7 28.8	28.8	86.7 86.7	86.7	5.8 5.8	5.8		14.1 14.5	14.3		10.5 9.8	10.2	
24-Sep-16	Sunny	Moderate	14:48	Surface	1	28.4 28.5	28.5	7.9 8.0	8.0	25.1 25.1	25.1	87.4 88.3	87.9	6.4 6.4	6.4	6.2	6.0 6.4	6.2	8.9	4.1 4.6	4.4	4.1
				Middle	3.5	27.4 27.5	27.5	8.0 8.0	8.0	26.7 26.7	26.7	80.6 81.0	80.8	5.9 5.9	5.9		9.0 8.5	8.8		5.4 3.1	4.3	
				Bottom	6	27.4 27.4	27.4	7.7 7.8	7.8	29.7 29.1	29.4	70.4 68.7	69.6	5.2 5.1	5.2		11.4 11.8	11.6		2.9 4.4	3.7	
26-Sep-16	Fine	Moderate	16:33	Surface	1	26.6 26.5	26.6	7.3 7.8	7.6	24.5 24.4	24.5	93.7 92.1	92.9	6.6 6.5	6.6	6.5	5.8 6.4	6.1	8.4	5.7 6.2	6.0	5.6
				Middle	4	26.5 25.4	26.0	7.8 7.6	7.7	26.1 26.0	26.1	93.5 88.5	91.0	6.5 6.3	6.4		8.8 8.8	8.8		5.3 5.7	5.5	
				Bottom	7	25.3 25.2	25.3	7.7 7.4	7.6	29.0 28.3	28.7	82.3 82.3	82.3	5.7 5.8	5.8		10.3 10.5	10.4		5.3 5.2	5.3	
26-Sep-16	Fine	Moderate	16:33	Surface	1	26.6 26.5	26.6	7.3 7.8	7.6	24.5 24.4	24.5	93.7 92.1	92.9	6.6 6.5	6.6	6.5	5.8 6.4	6.1	8.4	5.7 6.2	6.0	5.6
				Middle	4	26.5 25.4	26.0	7.8 7.6	7.7	26.1 26.0	26.1	93.5 88.5	91.0	6.5 6.3	6.4		8.8 8.8	8.8		5.3 5.7	5.5	
				Bottom	7	25.3 25.2	25.3	7.7 7.4	7.6	29.0 28.3	28.7	82.3 82.3	82.3	5.7 5.8	5.8		10.3 10.5	10.4		5.3 5.2	5.3	
28-Sep-16	Cloudy	Rough	17:00	Surface	1	26.7 26.6	26.7	7.9 7.8	7.9	25.2 25.6	25.4	85.2 90.5	87.9	5.9 6.3	6.1	5.9	6.2 6.0	6.1	8.9	3.5 5.6	4.6	4.7
				Middle	4	25.7 25.7	25.7	7.8 7.6	7.7	27.6 25.6	26.6	80.8 77.9	79.4	5.6 5.5	5.6		8.7 8.3	8.5		4.9 4.5	4.7	
				Bottom	7	25.6 25.6	25.6	7.8 7.7	7.8	28.1 28.8	28.5	71.7 75.0	73.4	5.0 5.2	5.1		11.6 12.6	12.1		4.4 4.9	4.7	
28-Sep-16	Cloudy	Rough	17:00	Surface	1	26.7 26.6	26.7	7.9 7.8	7.9	25.2 25.6	25.4	85.2 90.5	87.9	5.9 6.3	6.1	5.9	6.2 6.0	6.1	8.9	3.5 5.6	4.6	4.7
				Middle	4	25.7 25.7	25.7	7.8 7.6	7.7	27.6 25.6	26.6	80.8 77.9	79.4	5.6 5.5	5.6		8.7 8.3	8.5		4.9 4.5	4.7	
				Bottom	7	25.6 25.6	25.6	7.8 7.7	7.8	28.1 28.8	28.5	71.7 75.0	73.4	5.0 5.2	5.1		11.6 12.6	12.1		4.4 4.9	4.7	
30-Sep-16	Cloudy	Rough	17:54	Surface	1	25.3 25.1	25.2	7.8 7.9	7.9	24.6 24.5	24.6	102.3 102.3	102.3	7.3 7.3	7.3	7.3	6.4 5.8	6.1	8.3	6.8 6.3	6.6	6.5
				Middle	4	25.0 25.0	25.0	7.9 7.8	7.9	26.2 26.1	26.2	101.6 100.5	101.1	7.2 7.2	7.2		8.7 8.6	8.7		7.7 6.1	6.9	
				Bottom	7	24.9 24.9	24.9	8.0 8.0	8.0	29.1 28.5	28.8	90.3 90.9	90.6	6.3 6.4	6.4		9.9 10.1	10.0		6.0 5.7	5.9	

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at ST3 - Mid-Ebb Tide**

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Sunny	Rough	13:42	Surface	1	28.2 28.2	28.2	7.5 7.5	7.5	29.8 29.8	29.8	88.3 88.7	88.5	5.8 5.9	5.9	5.8	9.0 9.2	9.1	9.9	6.9 11.5	9.2	8.1
				Middle	5.5	28.2 28.2	28.2	7.6 7.6	7.6	27.3 27.6	27.5	84.6 84.4	84.5	5.7 5.7	5.7		10.2 9.2			9.7		
				Bottom	10	28.2 28.2	28.2	7.6 7.6	7.6	30.3 30.3	30.3	86.2 86.2	86.2	5.7 5.7	5.7	10.6 11.4	11.0	7.0 6.4	6.7			
5-Sep-16	Cloudy	Moderate	14:10	Surface	1	27.6 27.6	27.6	7.5 7.5	7.5	21.8 21.9	21.9	76.5 79.4	78.0	5.3 5.5	5.4	5.4	3.9 3.8	3.9	6.7	6.4 6.3	6.4	8.1
				Middle	6.5	27.3 27.3	27.3	7.6 7.6	7.6	26.3 25.9	26.1	79.4 78.4	78.9	5.4 5.4	5.4		6.2 7.5			6.9		
				Bottom	12	27.0 27.0	27.0	7.7 7.7	7.7	28.4 28.6	28.5	80.5 79.7	80.1	5.5 5.4	5.5	9.5 9.1	9.3	9.6 7.7	8.7			
7-Sep-16	Cloudy	Moderate	15:19	Surface	1	28.1 28.1	28.1	7.7 7.7	7.7	27.3 27.4	27.4	98.3 98.1	98.2	6.6 6.6	6.6	6.5	8.0 8.2	8.1	8.7	7.5 8.2	7.9	7.5
				Middle	7	27.8 27.8	27.8	7.8 7.8	7.8	31.8 31.4	31.6	97.2 97.0	97.1	6.4 6.4	6.4		8.3 8.1			8.2		
				Bottom	13	27.5 27.4	27.5	7.8 7.8	7.8	33.9 34.2	34.1	97.9 98.1	98.0	6.4 6.4	6.4	10.1 9.7	9.9	7.3 8.0	7.7			
10-Sep-16	Rainy	Rough	07:20	Surface	1	28.3 28.4	28.4	7.9 7.9	7.9	24.3 24.3	24.3	96.7 96.6	96.7	6.6 6.6	6.6	6.2	5.7 5.4	5.6	8.5	1.9 2.4	2.2	2.3
				Middle	6	27.9 27.9	27.9	7.9 8.0	8.0	25.7 25.8	25.8	82.9 83.5	83.2	5.6 5.7	5.7		9.8 9.1			9.5		
				Bottom	11	27.7 27.7	27.7	7.9 7.9	7.9	28.5 28.4	28.5	78.0 78.5	78.3	5.2 5.3	5.3	10.1 10.5	10.3	1.5 3.0	2.3			
12-Sep-16	Sunny	Moderate	09:06	Surface	1	27.8 27.8	27.8	7.8 7.8	7.8	22.8 22.9	22.9	86.7 86.7	86.7	6.0 6.0	6.0	5.6	6.1 6.0	6.1	8.9	9.1 10.4	9.8	9.2
				Middle	6.5	26.8 26.8	26.8	7.9 7.9	7.9	29.7 29.7	29.7	76.5 76.5	76.5	5.2 5.2	5.2		3.9 4.1			4.0		
				Bottom	12	26.7 26.7	26.7	7.9 7.9	7.9	31.9 32.3	32.1	75.6 75.8	75.7	5.1 5.1	5.1	17.1 15.8	16.5	8.7 7.8	8.3			
14-Sep-16	Sunny	Moderate	11:22	Surface	1	27.2 27.1	27.2	7.8 7.8	7.8	25.7 25.7	25.7	75.6 74.8	75.2	5.2 5.2	5.2	5.2	5.4 5.4	5.4	6.7	9.7 8.9	9.3	10.6
				Middle	6.5	27.0 27.0	27.0	7.9 7.9	7.9	27.5 27.5	27.5	74.5 74.5	74.5	5.1 5.1	5.1		6.8 6.8			6.8		
				Bottom	12	27.0 27.0	27.0	7.9 7.9	7.9	27.6 27.6	27.6	74.4 74.4	74.4	5.1 5.1	5.1	8.0 7.9	8.0	11.8 12.8	12.3			
17-Sep-16	Sunny	Rough	14:21	Surface	1	28.3 28.2	28.3	7.9 7.9	7.9	24.8 24.9	24.9	90.0 88.1	89.1	6.1 6.0	6.1	5.9	7.9 8.0	8.0	10.6	6.9 7.7	7.3	7.2
				Middle	6	27.7 27.7	27.7	7.9 7.9	7.9	28.3 28.4	28.4	85.4 83.9	84.7	5.7 5.6	5.7		10.0 11.3			10.7		
				Bottom	11	27.6 27.6	27.6	7.9 7.9	7.9	28.7 28.8	28.8	80.4 80.1	80.3	5.4 5.4	5.4	12.3 14.1	13.2	7.0 7.6	7.3			
19-Sep-16	Sunny	Rough	13:35	Surface	1	28.3 28.3	28.3	7.9 7.9	7.9	19.2 19.3	19.3	98.7 98.2	98.5	6.9 6.9	6.9	6.9	6.7 7.0	6.9	7.4	7.9 6.7	7.3	7.0
				Middle	7	27.7 27.7	27.7	7.9 7.9	7.9	21.5 21.5	21.5	98.0 97.4	97.7	6.8 6.8	6.8		7.7 7.7			7.7		
				Bottom	13	27.3 27.3	27.3	7.9 7.9	7.9	23.5 23.5	23.5	92.7 94.0	93.4	6.4 6.5	6.5	7.7 7.7	7.7	6.8 6.2	6.5			

### Water Quality Monitoring Results at ST3 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	14:57	Surface	1	28.9 28.9	28.9	8.0 8.0	8.0	25.9 25.9	25.9	89.2 88.8	89.0	6.0 5.9	6.0	6.0	6.2 6.5	6.4	6.9	5.5 6.2	5.9	6.0		
				Middle	7	28.2 28.2	28.2	8.0 8.0	8.0	28.1 28.1	28.1	88.5 87.9	88.2	5.9 5.9	5.9		7.2 7.2			7.2			5.8 5.0	5.4
				Bottom	13	27.8 27.8	27.8	8.0 7.9	8.0	30.1 30.2	30.2	82.9 84.2	83.6	5.5 5.6	5.6		7.2 7.2			7.2			7.4 5.7	6.6
24-Sep-16	Sunny	Moderate	07:48	Surface	1	28.6 28.6	28.6	7.9 7.9	7.9	25.4 25.4	25.4	83.5 83.5	83.5	6.1 6.1	6.1	5.9	4.5 4.6	4.6	8.3	4.7 4.4	4.6	4.9		
				Middle	7	28.0 28.0	28.0	7.8 7.8	7.8	26.7 26.7	26.7	75.7 75.7	75.7	5.6 5.6	5.6		7.0 7.2			7.1			5.6 5.4	5.5
				Bottom	13	27.9 27.9	27.9	7.8 7.8	7.8	30.3 30.6	30.5	73.9 73.4	73.7	5.4 5.4	5.4		13.1 13.3			13.2			5.1 4.1	4.6
26-Sep-16	Fine	Moderate	10:02	Surface	1	26.9 26.9	26.9	7.6 7.6	7.6	24.8 24.9	24.9	93.9 94.2	94.1	6.5 6.6	6.6	6.6	6.2 6.2	6.2	8.5	6.6 4.8	5.7	5.6		
				Middle	6	26.6 26.6	26.6	7.6 7.6	7.6	26.1 26.1	26.1	93.8 92.4	93.1	6.5 6.4	6.5		9.1 8.9			9.0			5.4 4.3	4.9
				Bottom	11	26.5 26.5	26.5	7.6 7.6	7.6	29.6 29.8	29.7	85.7 85.3	85.5	5.8 5.8	5.8		10.2 10.6			10.4			7.5 4.6	6.1
26-Sep-16	Fine	Moderate	10:02	Surface	1	26.9 26.9	26.9	7.6 7.6	7.6	24.8 24.9	24.9	93.9 94.2	94.1	6.5 6.6	6.6	6.6	6.2 6.2	6.2	8.5	6.6 4.8	5.7	5.6		
				Middle	6	26.6 26.6	26.6	7.6 7.6	7.6	26.1 26.1	26.1	93.8 92.4	93.1	6.5 6.4	6.5		9.1 8.9			9.0			5.4 4.3	4.9
				Bottom	11	26.5 26.5	26.5	7.6 7.6	7.6	29.6 29.8	29.7	85.7 85.3	85.5	5.8 5.8	5.8		10.2 10.6			10.4			7.5 4.6	6.1
28-Sep-16	Cloudy	Rough	12:12	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	26.4 25.9	26.2	86.1 88.4	87.3	5.9 6.1	6.0	5.8	5.7 6.0	5.9	9.6	7.0 7.3	7.2	7.7		
				Middle	7	26.5 26.5	26.5	7.7 7.7	7.7	26.5 26.2	26.4	80.5 80.4	80.5	5.6 5.6	5.6		8.3 8.3			8.3			8.5 7.6	8.1
				Bottom	13	26.4 26.4	26.4	7.7 7.7	7.7	29.5 31.2	30.4	78.2 74.1	76.2	5.3 5.0	5.2		14.9 14.4			14.7			7.7 7.8	7.8
28-Sep-16	Cloudy	Rough	12:12	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	26.4 25.9	26.2	86.1 88.4	87.3	5.9 6.1	6.0	5.8	5.7 6.0	5.9	9.6	7.0 7.3	7.2	7.7		
				Middle	7	26.5 26.5	26.5	7.7 7.7	7.7	26.5 26.2	26.4	80.5 80.4	80.5	5.6 5.6	5.6		8.3 8.3			8.3			8.5 7.6	8.1
				Bottom	13	26.4 26.4	26.4	7.7 7.7	7.7	29.5 31.2	30.4	78.2 74.1	76.2	5.3 5.0	5.2		14.9 14.4			14.7			7.7 7.8	7.8
30-Sep-16	Cloudy	Rough	13:47	Surface	1	26.2 26.2	26.2	8.3 8.3	8.3	25.1 25.2	25.2	111.3 110.9	111.1	7.8 7.8	7.8	7.7	6.5 6.5	6.5	8.7	9.6 9.1	9.4	10.3		
				Middle	6	26.0 25.2	25.6	8.1 8.1	8.1	26.5 26.5	26.5	109.1 105.2	107.2	7.6 7.5	7.6		9.0 9.0			9.0			9.1 8.5	8.8
				Bottom	11	24.9 24.8	24.9	8.0 8.0	8.0	30.0 30.3	30.2	98.6 99.3	99.0	6.9 6.9	6.9		10.7 10.2			10.5			15.9 9.5	12.7

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

**Water Quality Monitoring Results at ST3 - Mid-Flood Tide**

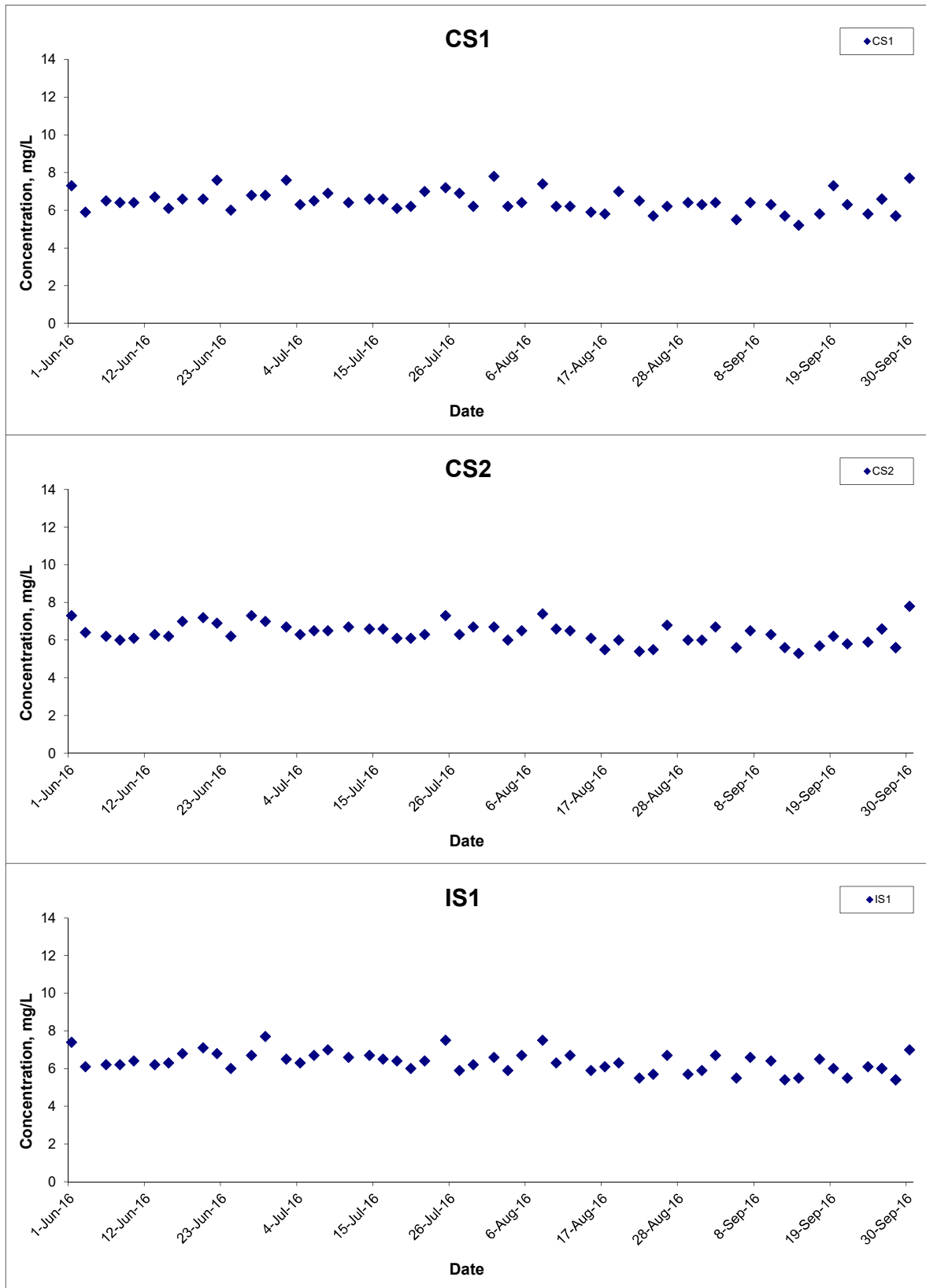
Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*
2-Sep-16	Fine	Rough	18:31	Surface	1	28.1 28.2	28.2	7.5 7.5	7.5	27.7 27.6	27.7	94.8 94.7	94.8	6.4 6.3	6.4	6.3	10.7 10.6	10.7	11.0	9.8 9.4	9.6	8.8
				Middle	5.5	28.2 28.2	28.2	7.5 7.5	7.5	28.2 27.8	28.0	92.3 92.1	92.2	6.2 6.2	6.2		9.2 10.5	9.9		8.8 8.2	8.5	
				Bottom	10	28.2 28.2	28.2	7.6 7.6	7.6	30.4 30.6	30.5	93.3 93.6	93.5	6.2 6.2	6.2		12.5 12.1	12.3		8.8 7.9	8.4	
5-Sep-16	Cloudy	Moderate	09:43	Surface	1	27.6 27.6	27.6	7.6 7.6	7.6	21.9 21.9	21.9	77.6 79.1	78.4	5.4 5.5	5.5	5.5	2.2 2.4	2.3	4.4	7.2 9.0	8.1	7.7
				Middle	6	27.4 27.4	27.4	7.7 7.7	7.7	25.4 25.6	25.5	77.7 79.7	78.7	5.3 5.5	5.4		2.9 2.9	2.9		6.4 7.5	7.0	
				Bottom	11	27.0 27.0	27.0	7.7 7.7	7.7	28.3 28.4	28.4	81.5 78.0	79.8	5.5 5.3	5.4		7.6 8.4	8.0		7.9 7.8	7.9	
7-Sep-16	Cloudy	Moderate	11:01	Surface	1	28.1 28.1	28.1	7.8 7.8	7.8	27.4 27.4	27.4	90.6 91.0	90.8	6.1 6.1	6.1	6.0	8.3 8.5	8.4	8.8	8.1 8.3	8.2	8.4
				Middle	6.5	27.9 27.9	27.9	7.8 7.8	7.8	30.9 31.2	31.1	89.6 89.4	89.5	5.9 5.9	5.9		9.3 9.7	9.5		9.8 8.4	9.1	
				Bottom	12	27.5 27.4	27.5	7.9 7.9	7.9	33.9 33.9	33.9	90.7 90.7	90.7	5.9 5.9	5.9		8.2 9.0	8.6		8.0 7.7	7.9	
10-Sep-16	Rainy	Rough	14:23	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	25.5 25.8	25.7	90.6 92.0	91.3	6.1 6.2	6.2	5.4	6.6 6.1	6.4	9.2	3.0 2.8	2.9	2.9
				Middle	6	27.9 27.9	27.9	7.8 7.8	7.8	25.0 25.1	25.1	67.3 67.1	67.2	4.6 4.6	4.6		9.7 9.8	9.8		2.8 3.4	3.1	
				Bottom	11	27.7 27.8	27.8	7.9 7.9	7.9	28.9 29.0	29.0	80.2 80.6	80.4	5.4 5.4	5.4		11.5 11.5	11.5		2.6 2.8	2.7	
12-Sep-16	Sunny	Moderate	16:28	Surface	1	28.9 28.9	28.9	7.7 7.7	7.7	31.6 31.4	31.5	88.8 88.6	88.7	5.8 5.7	5.8	5.5	4.0 3.9	4.0	7.7	9.8 10.6	10.2	9.4
				Middle	6.5	26.9 26.9	26.9	7.7 7.7	7.7	28.7 28.7	28.7	75.4 75.0	75.2	5.1 5.1	5.1		4.2 4.3	4.3		8.2 8.8	8.5	
				Bottom	12	26.8 26.8	26.8	7.7 7.7	7.7	32.4 32.5	32.5	75.0 74.6	74.8	5.0 5.0	5.0		15.1 14.5	14.8		8.2 10.8	9.5	
14-Sep-16	Fine	Moderate	17:31	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	26.5 26.5	26.5	75.8 75.6	75.7	5.2 5.2	5.2	5.2	6.4 6.0	6.2	7.4	12.3 12.7	12.5	11.3
				Middle	6.5	27.0 27.0	27.0	7.8 7.8	7.8	27.0 26.9	27.0	75.2 75.3	75.3	5.2 5.2	5.2		7.8 7.7	7.8		9.3 11.3	10.3	
				Bottom	12	26.9 26.9	26.9	7.9 7.9	7.9	27.9 27.8	27.9	75.8 75.7	75.8	5.2 5.2	5.2		7.8 8.3	8.1		9.6 12.4	11.0	
17-Sep-16	Fine	Rough	19:47	Surface	1	28.2 28.2	28.2	7.9 7.9	7.9	24.9 25.0	25.0	87.6 87.2	87.4	6.0 5.9	6.0	5.8	8.3 9.9	9.1	11.7	7.4 6.9	7.2	7.7
				Middle	6	27.6 27.6	27.6	7.9 7.9	7.9	28.3 28.3	28.3	82.7 81.6	82.2	5.6 5.5	5.6		11.3 12.1	11.7		7.9 8.5	8.2	
				Bottom	11	27.6 27.6	27.6	7.9 7.9	7.9	28.8 28.9	28.9	79.7 79.6	79.7	5.4 5.4	5.4		14.4 14.4	14.4		8.1 7.4	7.8	
19-Sep-16	Sunny	Rough	09:07	Surface	1	27.9 27.9	27.9	7.8 7.8	7.8	19.7 19.7	19.7	89.5 89.8	89.7	6.3 6.3	6.3	6.4	6.5 6.8	6.7	7.8	8.1 6.6	7.4	6.7
				Middle	6.5	27.1 27.2	27.2	7.8 7.8	7.8	22.4 22.3	22.4	90.7 91.2	91.0	6.4 6.4	6.4		8.6 7.9	8.3		7.7 5.7	6.7	
				Bottom	12	26.7 26.7	26.7	7.8 7.8	7.8	24.4 24.4	24.4	86.9 85.1	86.0	6.1 5.9	6.0		7.9 8.6	8.3		5.6 6.2	5.9	

### Water Quality Monitoring Results at ST3 - Mid-Flood Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)			Turbidity(NTU)			Suspended Solids (mg/L)				
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	DA*	Value	Average	DA*	Value	Average	DA*		
21-Sep-16	Cloudy	Moderate	10:10	Surface	1	28.4 28.4	28.4	7.8 7.8	7.8	26.3 26.3	26.3	87.1 87.4	87.3	5.9 5.9	5.9	6.0	6.0 6.3	6.2	7.3	3.9 2.7	3.3	5.0		
				Middle	6.5	27.7 27.7	27.7	7.9 7.9	7.9	29.0 29.0	29.0	88.4 88.9	88.7	5.9 6.0	6.0		8.1 7.4			7.8			4.6 5.0	6.6
				Bottom	12	27.3 27.3	27.3	7.8 7.8	7.8	31.1 31.1	31.1	84.5 82.5	83.5	5.6 5.5	5.6		7.4 8.1			7.8			5.4 5.4	5.2
24-Sep-16	Sunny	Moderate	14:23	Surface	1	28.7 28.7	28.7	7.9 7.9	7.9	25.1 25.1	25.1	87.6 87.7	87.7	6.4 6.4	6.4	6.1	5.5 5.6	5.6	8.2	5.6 3.7	4.7	5.5		
				Middle	7	27.7 27.7	27.7	7.9 7.9	7.9	26.8 26.7	26.8	78.6 78.6	78.6	5.8 5.8	5.8		8.0 7.9			8.0			6.6 4.8	5.7
				Bottom	13	27.6 27.6	27.6	7.8 7.8	7.8	29.7 29.0	29.4	70.5 70.5	70.5	5.2 5.2	5.2		10.8 11.0			10.9			6.3 6.0	6.2
26-Sep-16	Fine	Moderate	17:10	Surface	1	27.1 27.1	27.1	7.3 7.7	7.5	24.4 24.5	24.5	94.1 92.9	93.5	6.5 6.5	6.5	6.4	6.4 6.6	6.5	8.6	5.5 4.9	5.2	5.1		
				Middle	6	26.9 25.9	26.4	7.6 7.7	7.7	26.1 26.0	26.1	92.9 88.1	90.5	6.4 6.2	6.3		8.9 8.8			8.9			5.3 4.7	5.0
				Bottom	11	25.7 25.7	25.7	7.7 7.5	7.6	28.9 28.3	28.6	82.6 83.0	82.8	5.7 5.8	5.8		10.7 10.3			10.5			4.9 5.2	5.1
26-Sep-16	Fine	Moderate	17:10	Surface	1	27.1 27.1	27.1	7.3 7.7	7.5	24.4 24.5	24.5	94.1 92.9	93.5	6.5 6.5	6.5	6.4	6.4 6.6	6.5	8.6	5.5 4.9	5.2	5.1		
				Middle	6	26.9 25.9	26.4	7.6 7.7	7.7	26.1 26.0	26.1	92.9 88.1	90.5	6.4 6.2	6.3		8.9 8.8			8.9			5.3 4.7	5.0
				Bottom	11	25.7 25.7	25.7	7.7 7.5	7.6	28.9 28.3	28.6	82.6 83.0	82.8	5.7 5.8	5.8		10.7 10.3			10.5			4.9 5.2	5.1
28-Sep-16	Cloudy	Rough	17:53	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	25.2 25.5	25.4	87.5 91.1	89.3	6.0 6.3	6.2	6.0	6.6 6.8	6.7	9.3	10.1 7.4	8.8	8.6		
				Middle	6.5	26.2 26.2	26.2	7.8 7.8	7.8	27.6 25.6	26.6	82.6 80.0	81.3	5.7 5.6	5.7		9.1 9.0			9.1			10.8 6.9	8.9
				Bottom	12	26.0 26.1	26.1	7.7 7.7	7.7	28.1 28.7	28.4	73.1 74.4	73.8	5.1 5.1	5.1		12.1 12.3			12.2			8.4 7.5	8.0
28-Sep-16	Cloudy	Rough	17:53	Surface	1	27.1 27.1	27.1	7.8 7.8	7.8	25.2 25.5	25.4	87.5 91.1	89.3	6.0 6.3	6.2	6.0	6.6 6.8	6.7	9.3	10.1 7.4	8.8	8.6		
				Middle	6.5	26.2 26.2	26.2	7.8 7.8	7.8	27.6 25.6	26.6	82.6 80.0	81.3	5.7 5.6	5.7		9.1 9.0			9.1			10.8 6.9	8.9
				Bottom	12	26.0 26.1	26.1	7.7 7.7	7.7	28.1 28.7	28.4	73.1 74.4	73.8	5.1 5.1	5.1		12.1 12.3			12.2			8.4 7.5	8.0
30-Sep-16	Cloudy	Rough	18:36	Surface	1	25.4 25.4	25.4	7.9 7.9	7.9	24.5 24.6	24.6	101.1 101.4	101.3	7.2 7.2	7.2	7.2	6.8 6.3	6.6	8.9	11.3 7.7	9.5	10.9		
				Middle	6	25.2 25.2	25.2	8.0 7.9	8.0	26.2 26.1	26.2	101.9 101.3	101.6	7.2 7.2	7.2		9.3 9.3			9.3			13.7 9.6	11.7
				Bottom	11	25.1 25.1	25.1	7.9 7.9	7.9	29.1 28.4	28.8	91.9 91.7	91.8	6.4 6.4	6.4		10.7 10.6			10.7			11.0 12.1	11.6

Remarks: \*DA: Depth-Averaged  
 \*\*Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

## Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



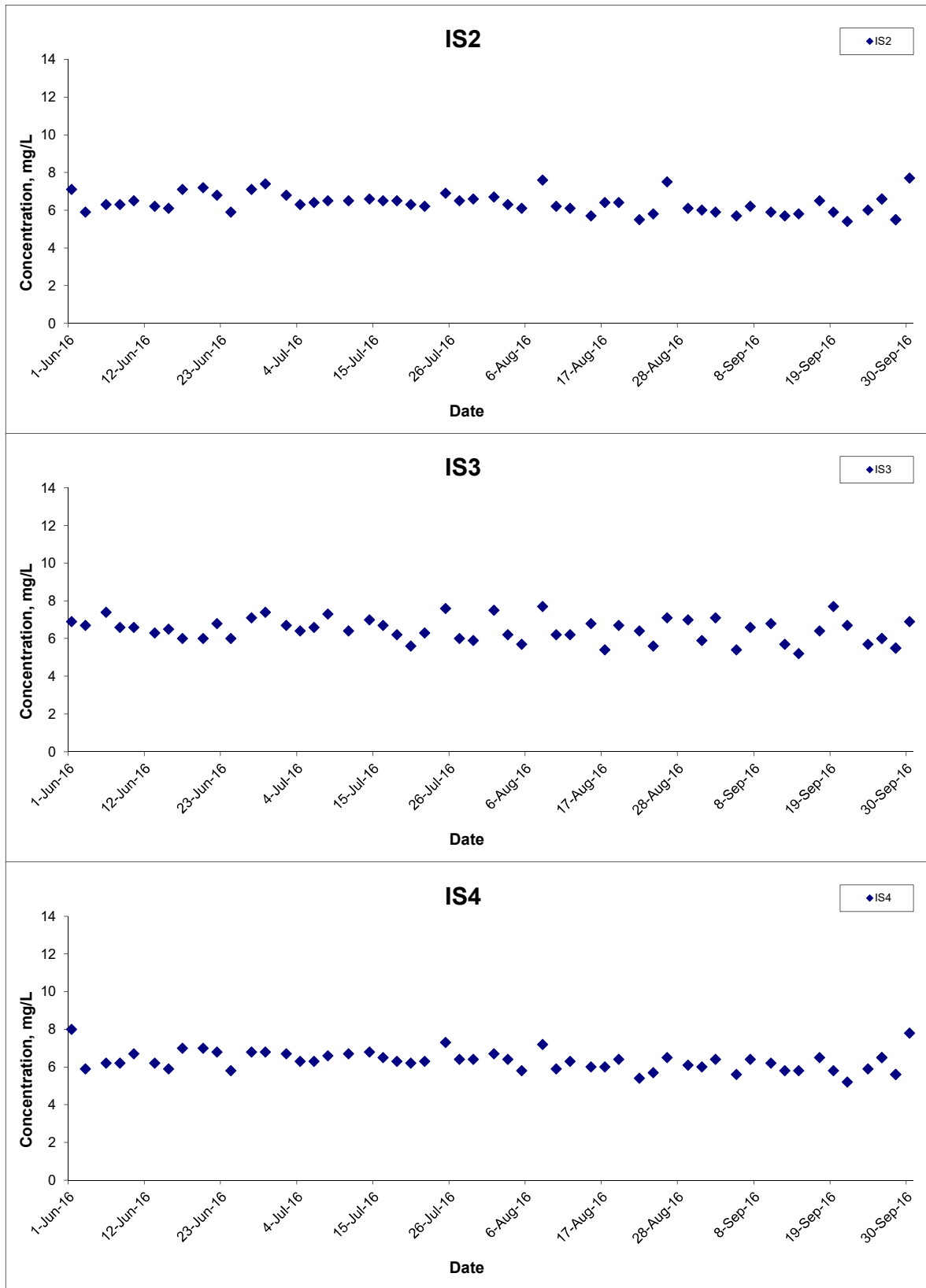
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge  
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## Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge  
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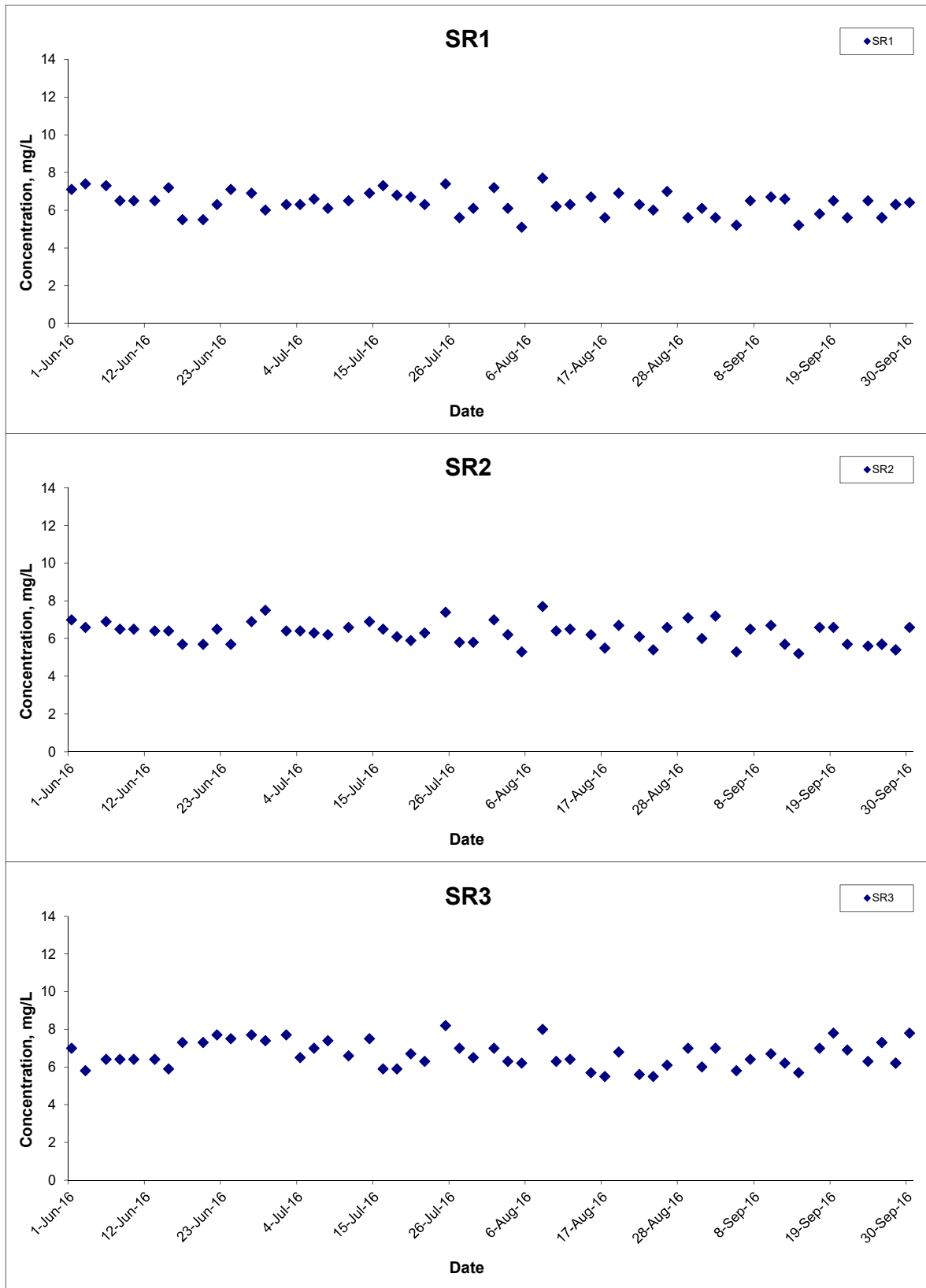
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## Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



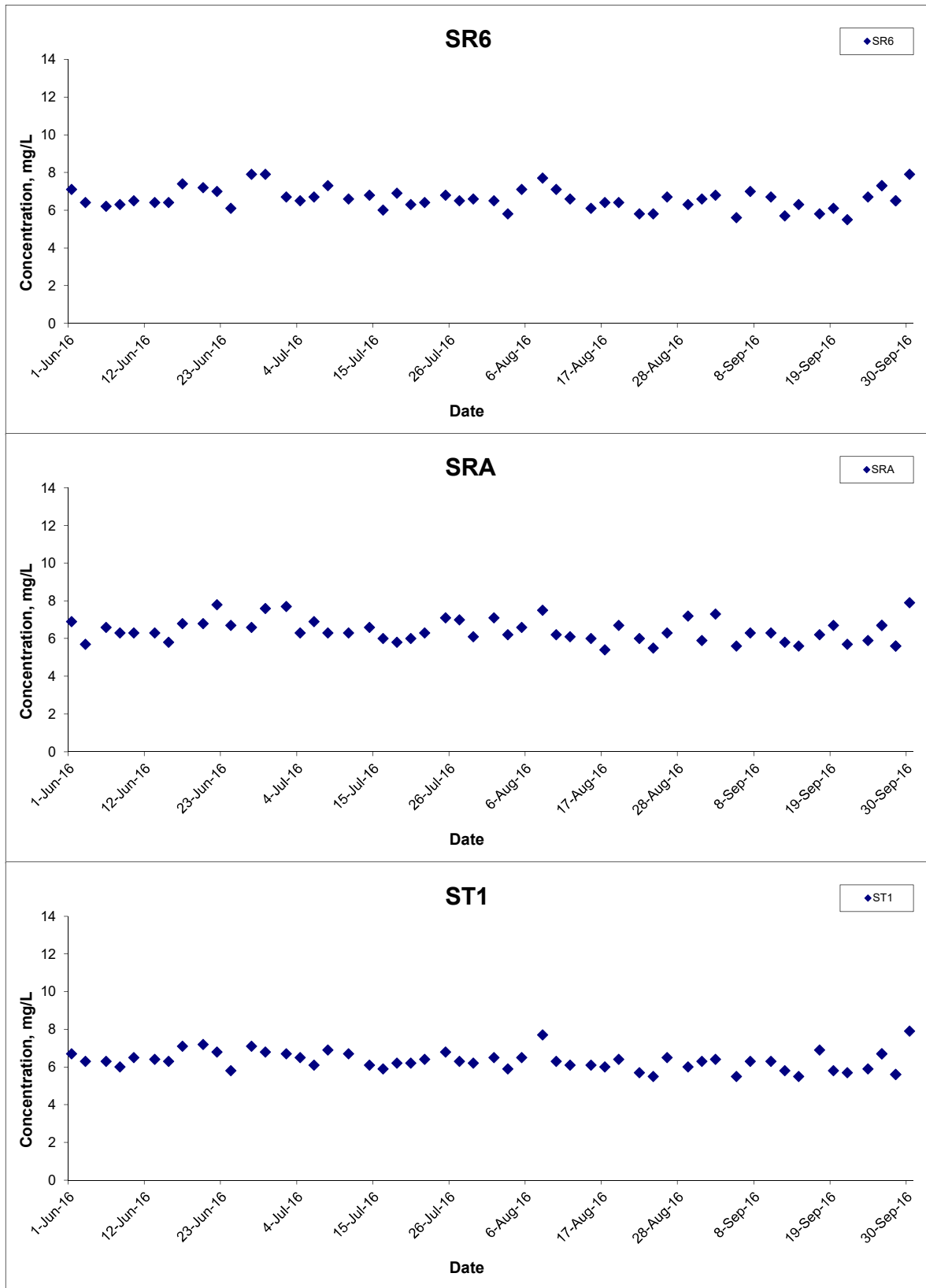
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## Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



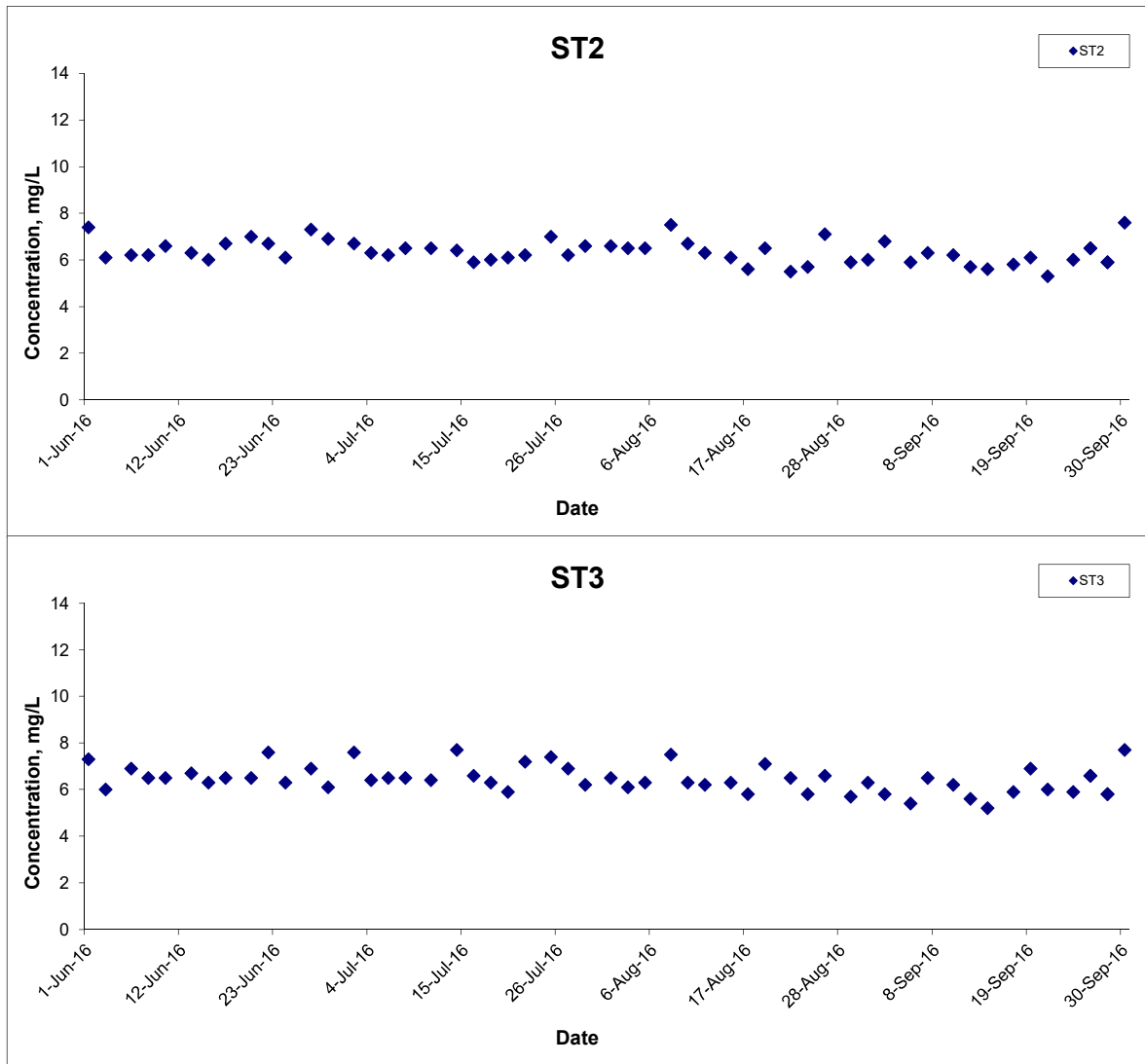
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 Hong Kong Link Road-Section between  
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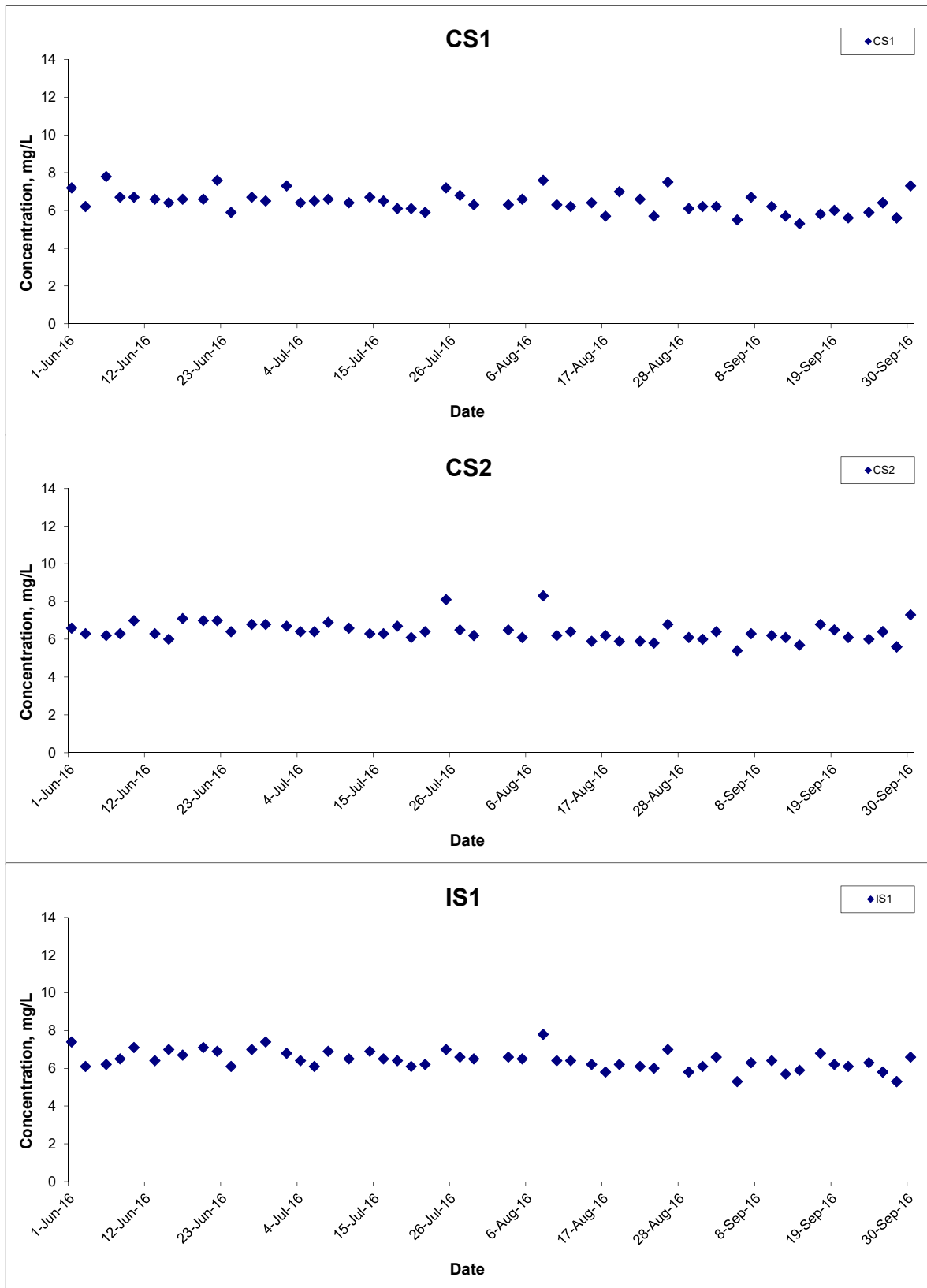


## Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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## Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



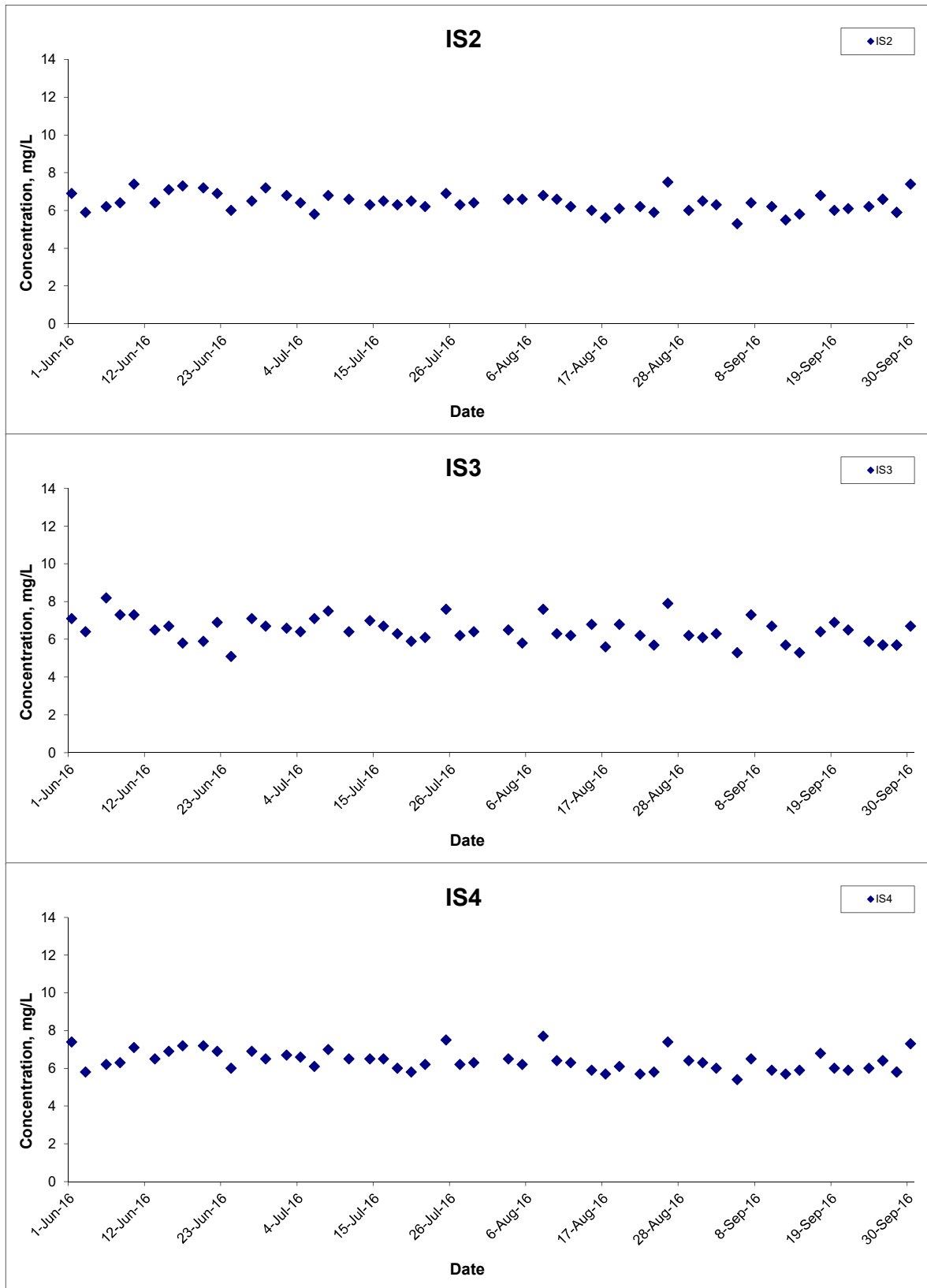
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 Hong Kong Link Road-Section between  
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## Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



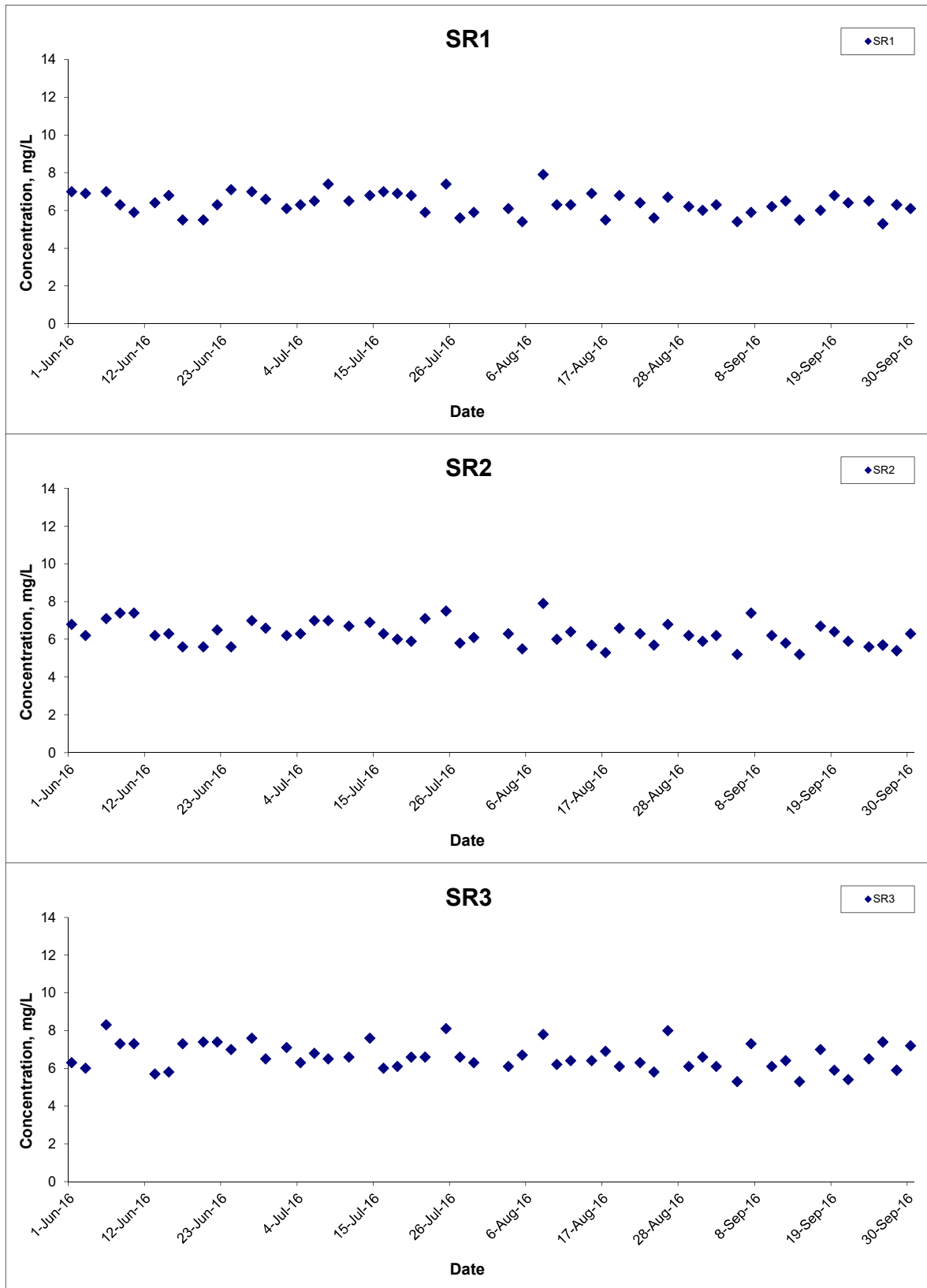
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## Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



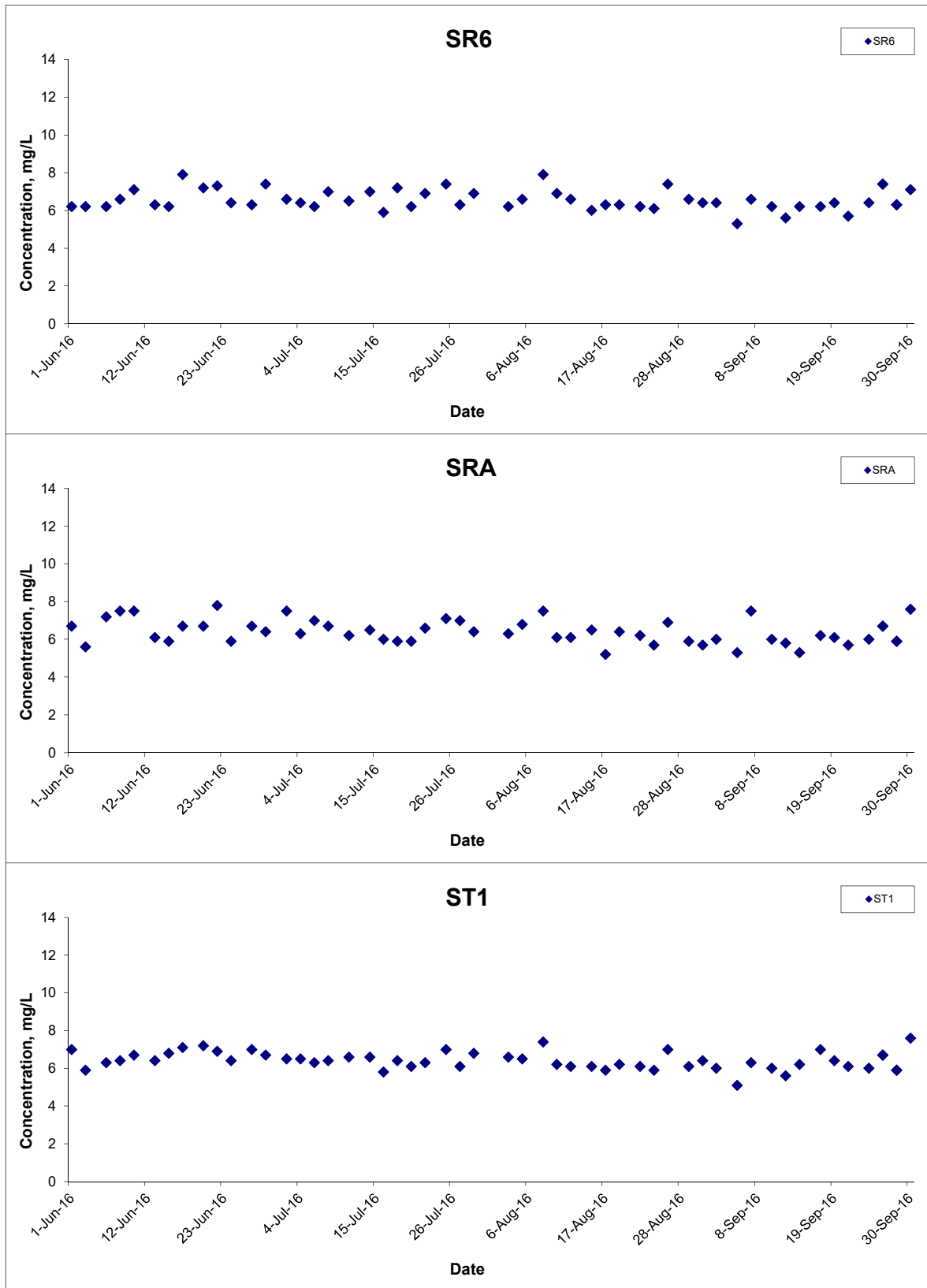
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## Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



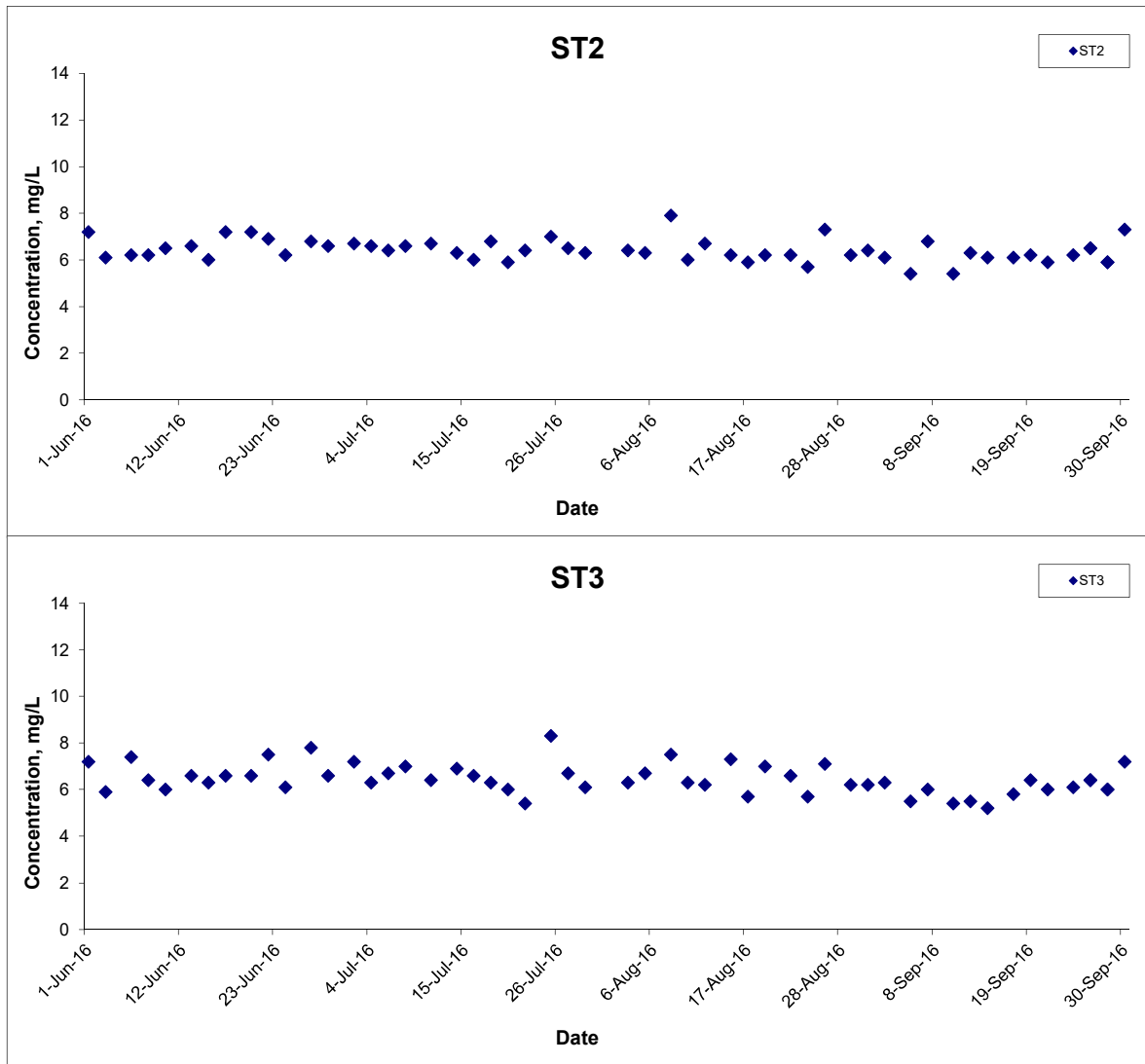
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## Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



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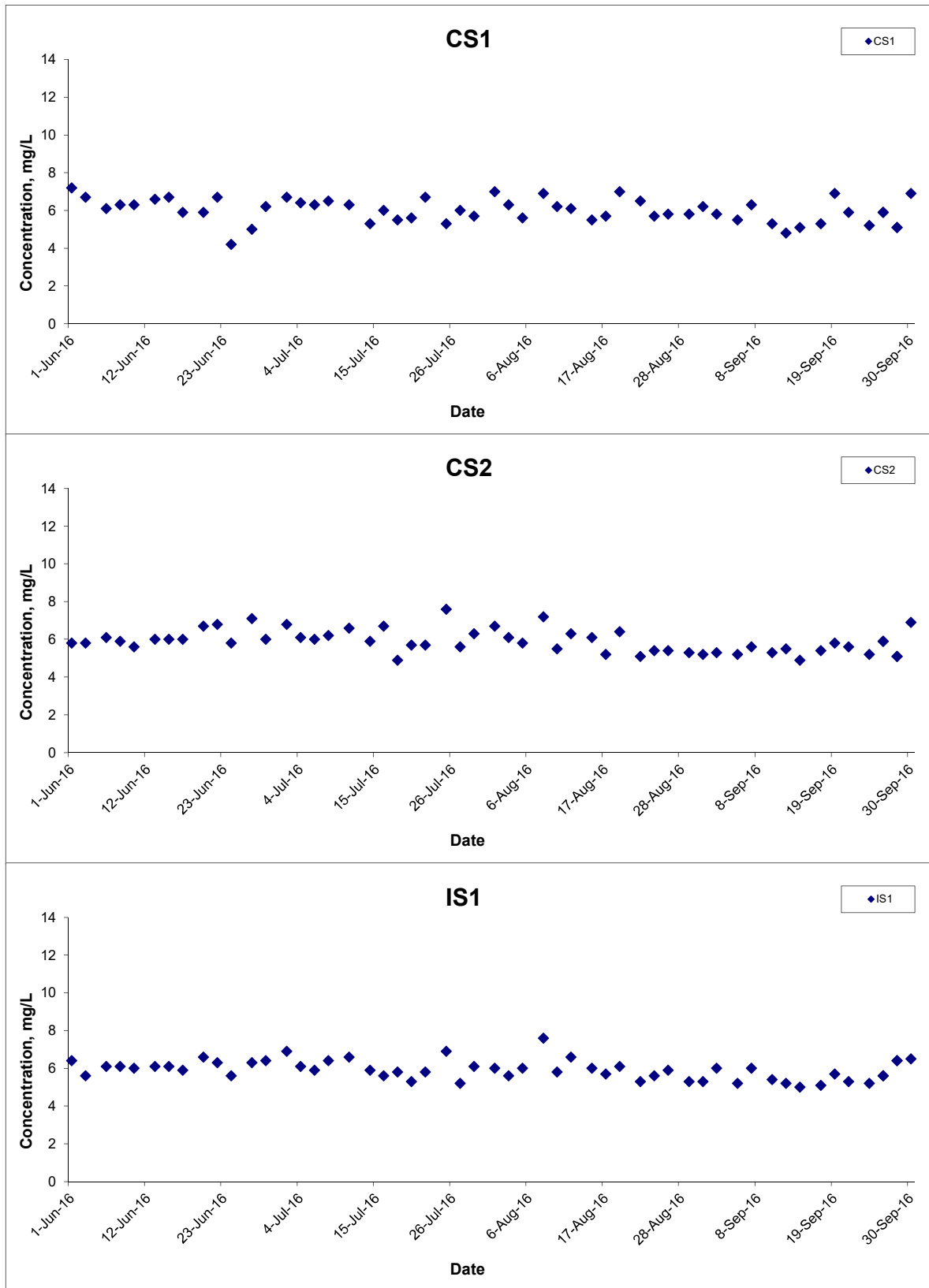
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## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



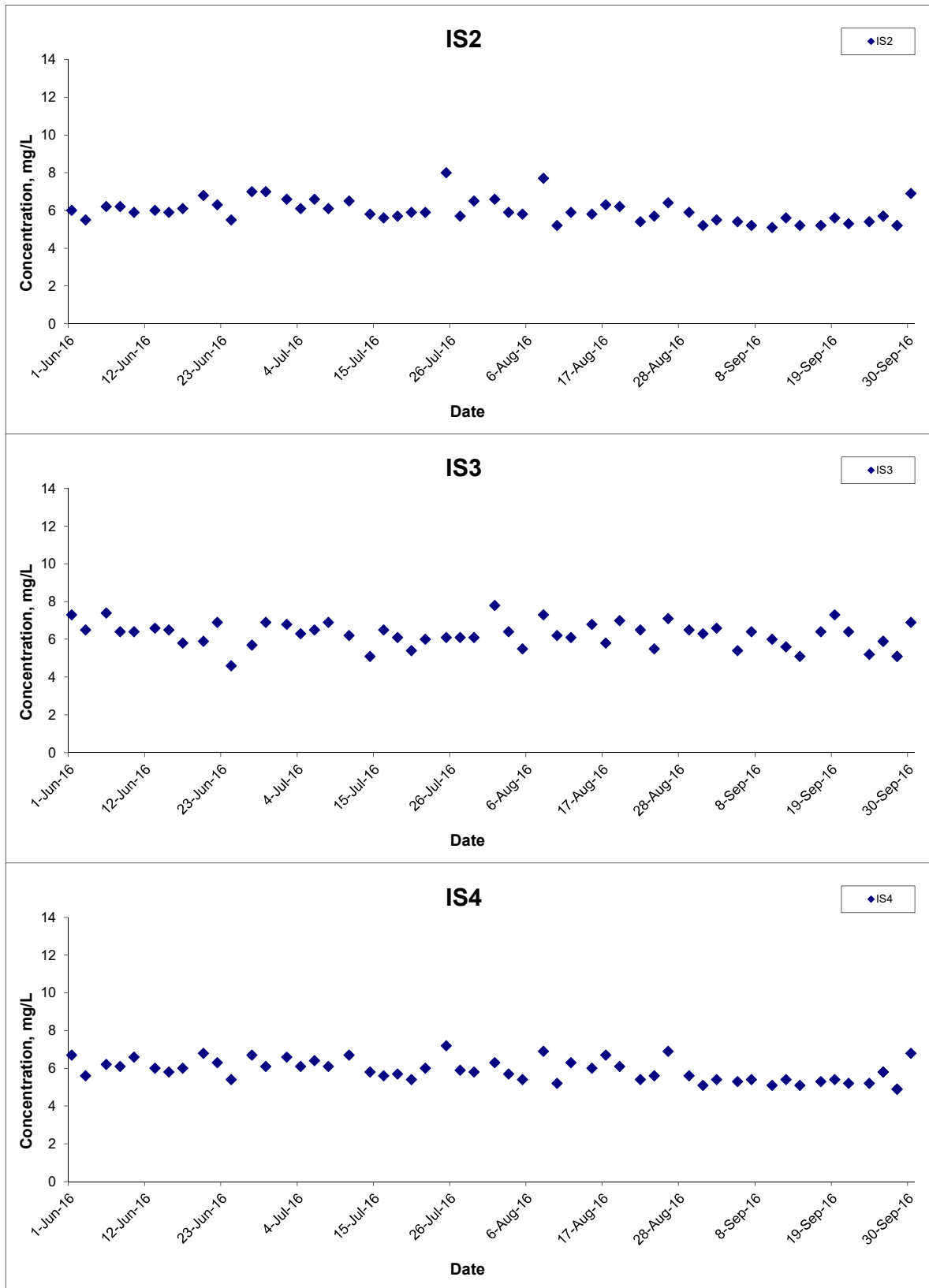
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## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



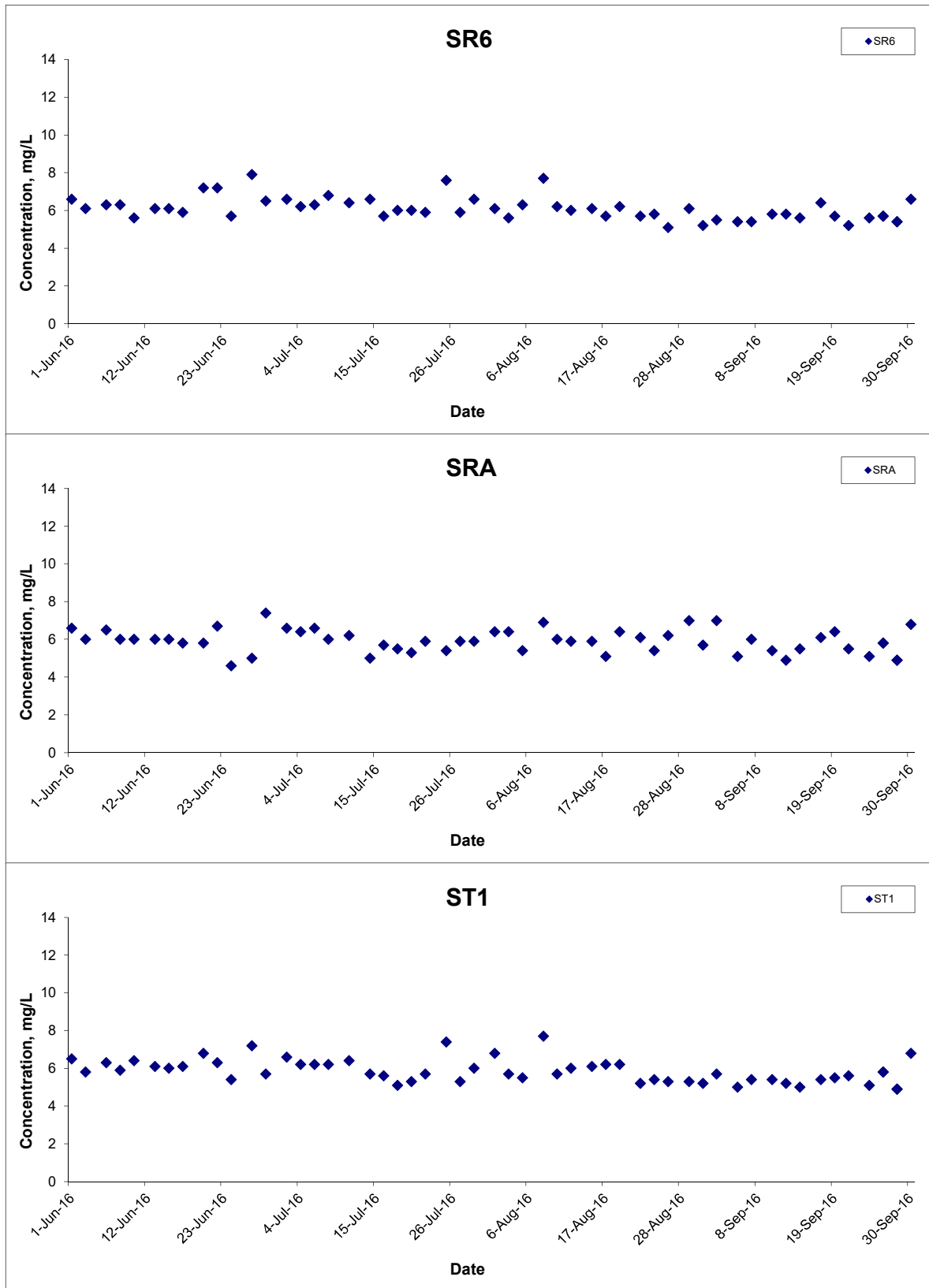
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## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



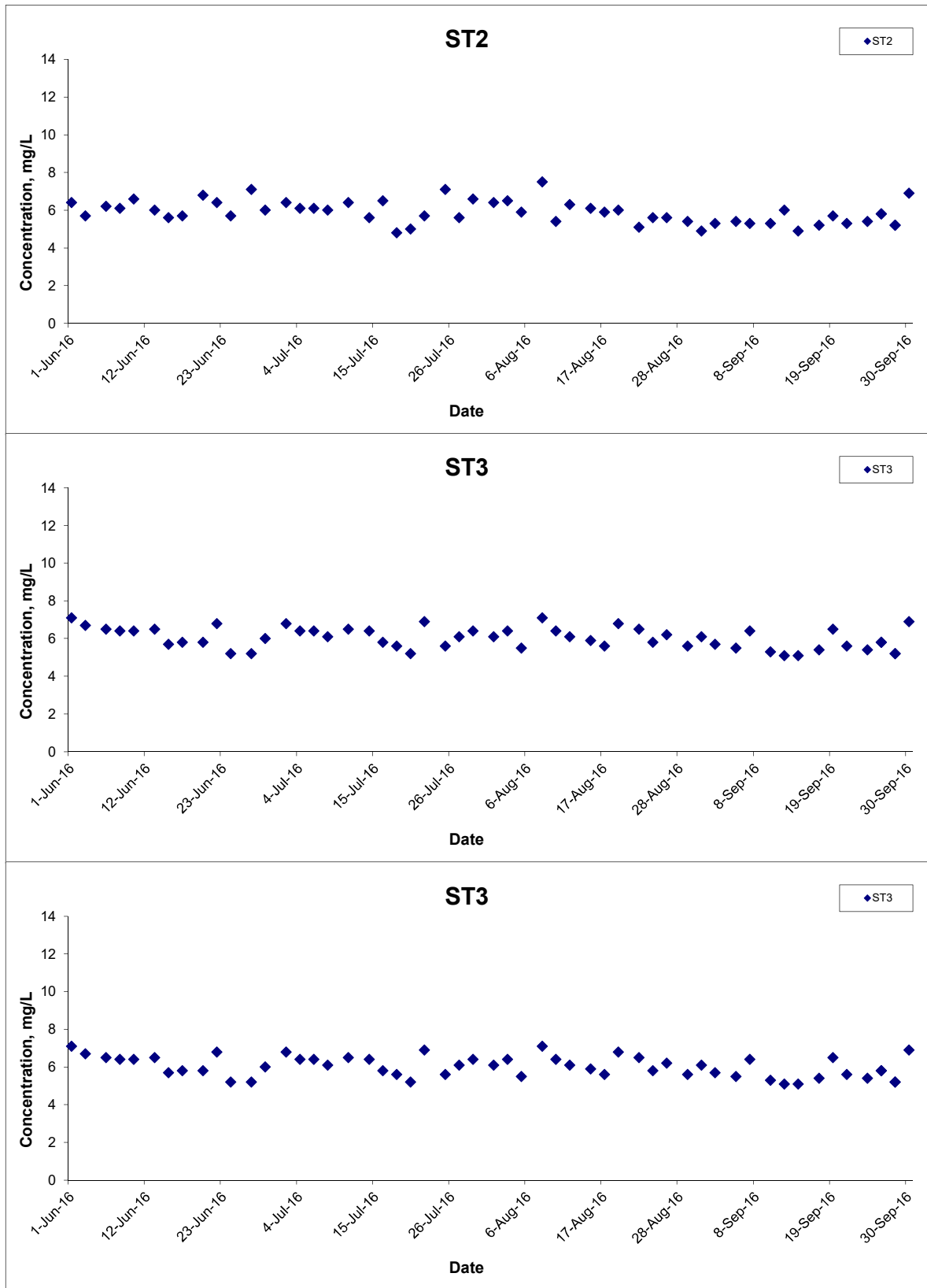
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## Dissolved Oxygen (Bottom) at Mid-Ebb Tide



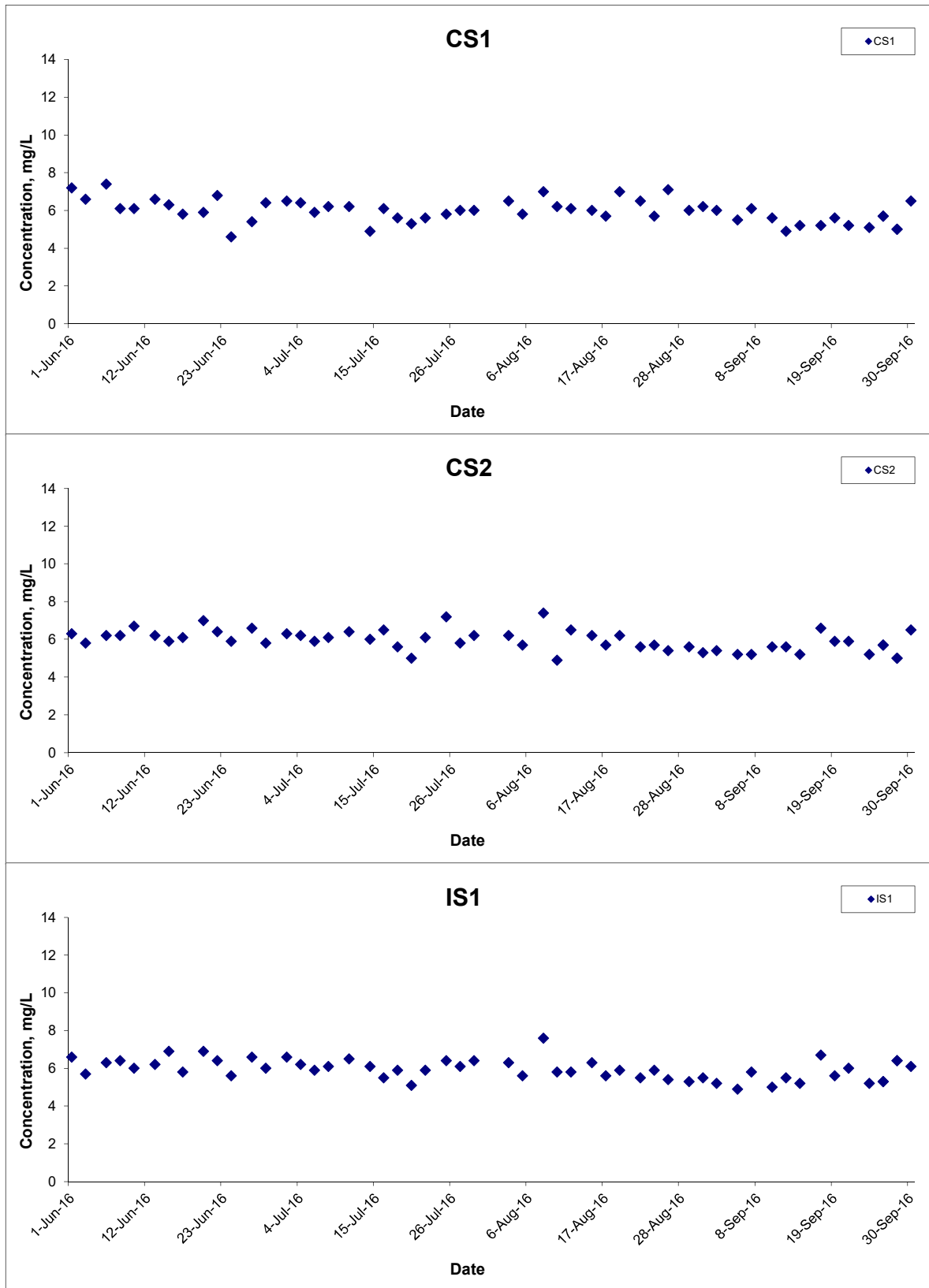
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## Dissolved Oxygen (Bottom) at Mid-Flood Tide



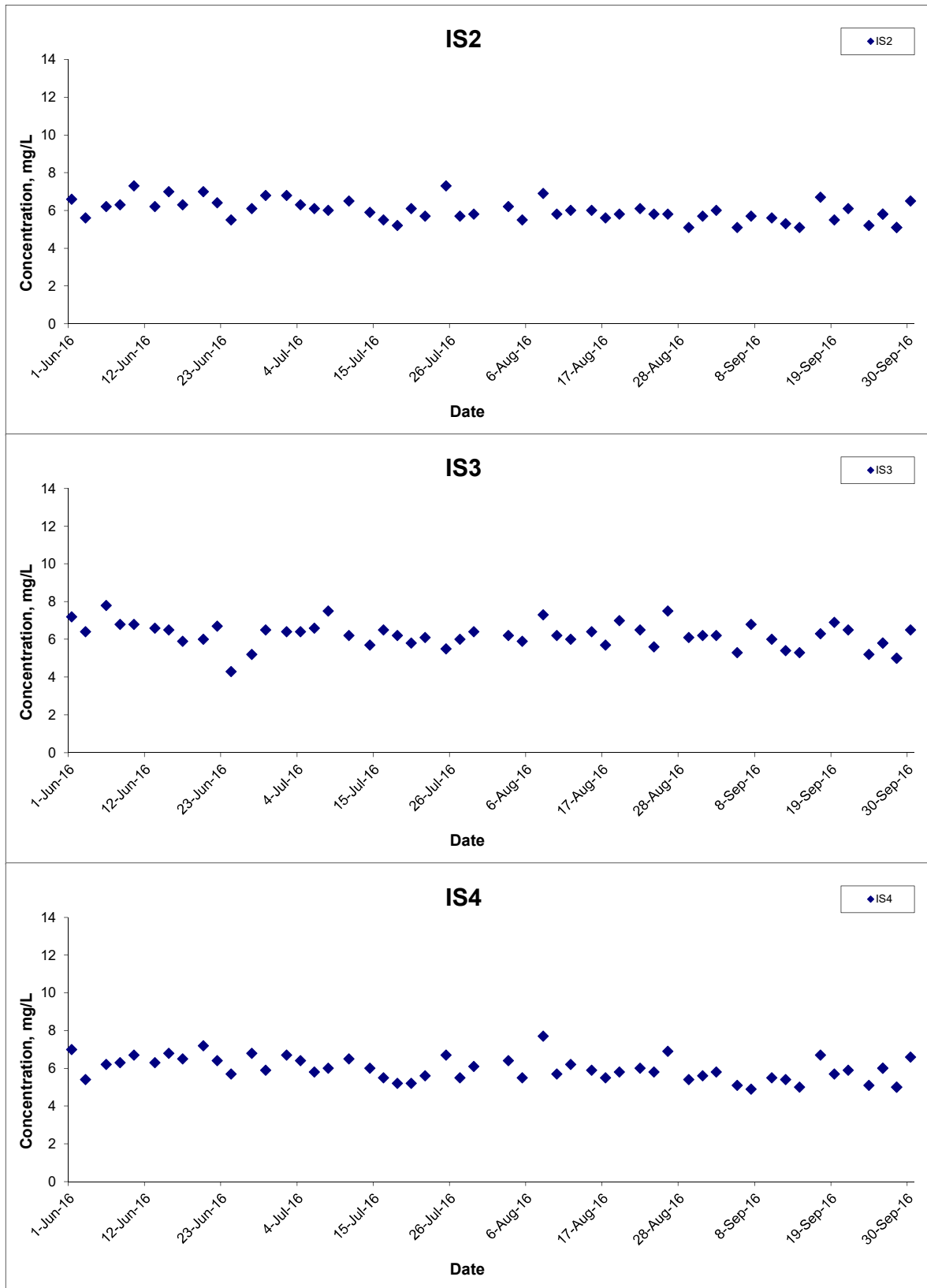
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## Dissolved Oxygen (Bottom) at Mid-Flood Tide



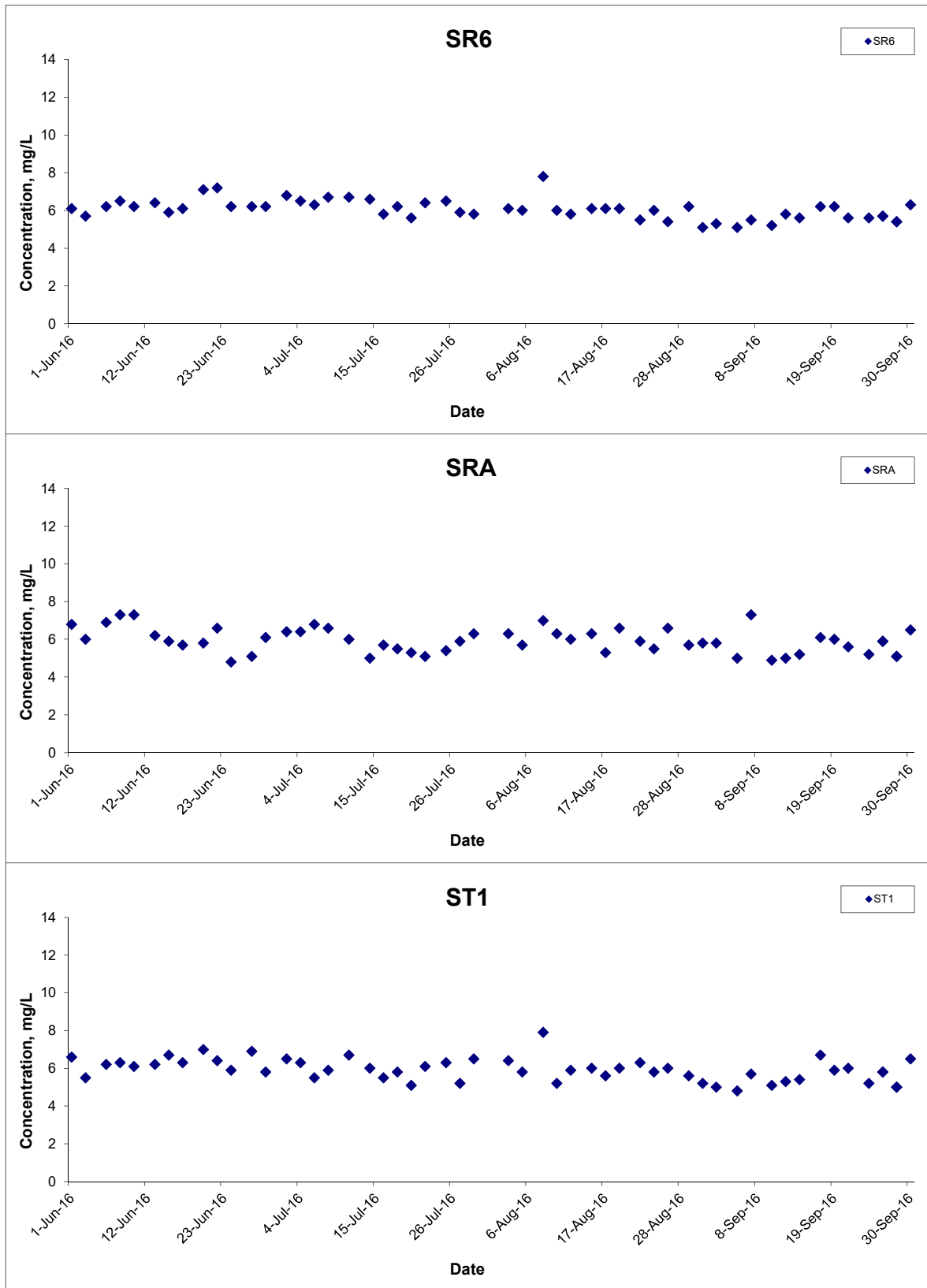
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## Dissolved Oxygen (Bottom) at Mid-Flood Tide



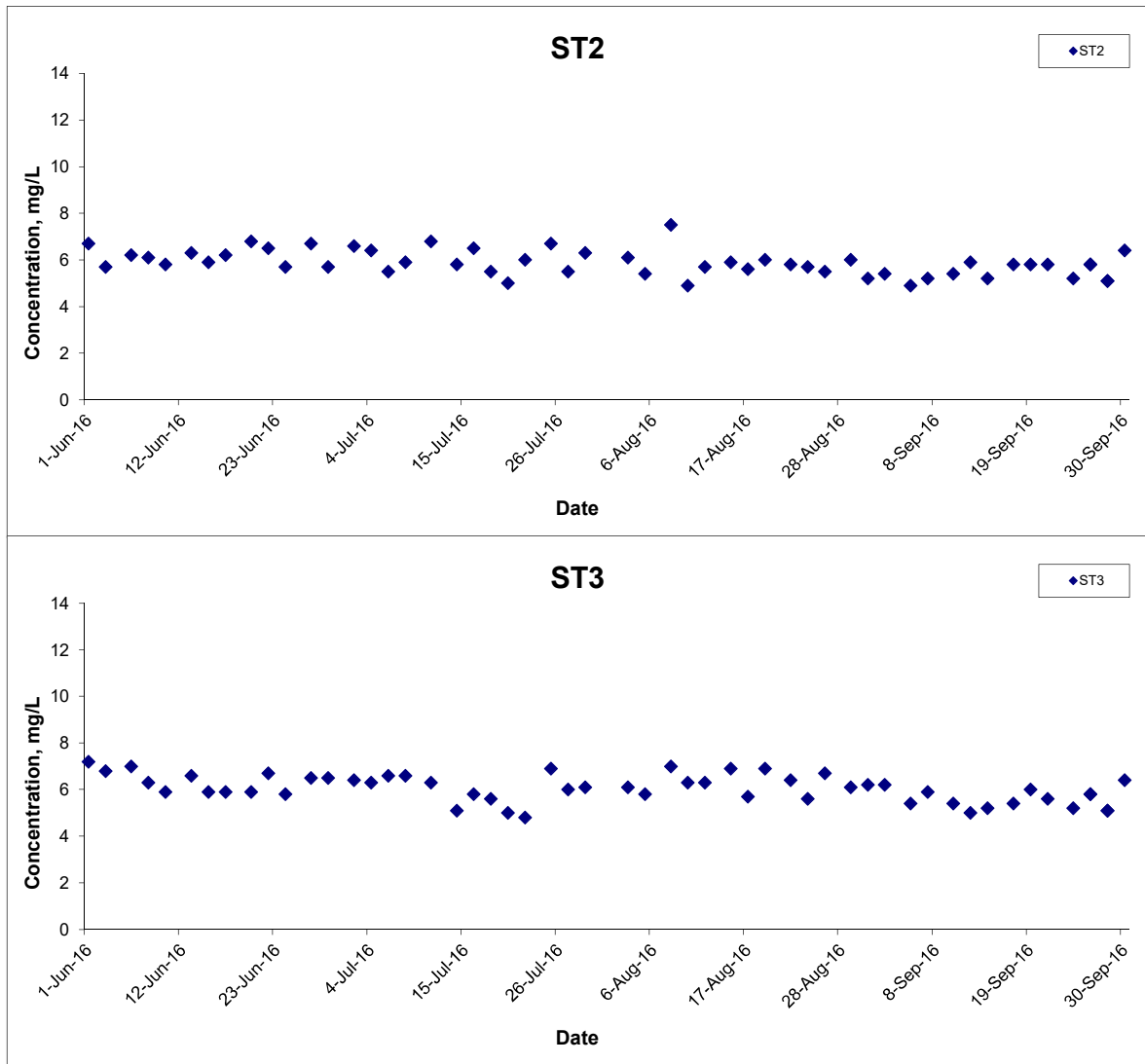
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge  
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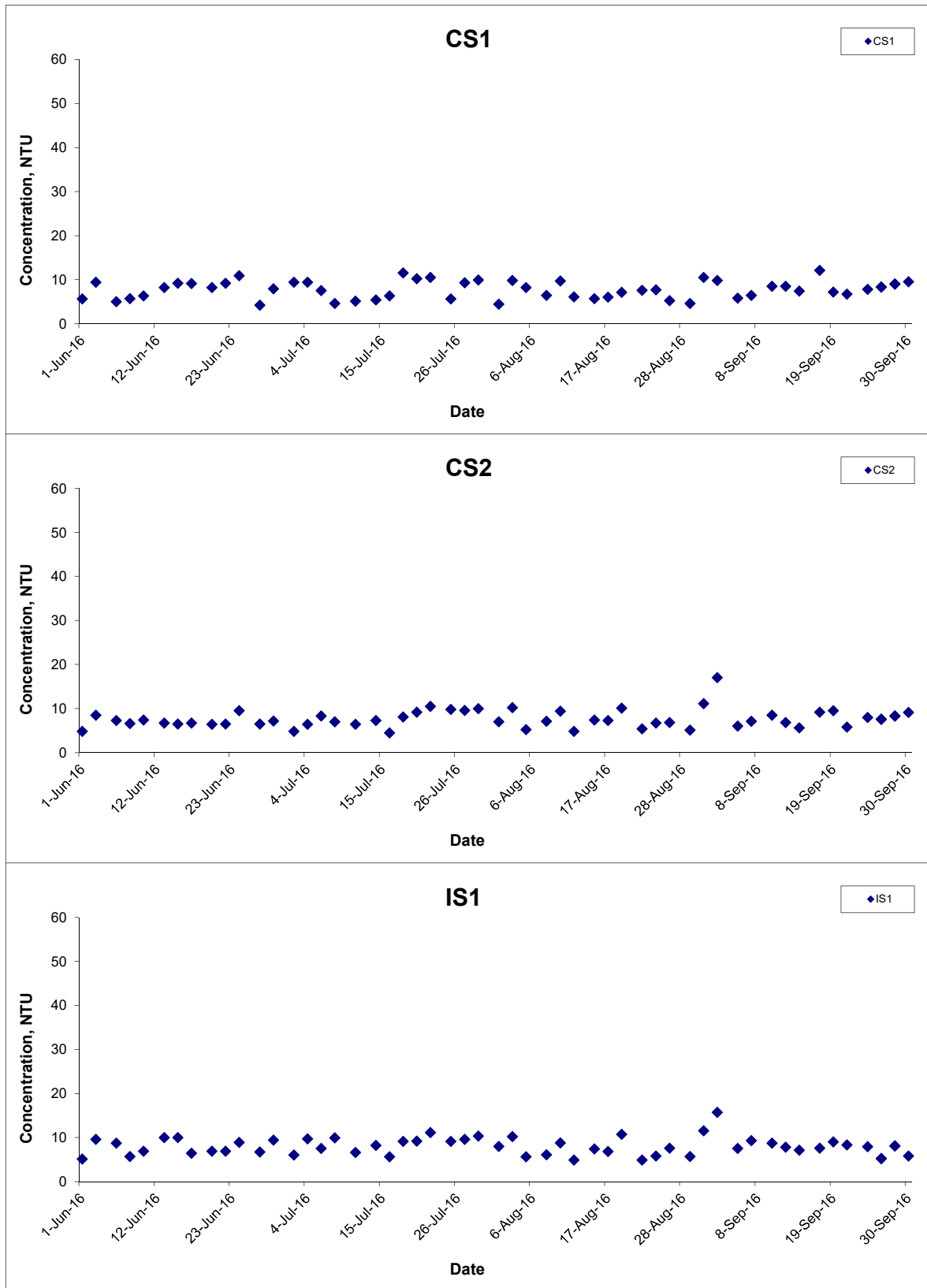
## Dissolved Oxygen (Bottom) at Mid-Flood Tide



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## Turbidity (Depth-averaged) at Mid-Ebb Tide



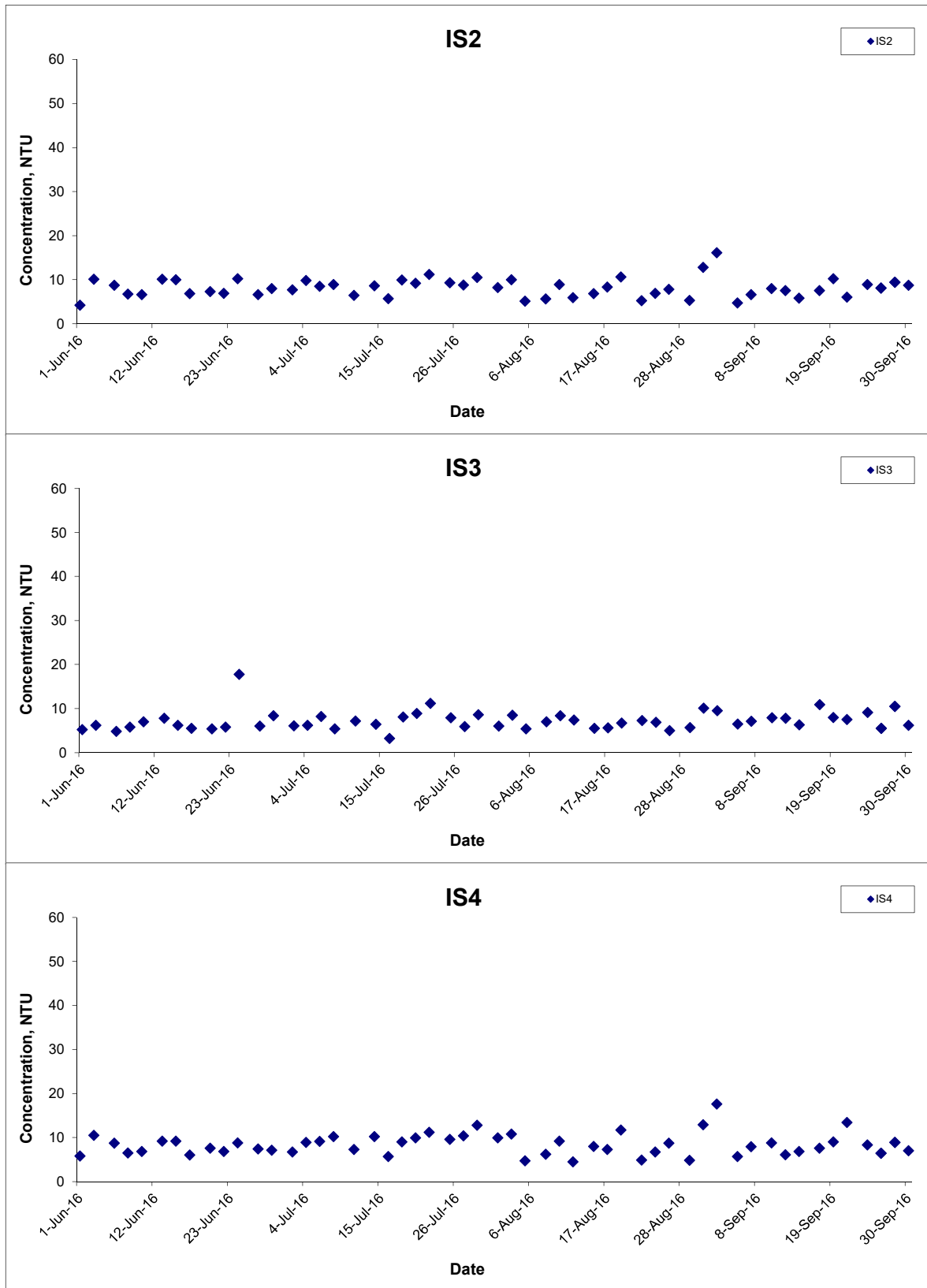
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## Turbidity (Depth-averaged) at Mid-Ebb Tide



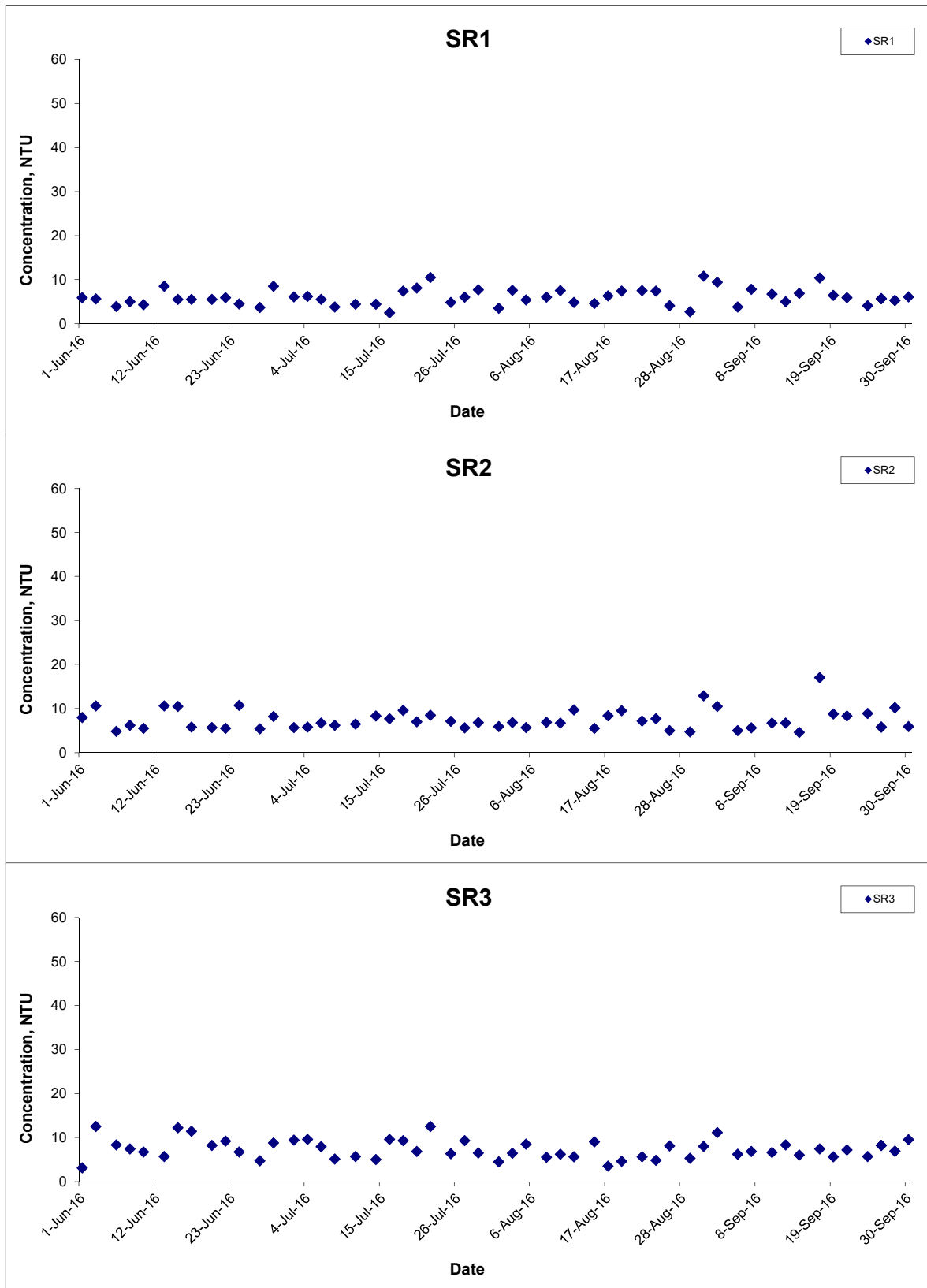
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### Turbidity (Depth-averaged) at Mid-Ebb Tide



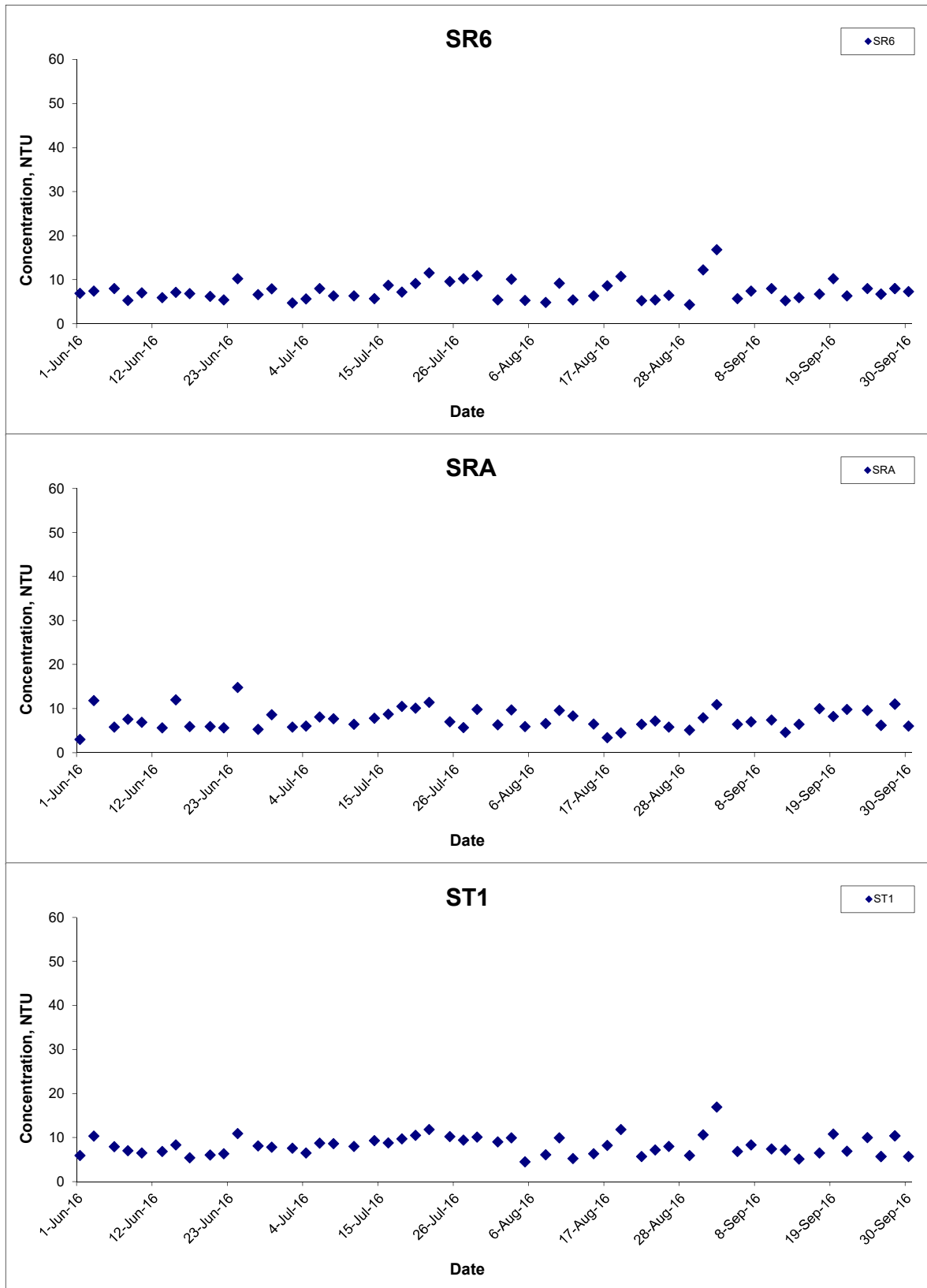
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## Turbidity (Depth-averaged) at Mid-Ebb Tide



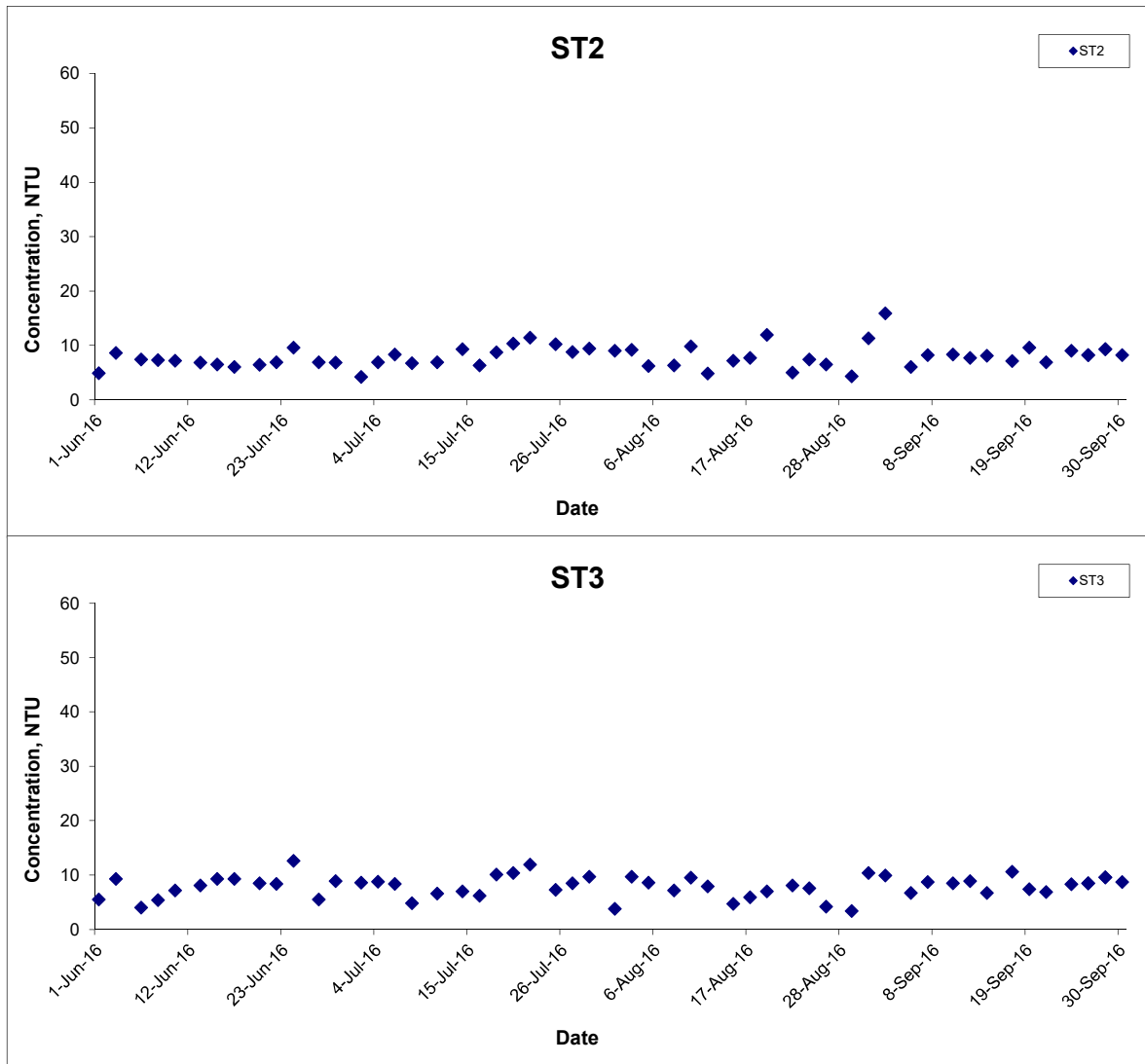
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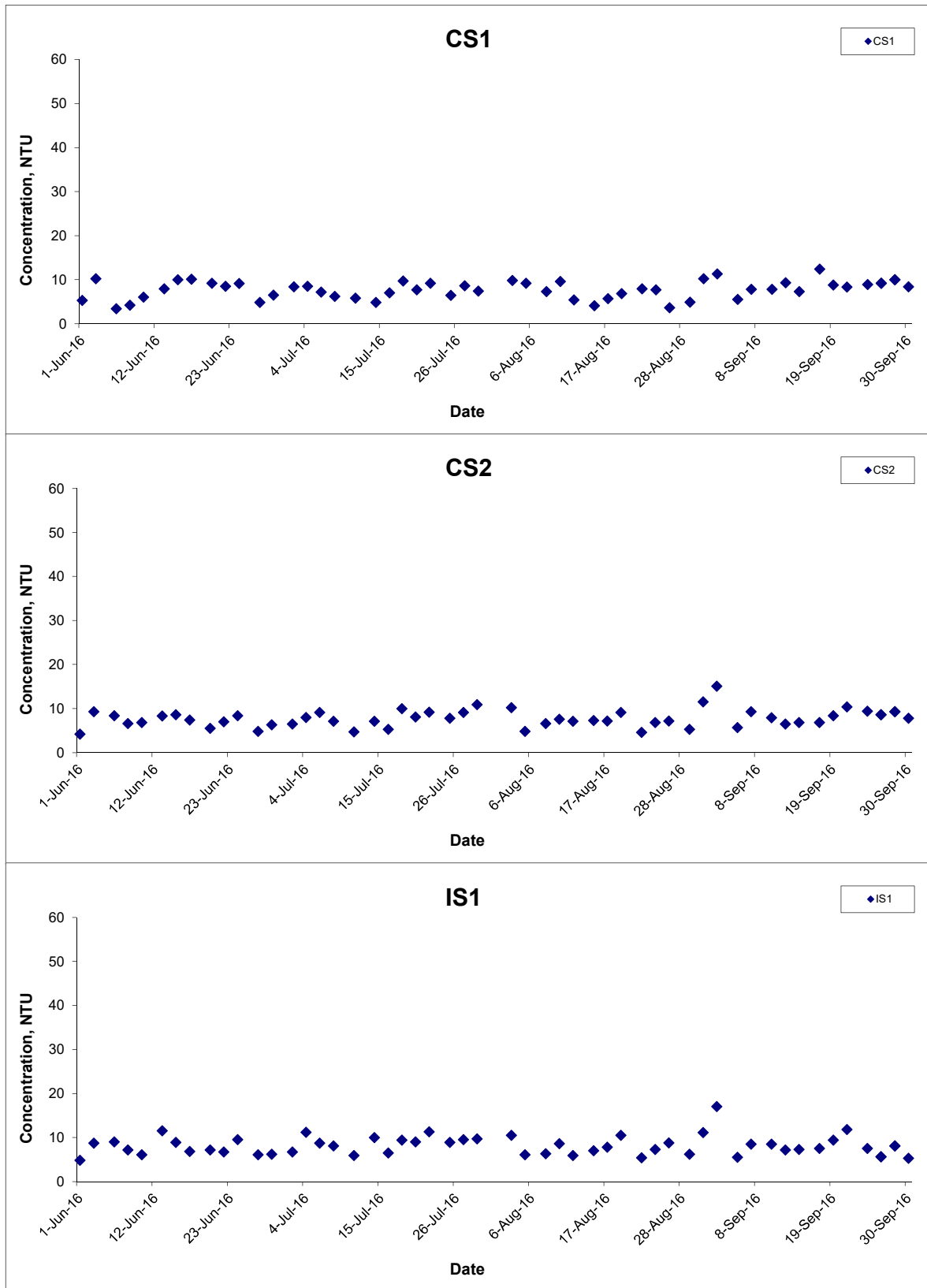


### Turbidity (Depth-averaged) at Mid-Ebb Tide



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## Turbidity (Depth-averaged) at Mid-Flood Tide



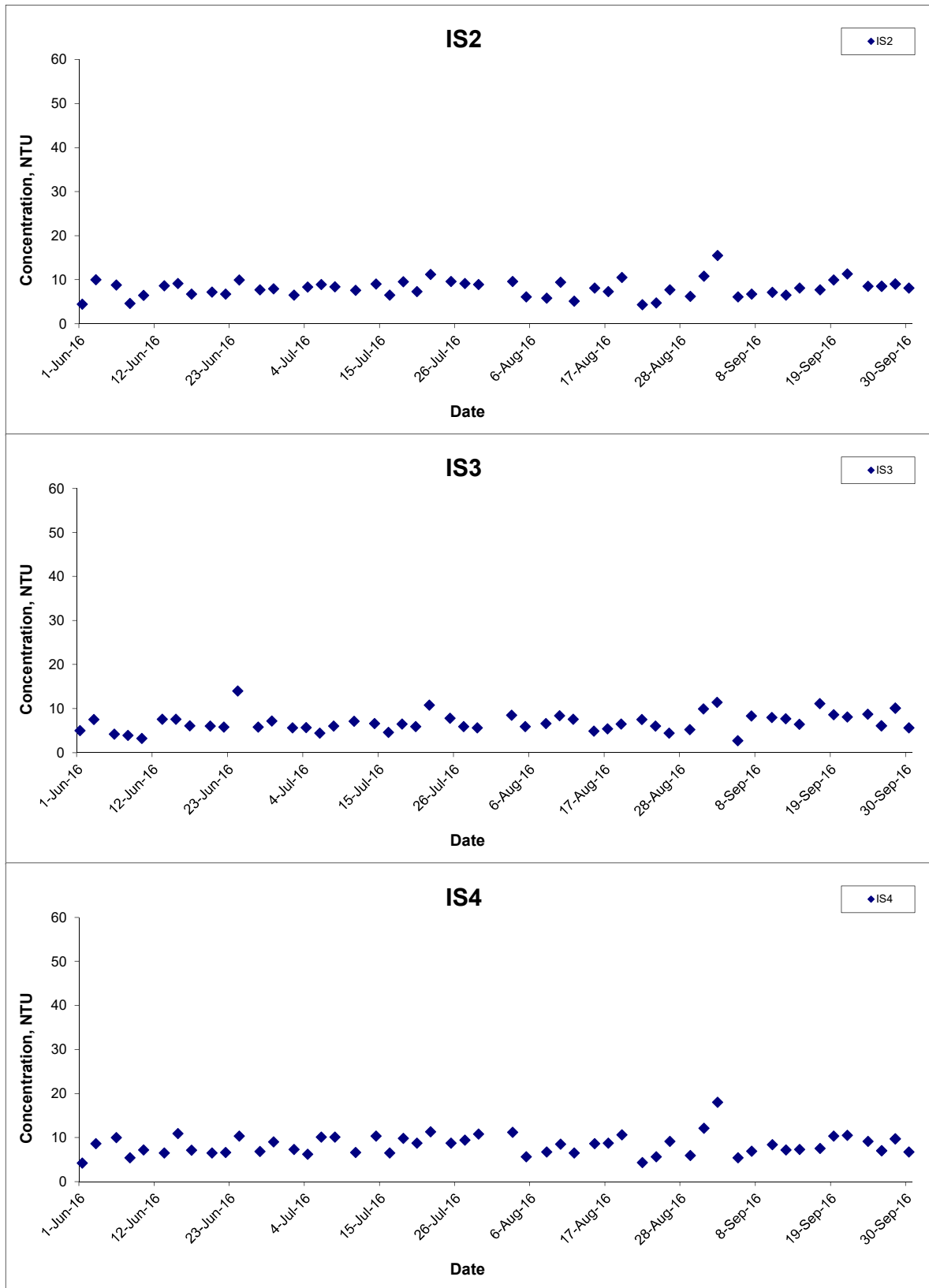
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 Hong Kong Link Road-Section between  
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### Turbidity (Depth-averaged) at Mid-Flood Tide



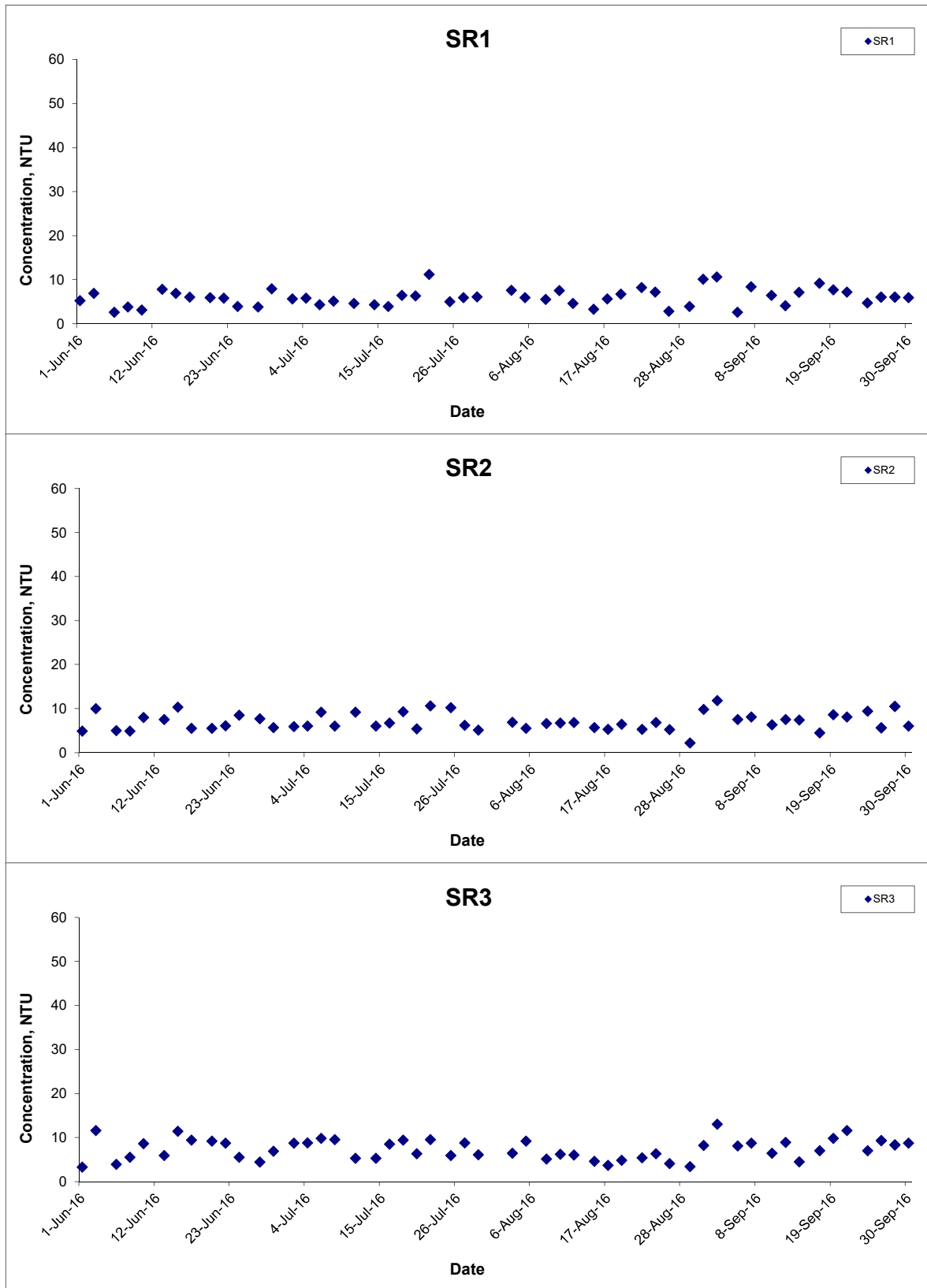
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## Turbidity (Depth-averaged) at Mid-Flood Tide



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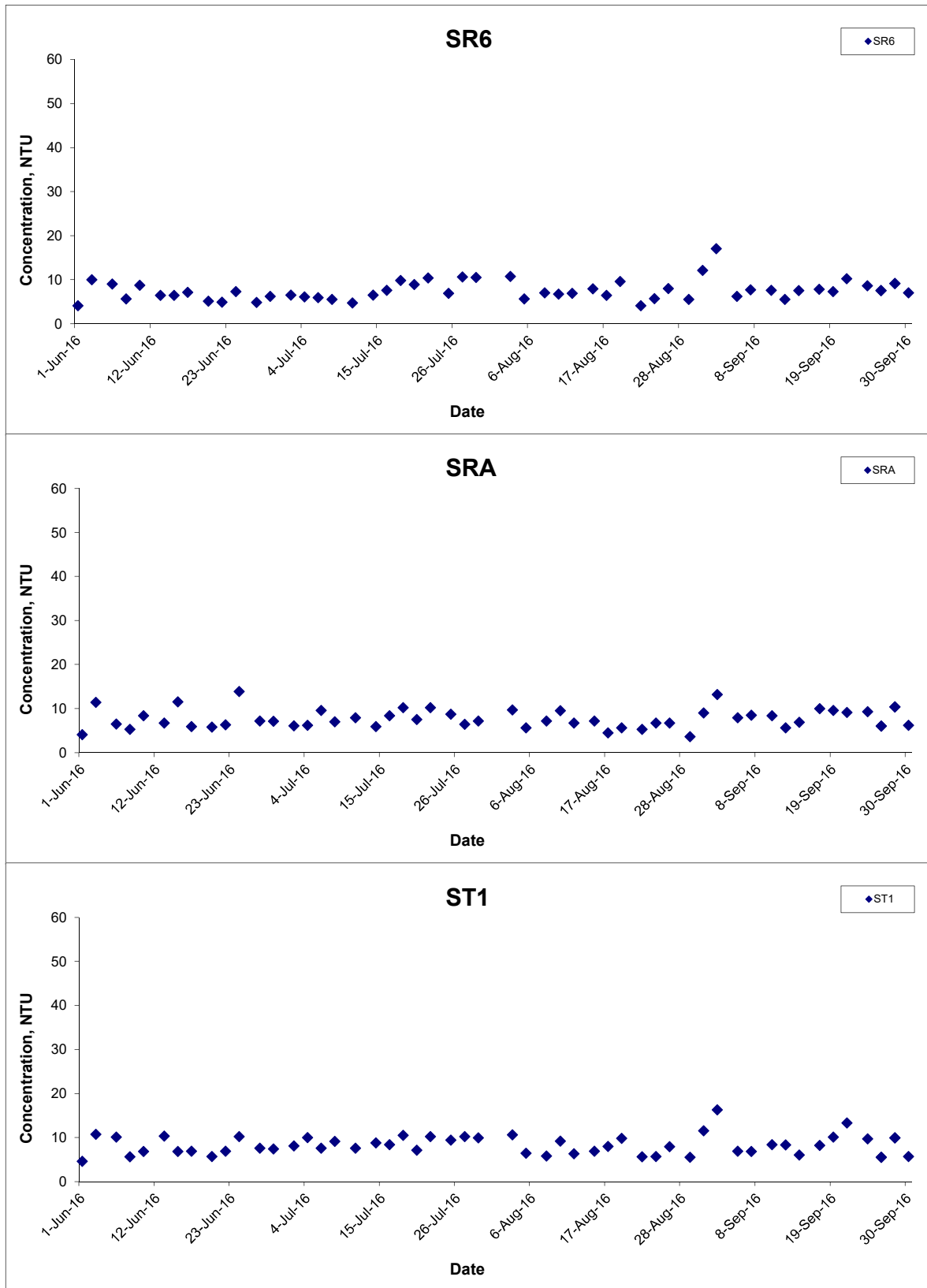
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## Turbidity (Depth-averaged) at Mid-Flood Tide



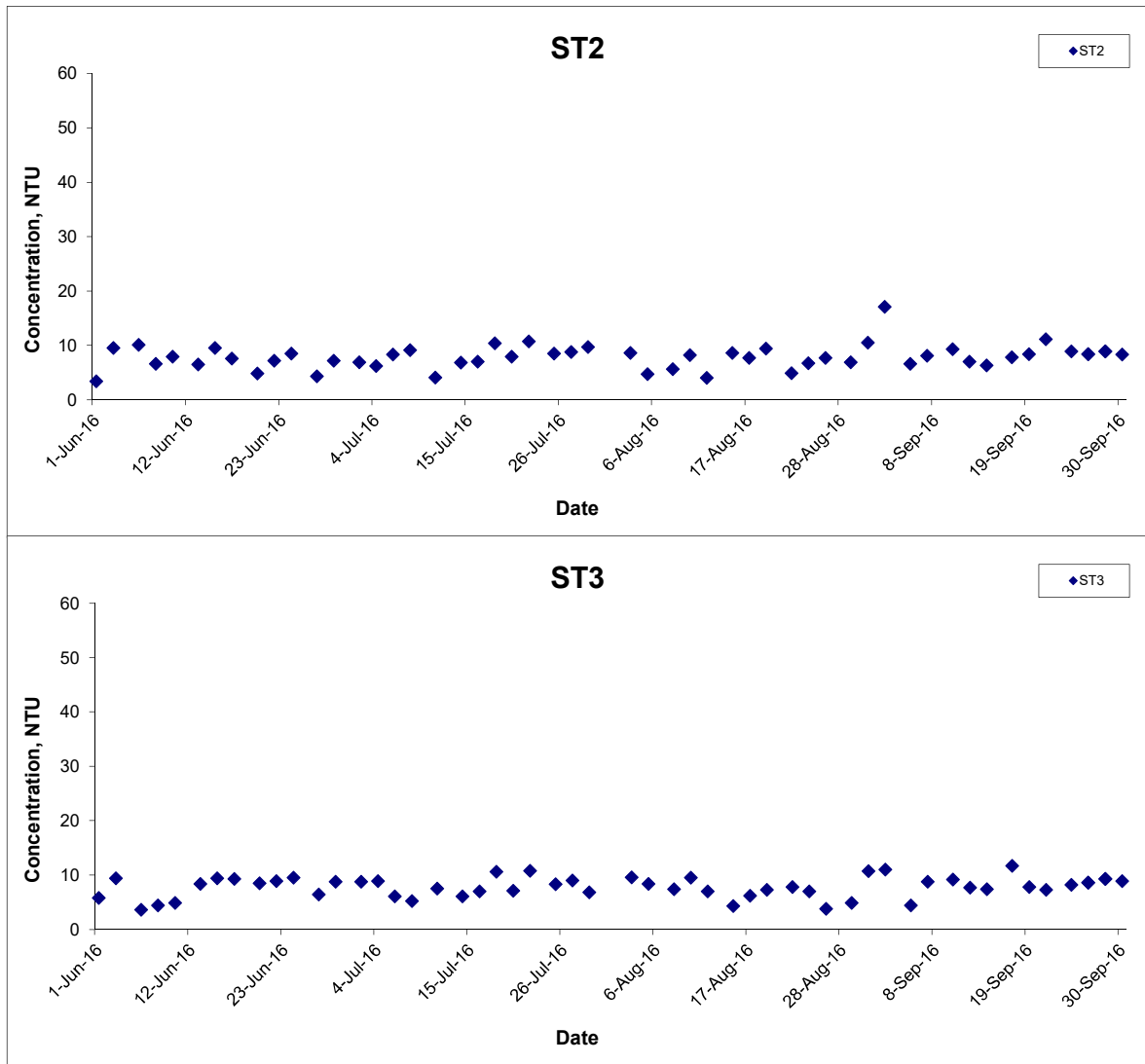
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 Hong Kong Link Road-Section between  
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## Turbidity (Depth-averaged) at Mid-Flood Tide



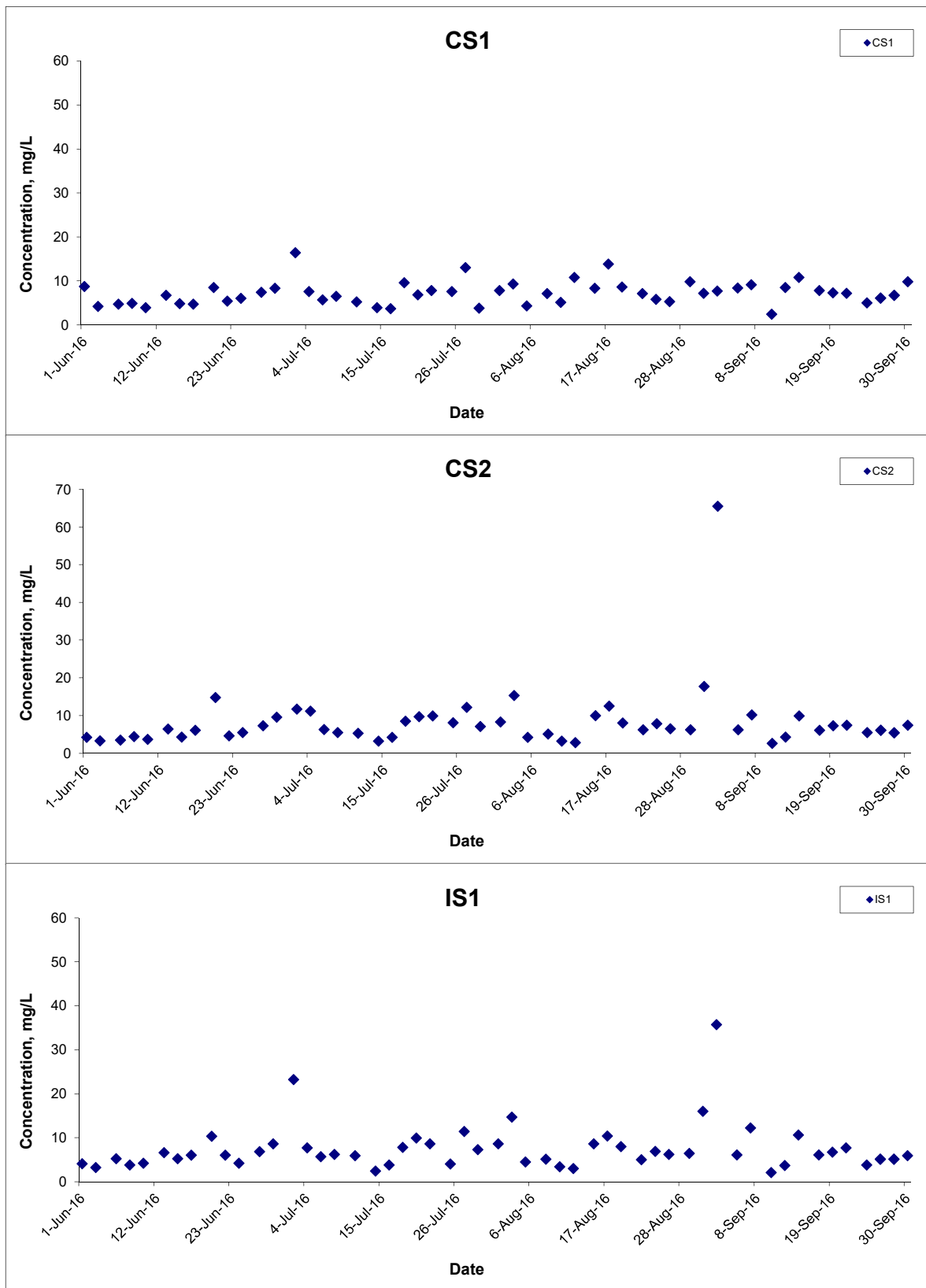
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



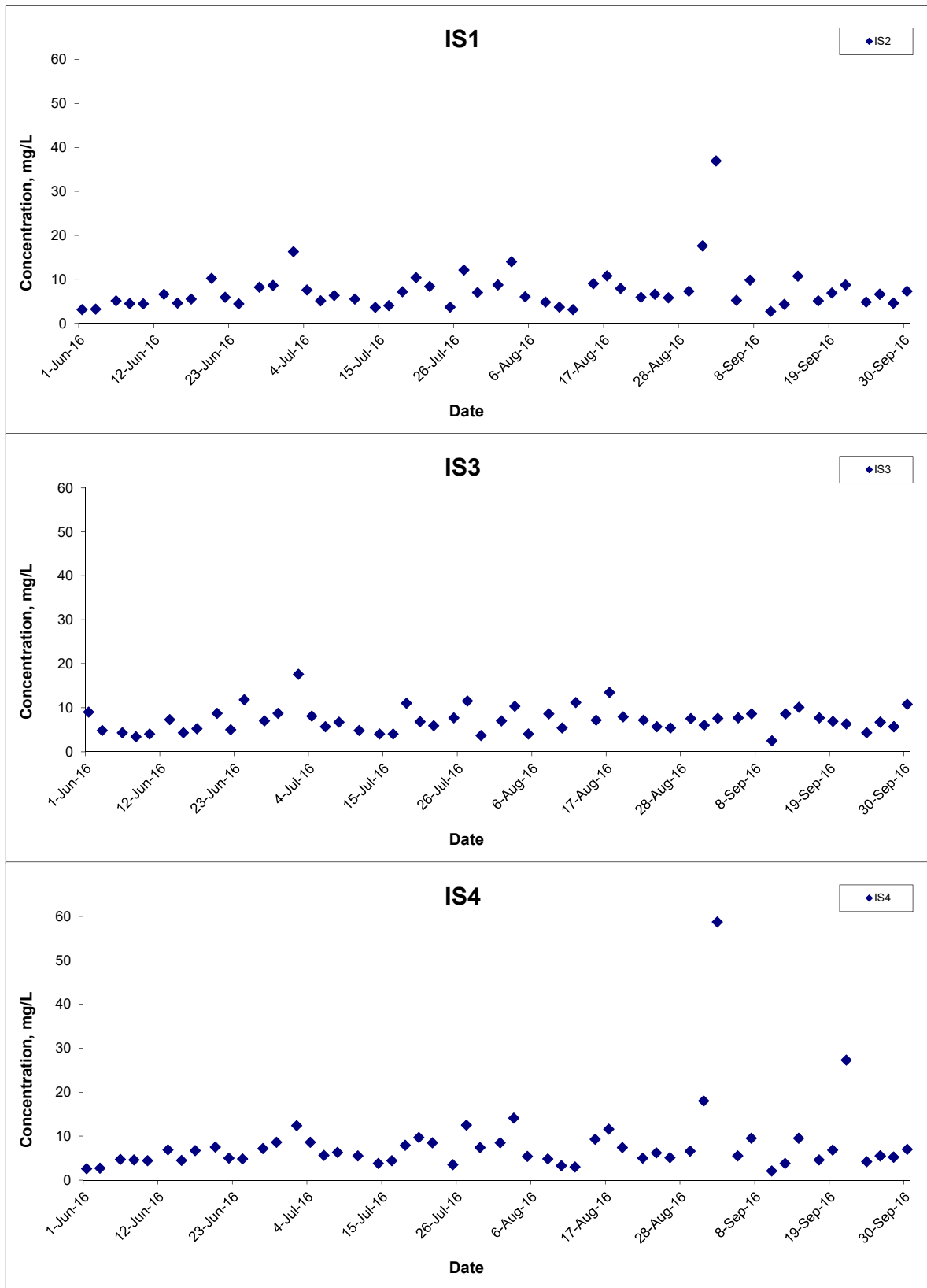
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 Hong Kong Link Road-Section between  
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



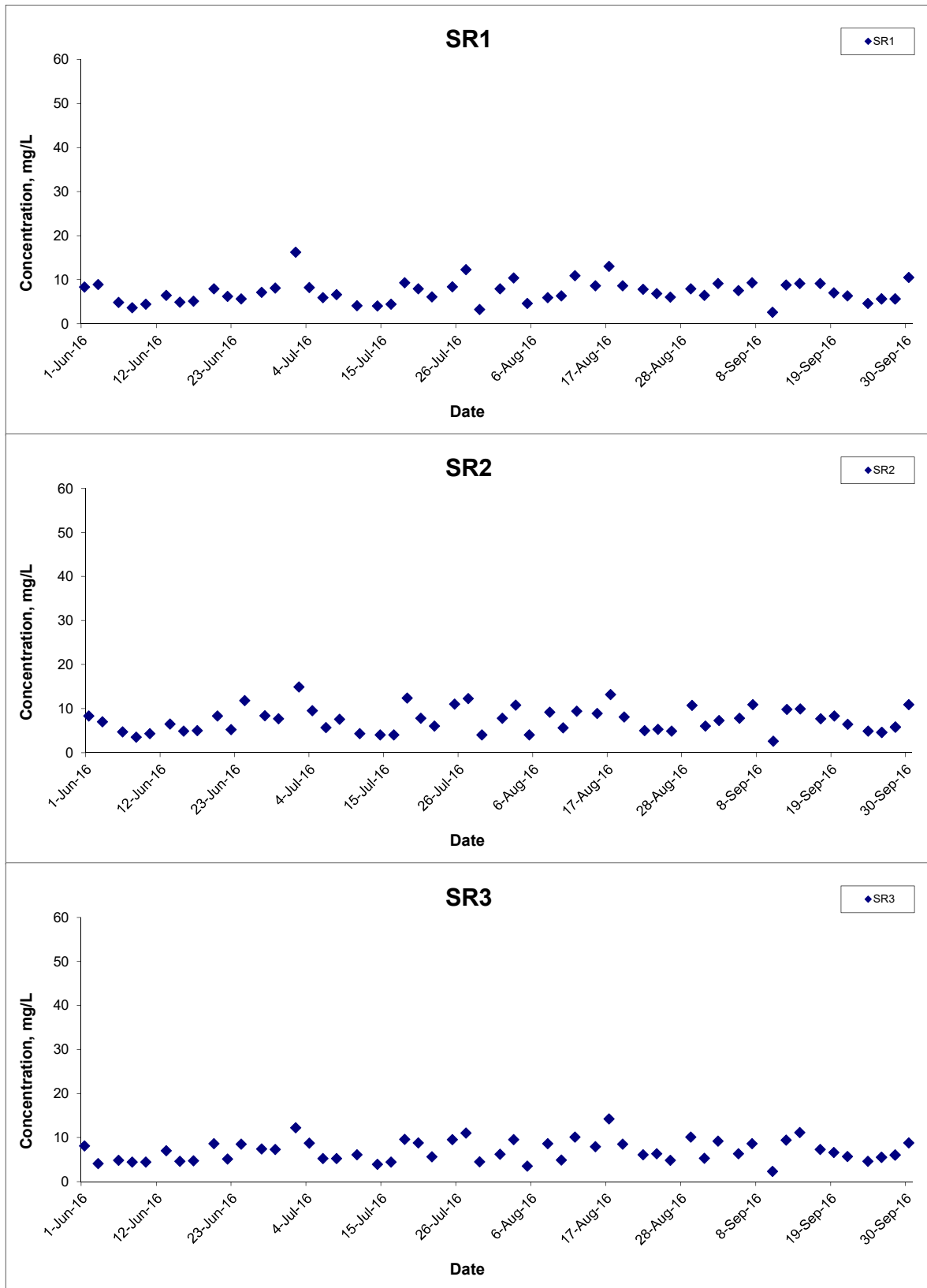
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 Hong Kong Link Road-Section between  
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



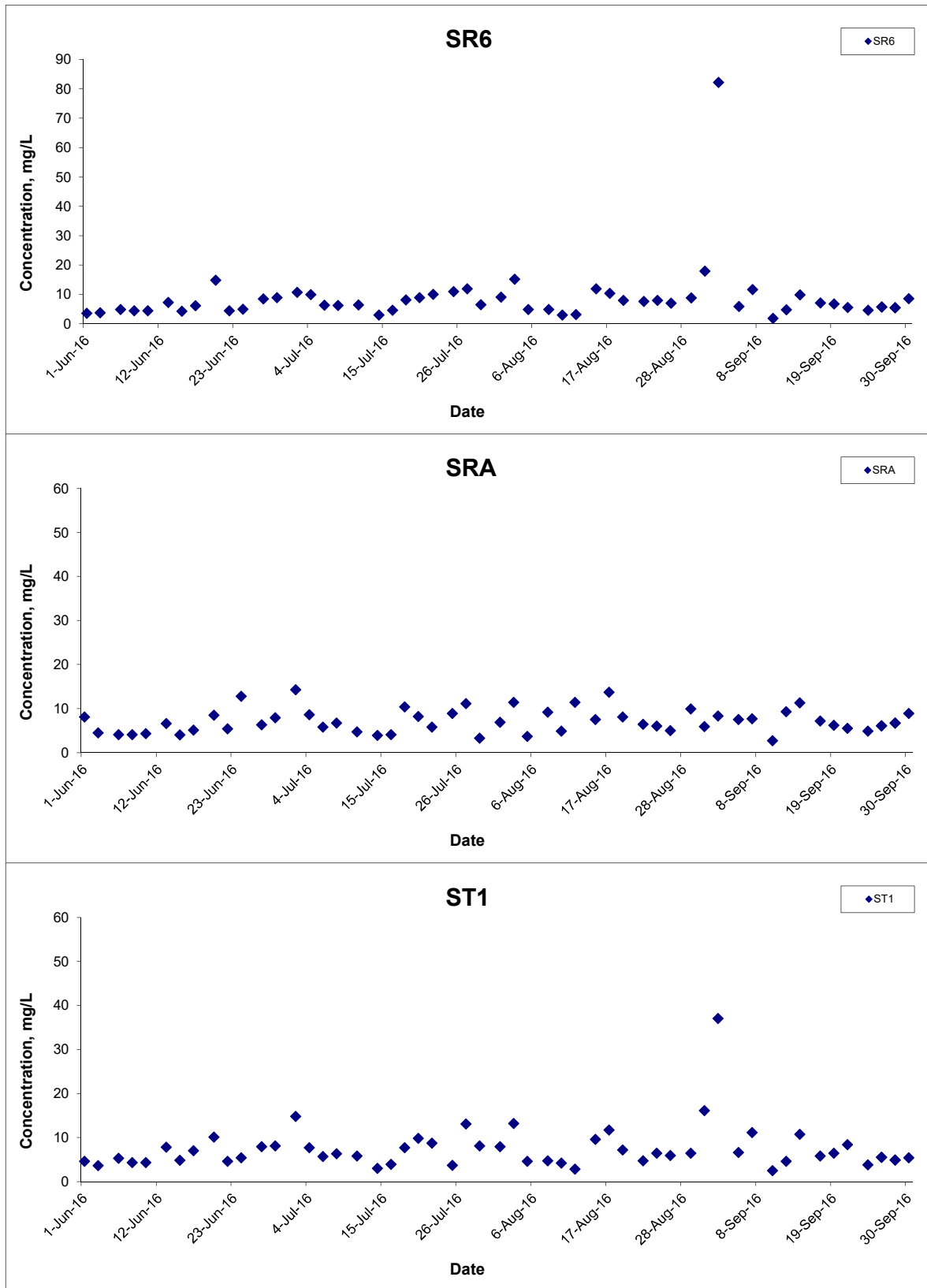
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 Hong Kong Link Road-Section between  
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



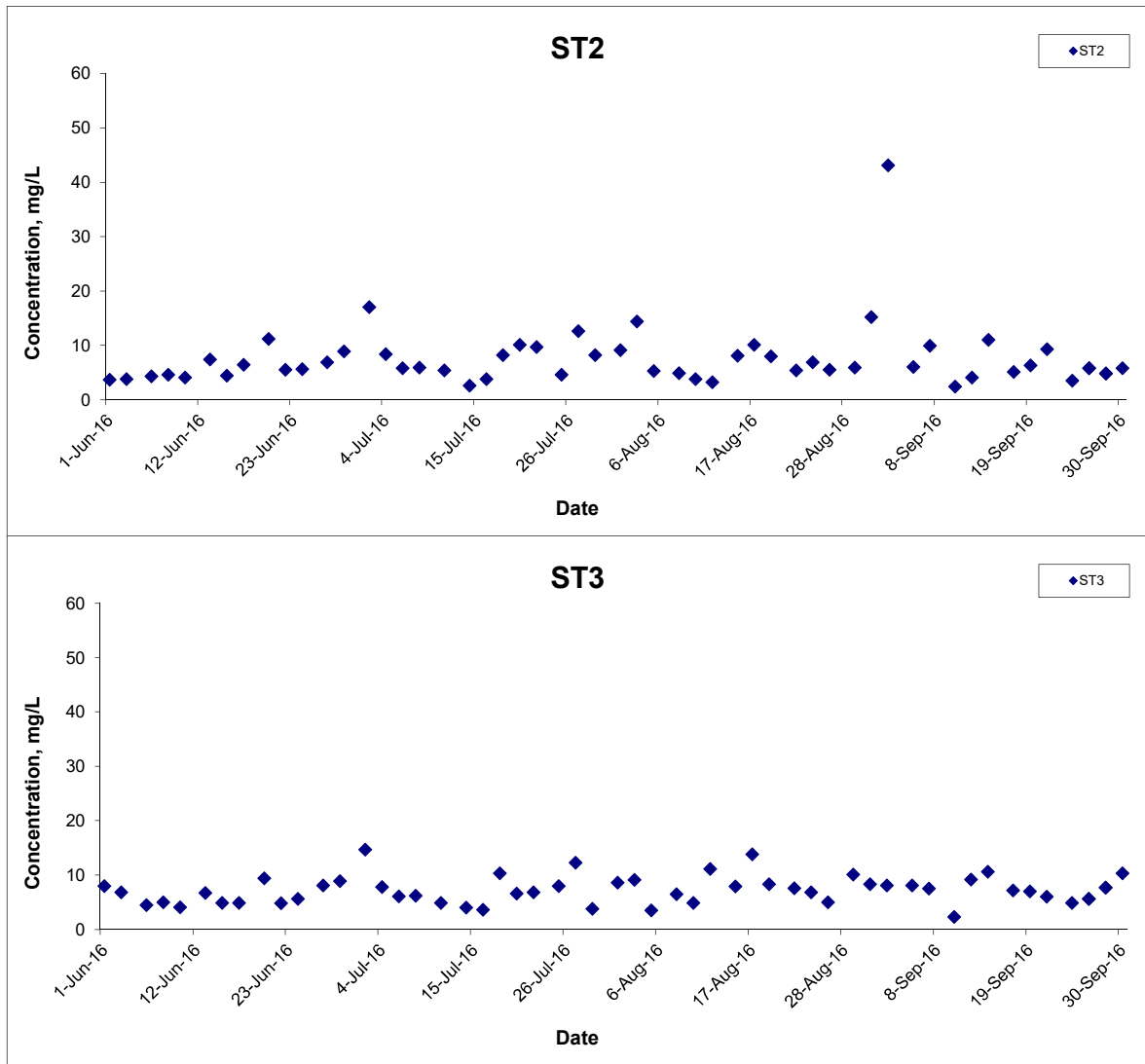
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## Suspended Solids (Depth-averaged) at Mid-Ebb Tide



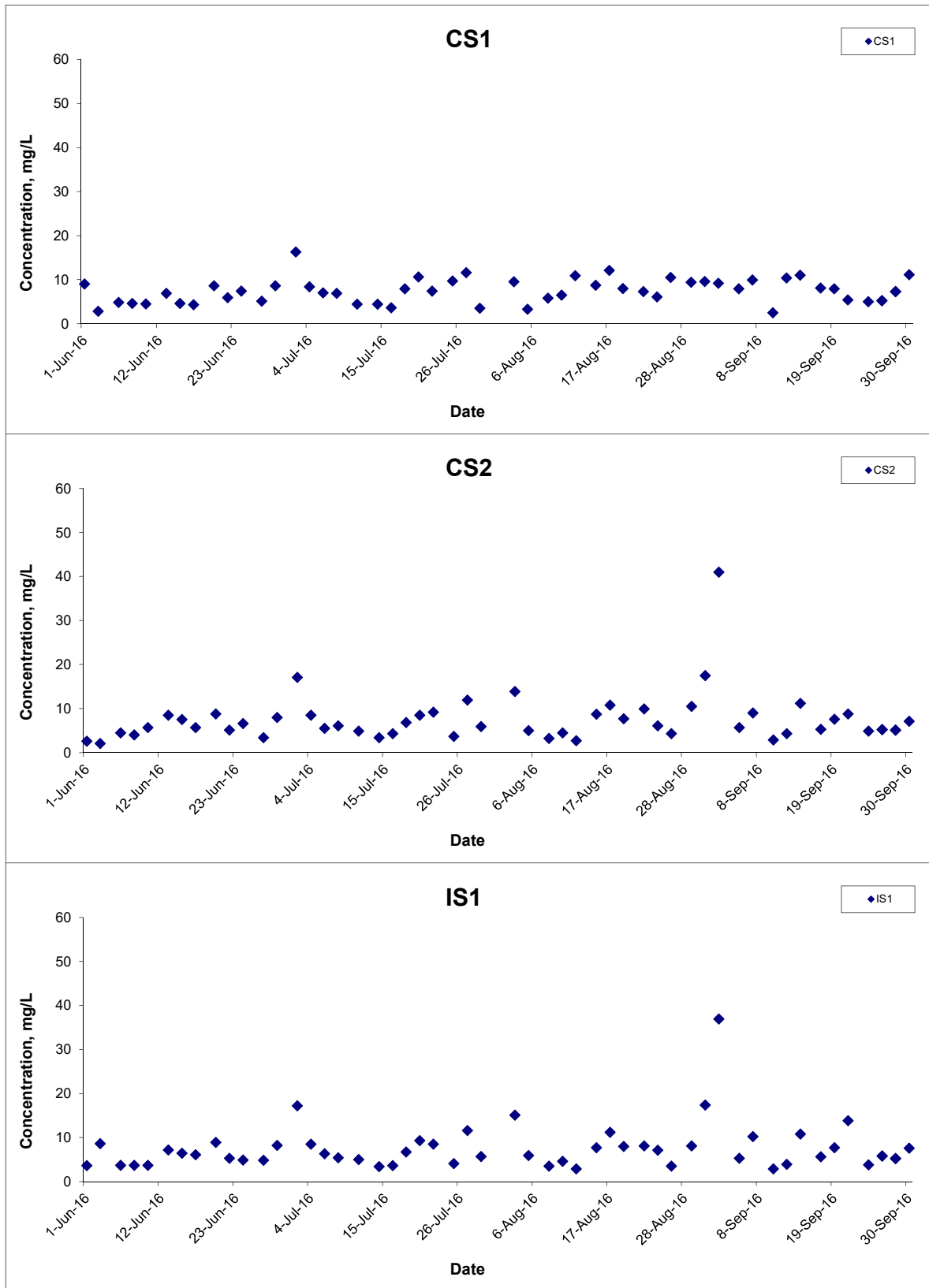
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 Hong Kong Link Road-Section between  
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 Graphical Presentation of Water Quality Monitoring  
 Results

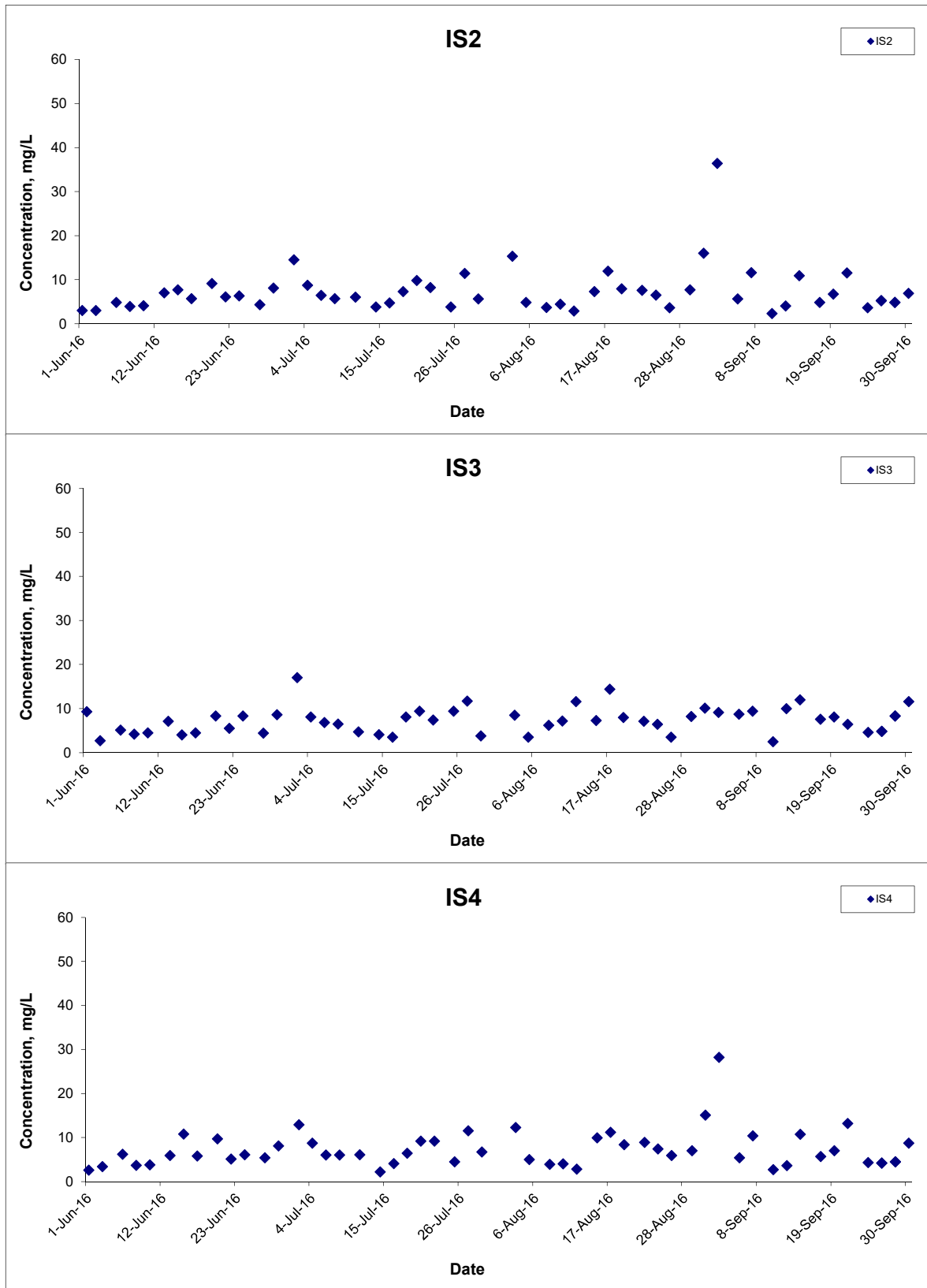
Scale N.T.S  
 Date Sep 16

Project No. MA12014  
 Appendix H





## Suspended Solids (Depth-averaged) at Mid-Flood Tide



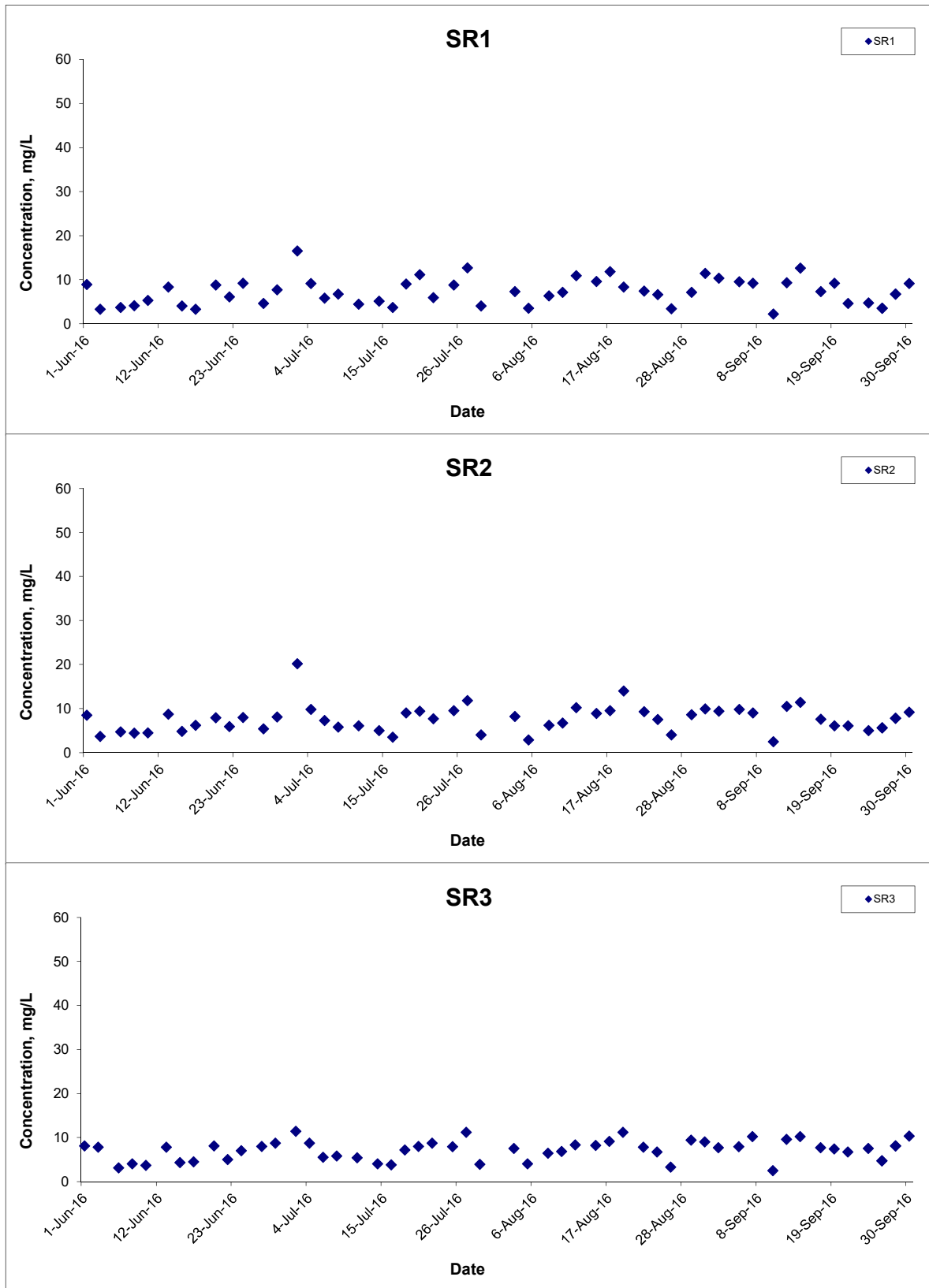
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge  
 Hong Kong Link Road-Section between  
 HKSAR Boundary and Scenic Hill  
 Graphical Presentation of Water Quality Monitoring  
 Results

Scale N.T.S  
 Date Sep 16

Project No. MA12014  
 Appendix H



## Suspended Solids (Depth-averaged) at Mid-Flood Tide



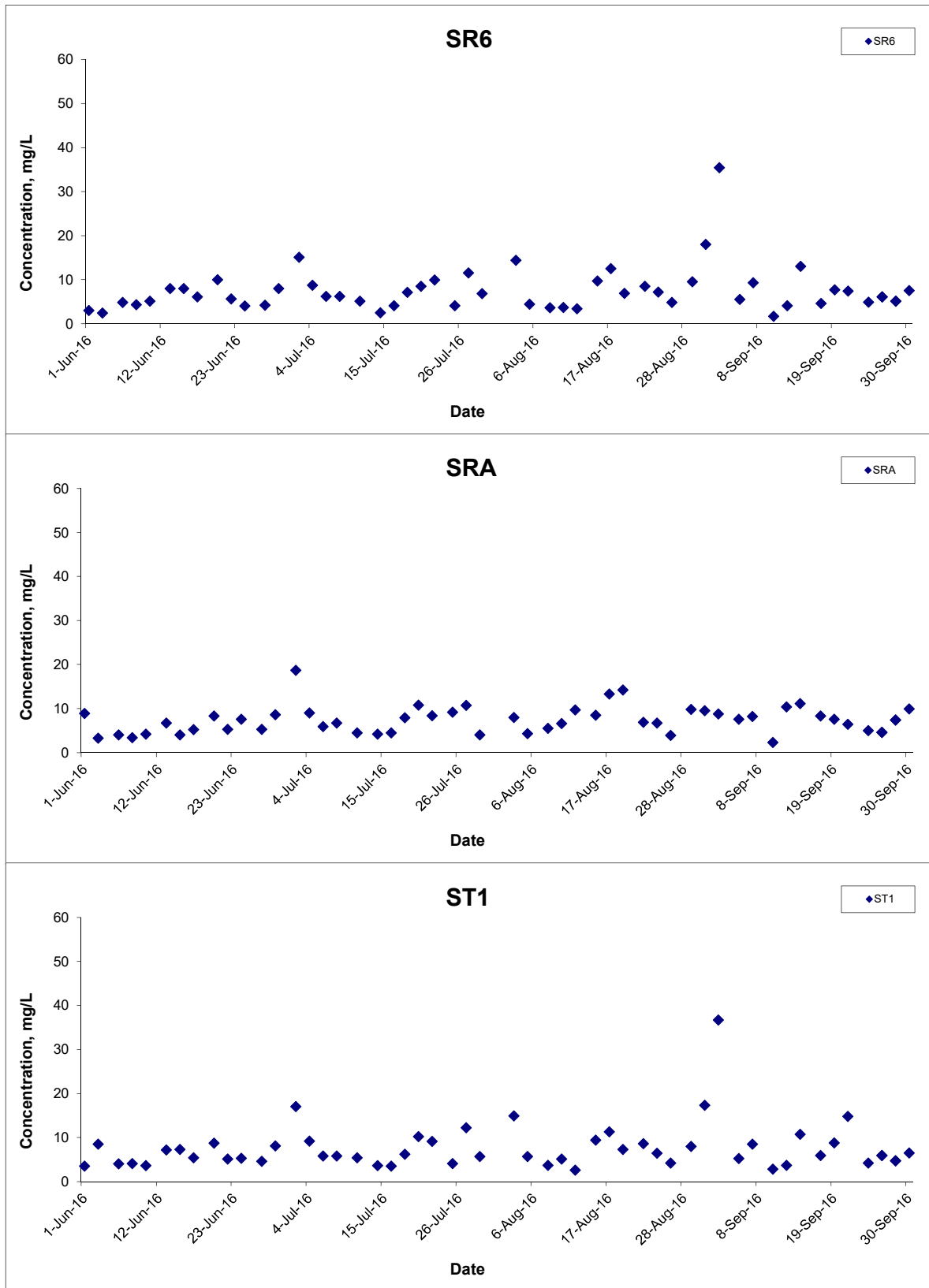
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 Hong Kong Link Road-Section between  
 HKSAR Boundary and Scenic Hill  
 Graphical Presentation of Water Quality Monitoring  
 Results

Scale N.T.S  
 Date Sep 16

Project No. MA12014  
 Appendix H



## Suspended Solids (Depth-averaged) at Mid-Flood Tide



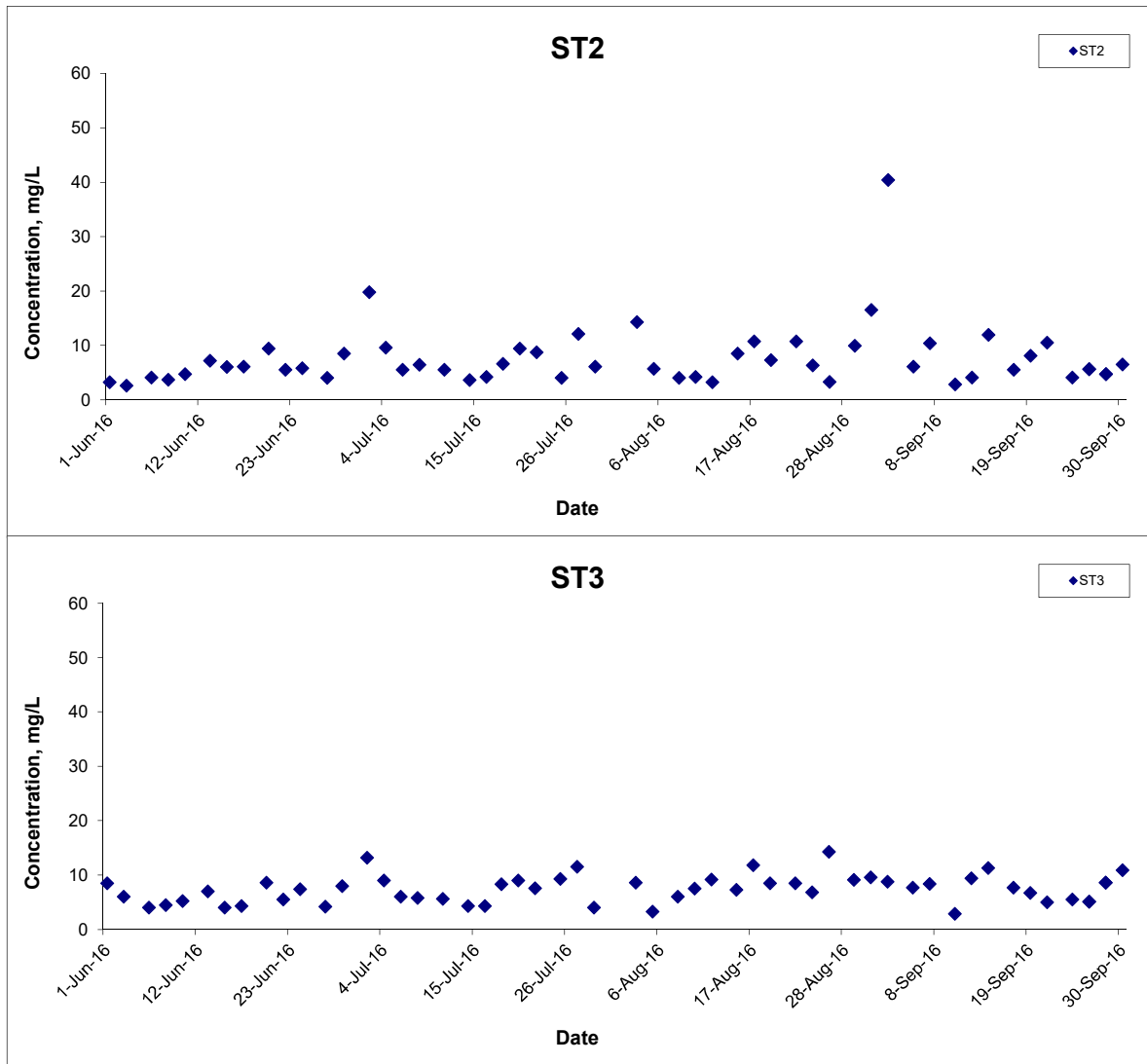
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 Hong Kong Link Road-Section between  
 HKSAR Boundary and Scenic Hill  
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Scale N.T.S  
 Date Sep 16

Project No. MA12014  
 Appendix H



## Suspended Solids (Depth-averaged) at Mid-Flood Tide



Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge  
 Hong Kong Link Road-Section between  
 HKSAR Boundary and Scenic Hill  
 Graphical Presentation of Water Quality Monitoring  
 Results

Scale N.T.S  
 Date Sep 16

Project No. MA12014  
 Appendix H



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**APPENDIX I  
DOLPHIN MONITORING REPORT  
(LINE TRANSECT)**

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**Contract No. HY/2011/09**  
**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road –**  
**Section between HKSAR Boundary and Scenic Hill Dolphin**  
**Monthly Monitoring**

*44<sup>th</sup> Monthly Progress Report (September 2016)*

Submitted by

Samuel K.Y. Hung, Ph.D., Hong Kong Cetacean Research Project

3 October 2016

**1. Introduction**

- 1.1. The Hong Kong Link Road (HKLR) serves to connect the Hong Kong-Zhuhai-Macao Bridge (HZMB) Main Bridge at the Hong Kong Special Administrative Region (HKSAR) Boundary and the HZMB Hong Kong Boundary Crossing Facilities (HKBCF) located at the northeastern waters of the Hong Kong International Airport.
- 1.2. According to the updated Environmental Monitoring and Audit (EM&A) Manual (for HKLR), monthly line-transect vessel surveys for Chinese White Dolphin should be conducted to cover the West Lantau survey area as in AFCD annual marine mammal monitoring programme.
- 1.3. Since November 2012, Hong Kong Cetacean Research Project (HKCRP) has been commissioned by Dragages – China Harbour – VSL JV to conduct this 34-month dolphin monitoring study in order to collect data on Chinese White Dolphins during the construction phase (i.e. impact period) of the HKLR09 project in West Lantau (WL) survey area, and to analyze the collected survey data to monitor distribution, encounter rate, abundance, activities and occurrence of dolphin calves. Photo-identification will also be collected from individual Chinese White Dolphins to examine their individual range patterns and core area use.
- 1.4. From the monitoring results, any changes in dolphin occurrence within the study area will be examined for possible causes, and appropriate actions and additional mitigation measures will be recommended as necessary.

1.5. This report is the 44<sup>th</sup> monthly progress report under the HKLR09 construction phase dolphin monitoring programme, summarizing the results of the survey findings during the month of September 2016.

## 2. Monitoring Methodology

### 2.1. Vessel-based Line-transect Survey

2.1.1. According to the requirement of the updated EM&A manual, dolphin monitoring programme should cover all transect lines in WL survey area (see Figure 1) twice per month throughout the entire construction period. The co-ordinates of all transect lines are shown in Table 1.

Table 1. Co-ordinates of transect lines in WL survey area

Line No.		Easting	Northing		Line No.		Easting	Northing
1	Start Point	803750	818500		7	Start Point	800200	810450
1	End Point	803750	815500		7	End Point	801400	810450
2	Start Point	803750	815500		8	Start Point	801300	809450
2	End Point	802940	815500		8	End Point	799750	809450
3	Start Point	802550	814500		9	Start Point	799400	808450
3	End Point	803700	814500		9	End Point	801430	808450
4	Start Point	803120	813600		10	Start Point	801500	807450
4	End Point	801640	813600		10	End Point	799600	807450
5	Start Point	801100	812450		11	Start Point	800300	806500
5	End Point	802900	812450		11	End Point	801750	806500
6	Start Point	802400	811500		12	Start Point	801760	805450
6	End Point	800660	811500		12	End Point	800700	805450

2.1.2. The survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the last 19 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung

2014, 2015). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

- 2.1.3. Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins and porpoises continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270° and 90° (in relation to the bow, which is defined as 0°). One to two additional experienced observers were available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and identifying local cetacean species.
- 2.1.4. During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS.
- 2.1.5. Data including time, position and vessel speed were also automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.
- 2.1.6. When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line was later calculated from the initial sighting distance and angle.
- 2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as “primary” survey effort, while the survey effort being conducted along the connecting lines between parallel lines was labeled as “secondary” survey



effort. According to HKCRP long-term dolphin monitoring data, encounter rates of Chinese white dolphins deduced from effort and sighting data collected along primary and secondary lines were similar in survey areas around Lantau Island. Therefore, primary and secondary survey effort were both presented as on-effort survey effort in this report.

- 2.1.8. Encounter rates of Chinese white dolphins (number of on-effort sightings per 100 km of survey effort) were calculated in WL survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. Dolphin encounter rates were calculated using primary survey effort alone, as well as the combined survey effort from both primary and secondary lines.

## 2.2. *Photo-identification Work*

- 2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.
- 2.2.2. A professional digital camera (*Canon* EOS 7D or 60D model) equipped with long telephoto lenses (100-400 mm zoom) were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.
- 2.2.3. All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995.
- 2.2.4. Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).

- 2.2.5. All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

### **3. Monitoring Results**

#### *3.1. Vessel-based Line-transect Survey*

- 3.1.1. During the monitoring month of September 2016, two complete sets of systematic line-transect vessel surveys were conducted on the 9<sup>th</sup> and 20<sup>th</sup>, to cover all transect lines in WL survey area twice. The survey routes of each survey day are presented in Figures 2-3.
- 3.1.2. From these surveys, a total of 66.97 km of survey effort was collected, with 100% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) (Appendix I). The total survey effort conducted on primary lines (the horizontal lines perpendicular to the coastlines) was 44.14 km, while the effort on secondary lines (the lines connecting the primary lines) was 22.83 km.
- 3.1.3. During the monitoring surveys conducted in September 2016, nine groups of 34 Chinese White Dolphins were sighted. All dolphin sightings were made during on-effort search, while seven of the nine on-effort sightings were made on primary lines (Appendix II).
- 3.1.4. None of the dolphin groups was associated with an operating fishing vessel.
- 3.1.5. Distribution of the nine dolphin sightings made during September's surveys is shown in Figure 4. The sightings were evenly distributed from Tai O Peninsula to Fan Lau, with no particular concentration (Figure 4). As in the past several monitoring months, dolphins were rarely sighted in the northern portion of the study area, especially in the area near the HKLR09 alignment (Figure 4).
- 3.1.6. During the September's surveys, encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) are shown in Tables 2 & 3.

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) per set during September's surveys in West Lantau (WL)

		<b>Encounter rate (STG)</b> (no. of on-effort dolphin sightings per 100 km of survey effort)	<b>Encounter rate (ANI)</b> (no. of dolphins from all on-effort sightings per 100 km of survey effort)
		<b>Primary Lines Only</b>	<b>Primary Lines Only</b>
<b>West Lantau</b>	Set 1: September 9 <sup>th</sup>	17.4	43.5
	Set 2: September 20 <sup>th</sup>	14.2	71.0

Table 3. Overall dolphin encounter rates (sightings per 100 km of survey effort) in September's surveys on primary lines only as well as both primary lines and secondary lines in West Lantau (WL)

	<b>Encounter rate (STG)</b> (no. of on-effort dolphin sightings per 100 km of survey effort)		<b>Encounter rate (ANI)</b> (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	<b>Primary Lines Only</b>	<b>Both Primary and Secondary Lines</b>	<b>Primary Lines Only</b>	<b>Both Primary and Secondary Lines</b>
<b>West Lantau</b>	15.9	13.4	56.6	50.8

- 3.1.7. The average group size of Chinese White Dolphins was 3.8 individuals per group during September's surveys, which was similar to the averages in previous months of monitoring surveys.
- 3.1.8. Five of the nine dolphin groups were small in size with 1-2 animals, while the other four were medium-sized groups with 5-9 animals per group (Appendix II).

### 3.2. Photo-identification Work

- 3.2.1. A total of 14 different individual Chinese White Dolphins were identified 14 times during September's surveys (Appendices III and IV).
- 3.2.2. Notably, two of these individuals (WL28 and WL145) were accompanied by their calves during their re-sightings in this month's monitoring surveys.

### 3.3. Conclusion

- 3.3.1. During this month of dolphin monitoring, marine construction activities have continued under this contract. However, no adverse impact on Chinese white dolphins was noticeable from general observations.

- 3.3.2. Due to the monthly variation in dolphin occurrence within the study area, it would be more appropriate to draw conclusion on whether any impacts on dolphins have been detected related to the construction activities of this project in the quarterly EM&A report, where comparison on distribution, group size and encounter rates of dolphins between the quarterly impact monitoring period (i.e. September-November 2016) and baseline monitoring period will be made.

#### **4. References**

- Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.
- Hung, S. K. 2014. Monitoring of marine mammals in Hong Kong waters: final report (2013-14). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department of Hong Kong SAR Government, 181 pp.
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- Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. Wildlife Monographs 144:1-65.

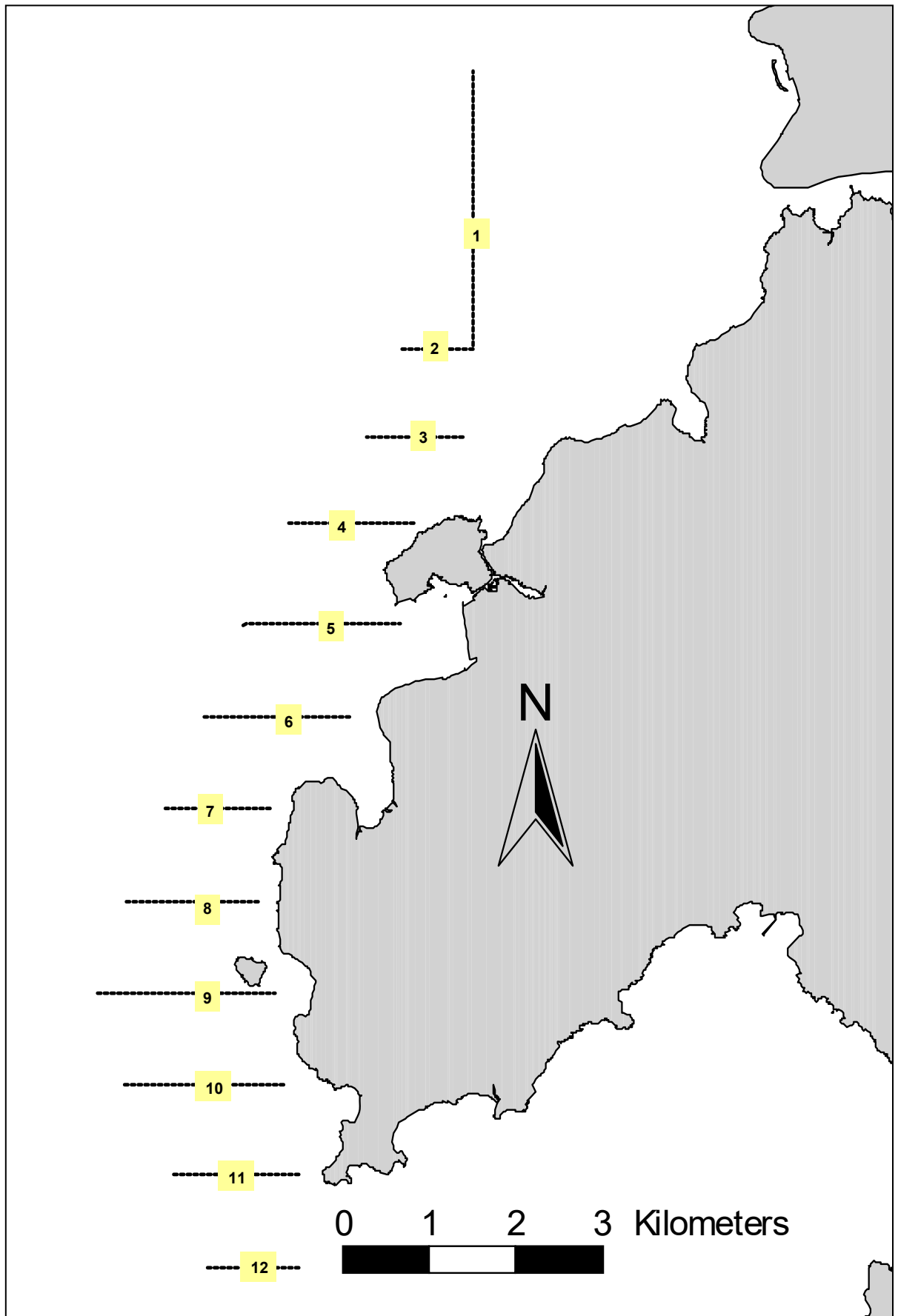


Figure 1. Transect Line Layout in West Lantau Survey Areas

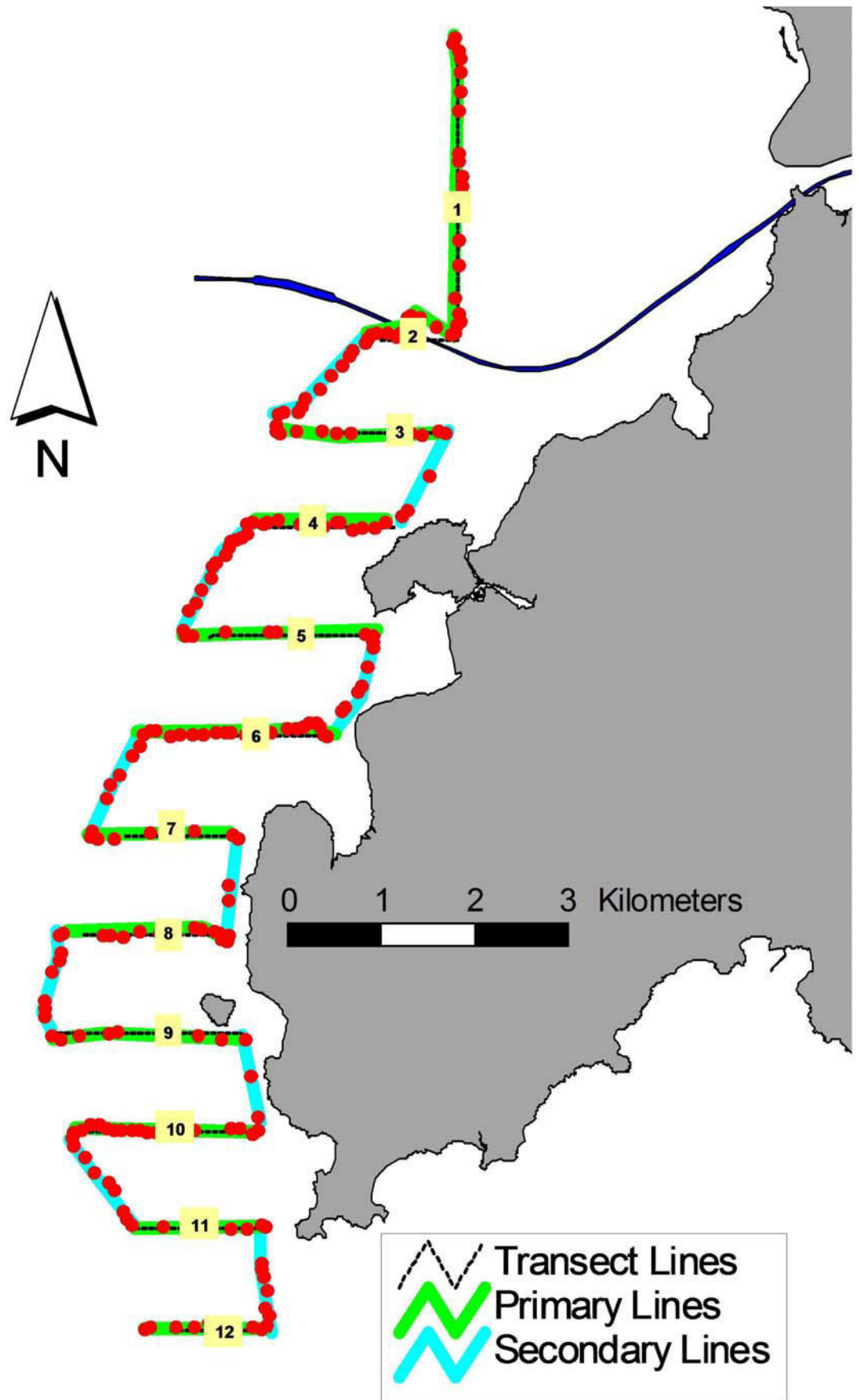


Figure 2. Survey Route on September 9<sup>th</sup>, 2016 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

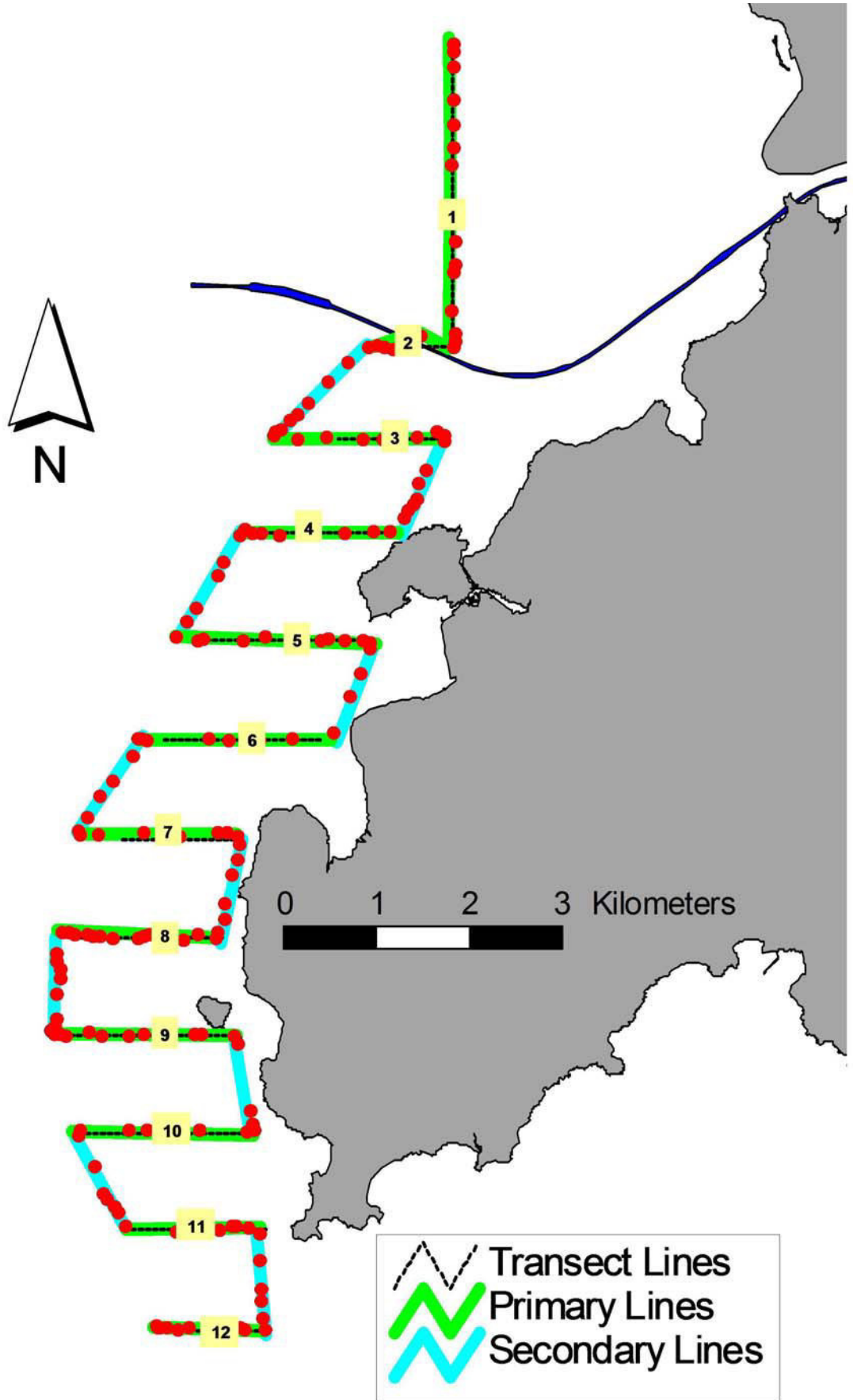


Figure 3. Survey Route on September 20<sup>th</sup>, 2016 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

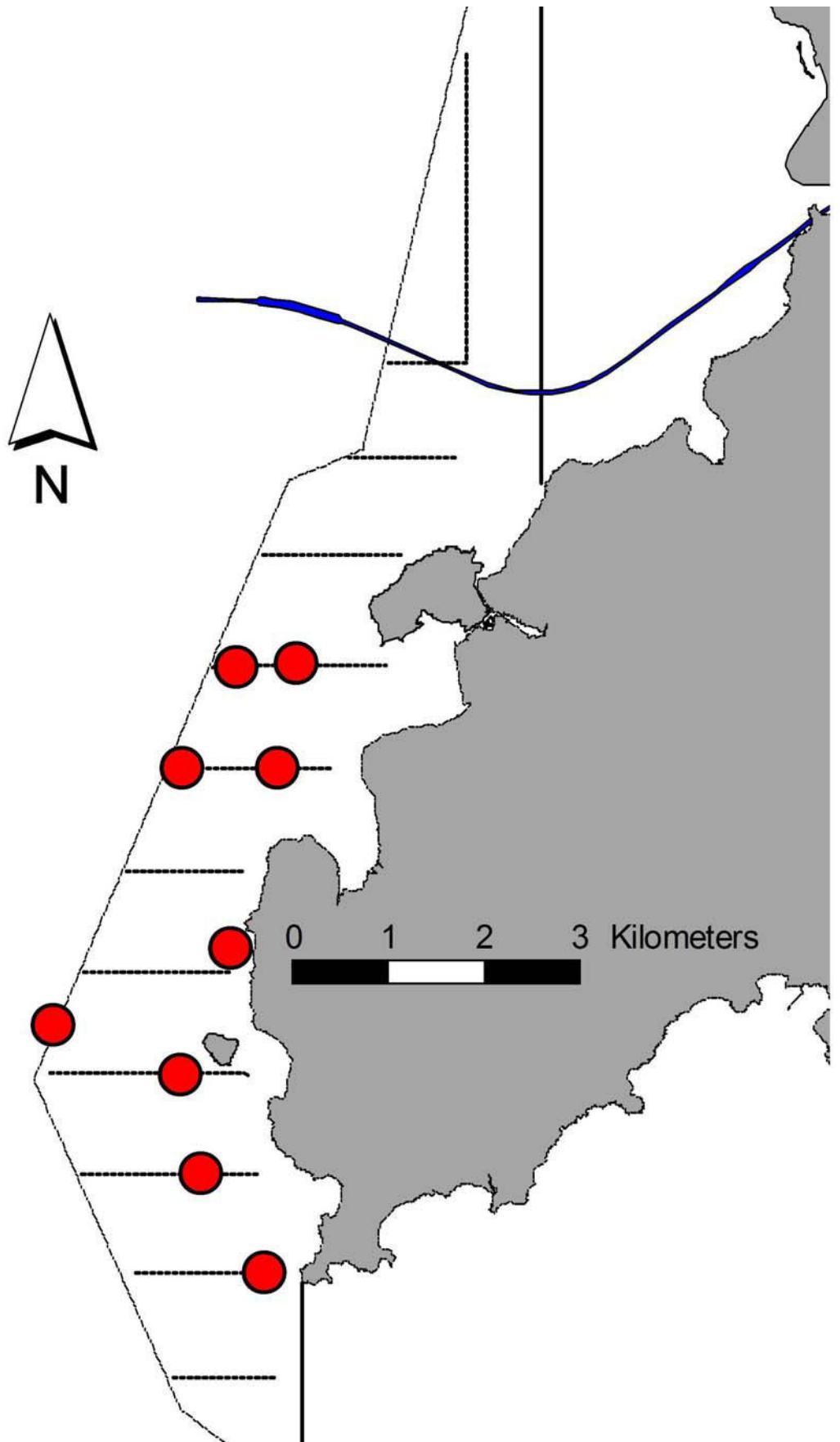


Figure 4. Distribution of Chinese White Dolphin Sighting during September 2016 HKLR09 Monitoring Surveys



## Appendix I. HKLR09 Survey Effort Database (September 2016)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
9-Sep-16	W LANTAU	2	20.04	AUTUMN	STANDARD31516	HKLR	P
9-Sep-16	W LANTAU	3	2.96	AUTUMN	STANDARD31516	HKLR	P
9-Sep-16	W LANTAU	2	11.56	AUTUMN	STANDARD31516	HKLR	S
20-Sep-16	W LANTAU	2	15.89	AUTUMN	STANDARD31516	HKLR	P
20-Sep-16	W LANTAU	3	5.25	AUTUMN	STANDARD31516	HKLR	P
20-Sep-16	W LANTAU	2	7.05	AUTUMN	STANDARD31516	HKLR	S
20-Sep-16	W LANTAU	3	4.22	AUTUMN	STANDARD31516	HKLR	S

## Appendix II. HKLR09 Chinese White Dolphin Sighting Database (September 2016)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; ND = Not Determined; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Line)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
9-Sep-16	1	1328	1	W LANTAU	3	49	ON	HKLR	812485	801975	AUTUMN	NONE	P
9-Sep-16	2	1417	2	W LANTAU	2	154	ON	HKLR	808914	799431	AUTUMN	NONE	S
9-Sep-16	3	1434	1	W LANTAU	2	60	ON	HKLR	808424	800749	AUTUMN	NONE	P
9-Sep-16	4	1449	2	W LANTAU	2	4	ON	HKLR	807438	800964	AUTUMN	NONE	P
9-Sep-16	5	1505	6	W LANTAU	2	59	ON	HKLR	806462	801642	AUTUMN	NONE	P
20-Sep-16	1	1232	7	W LANTAU	2	113	ON	HKLR	809674	801288	AUTUMN	NONE	S
20-Sep-16	2	1303	5	W LANTAU	2	968	ON	HKLR	811458	800767	AUTUMN	NONE	P
20-Sep-16	3	1314	9	W LANTAU	2	106	ON	HKLR	811445	801767	AUTUMN	NONE	P
20-Sep-16	4	1341	1	W LANTAU	2	43	ON	HKLR	812442	801336	AUTUMN	NONE	P

**Appendix III. Individual dolphins identified during HKLR09 monitoring surveys in September 2016**

<b>ID#</b>	<b>DATE</b>	<b>STG#</b>	<b>AREA</b>
CH108	09/09/16	5	W LANTAU
CH153	20/09/16	3	W LANTAU
NL302	20/09/16	2	W LANTAU
SL59	09/09/16	5	W LANTAU
WL28	20/09/16	3	W LANTAU
WL42	20/09/16	1	W LANTAU
WL46	20/09/16	2	W LANTAU
WL61	20/09/16	1	W LANTAU
WL109	09/09/16	5	W LANTAU
WL128	20/09/16	3	W LANTAU
WL145	20/09/16	3	W LANTAU
WL215	09/09/16	5	W LANTAU
WL220	20/09/16	1	W LANTAU
WL251	20/09/16	2	W LANTAU



Appendix IV. Photographs of Identified Individual Dolphins in September 2016 (HKLR09)

WL251\_20160920\_2



CH153\_20160920\_3



WL28\_20160920\_3



WL128\_20160920\_3



WL145\_20160920\_3



Appendix IV (cont'd).

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**APPENDIX J**  
**WIND DATA**

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## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
1-Sep-2016	0:00	2.6	ESE
1-Sep-2016	1:00	2.5	SE
1-Sep-2016	2:00	2.5	ENE
1-Sep-2016	3:00	2.6	SSE
1-Sep-2016	4:00	2	NE
1-Sep-2016	5:00	2.1	NE
1-Sep-2016	6:00	2	NE
1-Sep-2016	7:00	2.5	NE
1-Sep-2016	8:00	2.3	ENE
1-Sep-2016	9:00	2.3	NE
1-Sep-2016	10:00	2.7	ENE
1-Sep-2016	11:00	2.4	NE
1-Sep-2016	12:00	2.6	NNE
1-Sep-2016	13:00	3	NNE
1-Sep-2016	14:00	2.7	ENE
1-Sep-2016	15:00	3.2	SW
1-Sep-2016	16:00	2.6	WSW
1-Sep-2016	17:00	3.2	SW
1-Sep-2016	18:00	2.6	S
1-Sep-2016	19:00	2.6	S
1-Sep-2016	20:00	2.3	S
1-Sep-2016	21:00	2.1	WSW
1-Sep-2016	22:00	2.9	SW
1-Sep-2016	23:00	2.7	S
2-Sep-2016	0:00	2.4	W
2-Sep-2016	1:00	2.2	W
2-Sep-2016	2:00	2.3	W
2-Sep-2016	3:00	1.9	NE
2-Sep-2016	4:00	1.8	NE
2-Sep-2016	5:00	1.7	ESE
2-Sep-2016	6:00	1.4	NNE
2-Sep-2016	7:00	1.5	NNE
2-Sep-2016	8:00	2	SW
2-Sep-2016	9:00	2.2	W
2-Sep-2016	10:00	2.8	SW
2-Sep-2016	11:00	2.7	ESE
2-Sep-2016	12:00	3	ESE
2-Sep-2016	13:00	2.5	WNW
2-Sep-2016	14:00	2.7	NNE
2-Sep-2016	15:00	3	N
2-Sep-2016	16:00	2.3	NE
2-Sep-2016	17:00	2.4	NE
2-Sep-2016	18:00	2.3	NE
2-Sep-2016	19:00	2	ENE
2-Sep-2016	20:00	2.2	ENE
2-Sep-2016	21:00	2.2	NNE
2-Sep-2016	22:00	2.2	NNE
2-Sep-2016	23:00	2.6	ESE
3-Sep-2016	0:00	2.6	N
3-Sep-2016	1:00	2.4	SW
3-Sep-2016	2:00	2.4	WSW
3-Sep-2016	3:00	2	WSW
3-Sep-2016	4:00	2	NE
3-Sep-2016	5:00	1.8	S

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
3-Sep-2016	6:00	1.4	SSE
3-Sep-2016	7:00	1.4	SSE
3-Sep-2016	8:00	1.7	ESE
3-Sep-2016	9:00	2.2	SSE
3-Sep-2016	10:00	2.6	NE
3-Sep-2016	11:00	2.4	ESE
3-Sep-2016	12:00	2.4	NE
3-Sep-2016	13:00	2.6	NE
3-Sep-2016	14:00	2.1	ENE
3-Sep-2016	15:00	2.5	WNW
3-Sep-2016	16:00	2.5	SE
3-Sep-2016	17:00	3.2	SE
3-Sep-2016	18:00	2.7	ESE
3-Sep-2016	19:00	2.2	NNE
3-Sep-2016	20:00	2.3	ENE
3-Sep-2016	21:00	2.6	ENE
3-Sep-2016	22:00	2.4	ESE
3-Sep-2016	23:00	2.8	W
4-Sep-2016	0:00	2.7	W
4-Sep-2016	1:00	3.1	W
4-Sep-2016	2:00	3.1	W
4-Sep-2016	3:00	2.6	SSE
4-Sep-2016	4:00	2.5	SE
4-Sep-2016	5:00	2.4	NE
4-Sep-2016	6:00	2.5	ENE
4-Sep-2016	7:00	2.1	ENE
4-Sep-2016	8:00	2.1	ESE
4-Sep-2016	9:00	2.1	SE
4-Sep-2016	10:00	2.7	SE
4-Sep-2016	11:00	2.8	SSE
4-Sep-2016	12:00	2.4	SSE
4-Sep-2016	13:00	2.4	SSE
4-Sep-2016	14:00	2.1	SSE
4-Sep-2016	15:00	2.5	ESE
4-Sep-2016	16:00	2.2	E
4-Sep-2016	17:00	2.1	ENE
4-Sep-2016	18:00	1.8	SSE
4-Sep-2016	19:00	1.5	SW
4-Sep-2016	20:00	1.4	W
4-Sep-2016	21:00	1.8	S
4-Sep-2016	22:00	2.1	SE
4-Sep-2016	23:00	2.2	SE
5-Sep-2016	0:00	1.8	SE
5-Sep-2016	1:00	1.9	WNW
5-Sep-2016	2:00	1.8	WNW
5-Sep-2016	3:00	1.7	ENE
5-Sep-2016	4:00	1.8	SSE
5-Sep-2016	5:00	1.8	ENE
5-Sep-2016	6:00	1.5	S
5-Sep-2016	7:00	1.5	NE
5-Sep-2016	8:00	2	SW
5-Sep-2016	9:00	2.2	SW
5-Sep-2016	10:00	2.3	WNW
5-Sep-2016	11:00	2.3	SW



## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
5-Sep-2016	12:00	3	WSW
5-Sep-2016	13:00	3	WSW
5-Sep-2016	14:00	2.8	WSW
5-Sep-2016	15:00	2.8	NNW
5-Sep-2016	16:00	2.7	WNW
5-Sep-2016	17:00	2.4	N
5-Sep-2016	18:00	2.1	SW
5-Sep-2016	19:00	2.1	SSW
5-Sep-2016	20:00	2	SE
5-Sep-2016	21:00	1.9	W
5-Sep-2016	22:00	2.1	NE
5-Sep-2016	23:00	1.9	SW
6-Sep-2016	0:00	1.7	SSW
6-Sep-2016	1:00	1.6	W
6-Sep-2016	2:00	2	NE
6-Sep-2016	3:00	2.2	ENE
6-Sep-2016	4:00	1.9	N
6-Sep-2016	5:00	1.7	SE
6-Sep-2016	6:00	1.9	W
6-Sep-2016	7:00	1.8	NE
6-Sep-2016	8:00	2.1	NE
6-Sep-2016	9:00	2.4	SW
6-Sep-2016	10:00	2.7	WSW
6-Sep-2016	11:00	3	WSW
6-Sep-2016	12:00	2.8	WSW
6-Sep-2016	13:00	2.9	ESE
6-Sep-2016	14:00	2.8	ESE
6-Sep-2016	15:00	3	ESE
6-Sep-2016	16:00	2.8	ESE
6-Sep-2016	17:00	2.6	NE
6-Sep-2016	18:00	2.4	SSE
6-Sep-2016	19:00	2.4	SSE
6-Sep-2016	20:00	2.3	ENE
6-Sep-2016	21:00	2.2	ENE
6-Sep-2016	22:00	1.9	SE
6-Sep-2016	23:00	1.6	SE
7-Sep-2016	0:00	1.5	SE
7-Sep-2016	1:00	1.8	WNW
7-Sep-2016	2:00	1.7	W
7-Sep-2016	3:00	1.7	SSW
7-Sep-2016	4:00	1.7	WNW
7-Sep-2016	5:00	1.5	SSW
7-Sep-2016	6:00	1.5	S
7-Sep-2016	7:00	1.3	E
7-Sep-2016	8:00	1.6	E
7-Sep-2016	9:00	1.6	E
7-Sep-2016	10:00	1.7	ENE
7-Sep-2016	11:00	1.9	NE
7-Sep-2016	12:00	2.2	ENE
7-Sep-2016	13:00	2.1	NE
7-Sep-2016	14:00	2.1	ENE
7-Sep-2016	15:00	2.2	ENE
7-Sep-2016	16:00	2.3	NNE
7-Sep-2016	17:00	1.9	NNE

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
7-Sep-2016	18:00	1.8	N
7-Sep-2016	19:00	1.8	N
7-Sep-2016	20:00	1.3	N
7-Sep-2016	21:00	1.2	N
7-Sep-2016	22:00	1.3	SW
7-Sep-2016	23:00	1.1	WSW
8-Sep-2016	0:00	1.1	WSW
8-Sep-2016	1:00	1.1	ENE
8-Sep-2016	2:00	1	WSW
8-Sep-2016	3:00	1.2	ENE
8-Sep-2016	4:00	1.2	WSW
8-Sep-2016	5:00	1.2	NE
8-Sep-2016	6:00	1.1	WSW
8-Sep-2016	7:00	1.2	SW
8-Sep-2016	8:00	1.7	S
8-Sep-2016	9:00	2.2	E
8-Sep-2016	10:00	2.3	ENE
8-Sep-2016	11:00	2	SE
8-Sep-2016	12:00	2.3	N
8-Sep-2016	13:00	2.5	S
8-Sep-2016	14:00	3.3	SW
8-Sep-2016	15:00	3.1	SW
8-Sep-2016	16:00	2.6	SW
8-Sep-2016	17:00	2.2	SSE
8-Sep-2016	18:00	2.1	SE
8-Sep-2016	19:00	1.8	SE
8-Sep-2016	20:00	1.8	SSE
8-Sep-2016	21:00	2	SE
8-Sep-2016	22:00	1.8	SSE
8-Sep-2016	23:00	1.7	ENE
9-Sep-2016	0:00	1.9	E
9-Sep-2016	1:00	1.7	SE
9-Sep-2016	2:00	1.7	S
9-Sep-2016	3:00	1.9	SSE
9-Sep-2016	4:00	1.8	SE
9-Sep-2016	5:00	1.5	S
9-Sep-2016	6:00	1.5	SSW
9-Sep-2016	7:00	1.3	SSE
9-Sep-2016	8:00	1.4	SE
9-Sep-2016	9:00	1.6	NE
9-Sep-2016	10:00	1.9	NE
9-Sep-2016	11:00	2.2	ESE
9-Sep-2016	12:00	2.2	NE
9-Sep-2016	13:00	2.1	NNE
9-Sep-2016	14:00	2	NE
9-Sep-2016	15:00	2.2	E
9-Sep-2016	16:00	2.1	ESE
9-Sep-2016	17:00	1.8	W
9-Sep-2016	18:00	1.6	SE
9-Sep-2016	19:00	1.2	SE
9-Sep-2016	20:00	1.2	E
9-Sep-2016	21:00	1.4	ESE
9-Sep-2016	22:00	1.3	ESE
9-Sep-2016	23:00	1.1	SE

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
10-Sep-2016	0:00	1.2	N
10-Sep-2016	1:00	1.2	NE
10-Sep-2016	2:00	1.2	ESE
10-Sep-2016	3:00	1.4	ESE
10-Sep-2016	4:00	1.2	NE
10-Sep-2016	5:00	1	ESE
10-Sep-2016	6:00	0.9	SE
10-Sep-2016	7:00	1	ENE
10-Sep-2016	8:00	1.4	ESE
10-Sep-2016	9:00	1.8	ESE
10-Sep-2016	10:00	2.1	SE
10-Sep-2016	11:00	2.9	SE
10-Sep-2016	12:00	3	S
10-Sep-2016	13:00	2.9	S
10-Sep-2016	14:00	2.9	N
10-Sep-2016	15:00	2.5	N
10-Sep-2016	16:00	2.6	N
10-Sep-2016	17:00	2.5	N
10-Sep-2016	18:00	2.1	ESE
10-Sep-2016	19:00	2.1	ESE
10-Sep-2016	20:00	2.1	E
10-Sep-2016	21:00	1.9	ENE
10-Sep-2016	22:00	1.8	NNE
10-Sep-2016	23:00	2.1	NE
11-Sep-2016	0:00	1.9	WNW
11-Sep-2016	1:00	2	WNW
11-Sep-2016	2:00	2.1	E
11-Sep-2016	3:00	2.1	SE
11-Sep-2016	4:00	1.9	ESE
11-Sep-2016	5:00	1.7	ESE
11-Sep-2016	6:00	2	E
11-Sep-2016	7:00	1.9	ESE
11-Sep-2016	8:00	2	E
11-Sep-2016	9:00	2.2	E
11-Sep-2016	10:00	2.6	E
11-Sep-2016	11:00	2.8	SE
11-Sep-2016	12:00	2.8	SE
11-Sep-2016	13:00	2.5	SE
11-Sep-2016	14:00	2.7	SSE
11-Sep-2016	15:00	2.6	SE
11-Sep-2016	16:00	2.3	SE
11-Sep-2016	17:00	2.3	ESE
11-Sep-2016	18:00	2	E
11-Sep-2016	19:00	2	E
11-Sep-2016	20:00	2.1	SE
11-Sep-2016	21:00	1.8	NW
11-Sep-2016	22:00	2	SSW
11-Sep-2016	23:00	1.8	SW
12-Sep-2016	0:00	2	ESE
12-Sep-2016	1:00	1.5	E
12-Sep-2016	2:00	1.7	SE
12-Sep-2016	3:00	1.7	E
12-Sep-2016	4:00	1.8	S
12-Sep-2016	5:00	1.6	SSW

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
12-Sep-2016	6:00	1.4	ESE
12-Sep-2016	7:00	1.4	SE
12-Sep-2016	8:00	1.4	SE
12-Sep-2016	9:00	2.1	SE
12-Sep-2016	10:00	1.9	ESE
12-Sep-2016	11:00	2.3	ESE
12-Sep-2016	12:00	2.4	E
12-Sep-2016	13:00	2.3	ESE
12-Sep-2016	14:00	2.4	NE
12-Sep-2016	15:00	1.9	NE
12-Sep-2016	16:00	1.9	NE
12-Sep-2016	17:00	2	NE
12-Sep-2016	18:00	2	NE
12-Sep-2016	19:00	1.8	NE
12-Sep-2016	20:00	1.6	NE
12-Sep-2016	21:00	1.7	ENE
12-Sep-2016	22:00	1.8	ENE
12-Sep-2016	23:00	1.7	E
13-Sep-2016	0:00	1.7	ESE
13-Sep-2016	1:00	1.5	ENE
13-Sep-2016	2:00	1.2	ENE
13-Sep-2016	3:00	1.5	NE
13-Sep-2016	4:00	1.4	NE
13-Sep-2016	5:00	1.3	NE
13-Sep-2016	6:00	1.1	ENE
13-Sep-2016	7:00	1.3	ENE
13-Sep-2016	8:00	1.9	E
13-Sep-2016	9:00	2.4	ESE
13-Sep-2016	10:00	2.5	NE
13-Sep-2016	11:00	2.8	NE
13-Sep-2016	12:00	2.9	NNW
13-Sep-2016	13:00	2.8	N
13-Sep-2016	14:00	3	N
13-Sep-2016	15:00	2.5	NE
13-Sep-2016	16:00	2.5	NE
13-Sep-2016	17:00	2.7	NE
13-Sep-2016	18:00	2.2	ESE
13-Sep-2016	19:00	1.8	ESE
13-Sep-2016	20:00	1.3	ESE
13-Sep-2016	21:00	1.4	E
13-Sep-2016	22:00	1.4	ESE
13-Sep-2016	23:00	1.2	ESE
14-Sep-2016	0:00	1.4	ESE
14-Sep-2016	1:00	1.9	ESE
14-Sep-2016	2:00	1.7	W
14-Sep-2016	3:00	1.9	NE
14-Sep-2016	4:00	1.8	ESE
14-Sep-2016	5:00	1.9	WSW
14-Sep-2016	6:00	2.1	WSW
14-Sep-2016	7:00	2.1	SSW
14-Sep-2016	8:00	2.3	ENE
14-Sep-2016	9:00	2.6	ENE
14-Sep-2016	10:00	2.6	ENE
14-Sep-2016	11:00	2.7	SE

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
14-Sep-2016	12:00	2.5	NE
14-Sep-2016	13:00	2.7	NE
14-Sep-2016	14:00	2.2	SSW
14-Sep-2016	15:00	2.1	SSE
14-Sep-2016	16:00	2.3	NNE
14-Sep-2016	17:00	2.1	NNE
14-Sep-2016	18:00	1.7	E
14-Sep-2016	19:00	1.5	W
14-Sep-2016	20:00	1.4	S
14-Sep-2016	21:00	1.7	WNW
14-Sep-2016	22:00	1.8	W
14-Sep-2016	23:00	1.6	ENE
15-Sep-2016	0:00	1.5	WNW
15-Sep-2016	1:00	1.6	NNE
15-Sep-2016	2:00	1.4	ENE
15-Sep-2016	3:00	1.9	NNE
15-Sep-2016	4:00	1.7	SSW
15-Sep-2016	5:00	1.6	WNW
15-Sep-2016	6:00	1.3	NE
15-Sep-2016	7:00	1.5	NNE
15-Sep-2016	8:00	1.7	SW
15-Sep-2016	9:00	1.7	NNE
15-Sep-2016	10:00	2.2	SSW
15-Sep-2016	11:00	2.1	NE
15-Sep-2016	12:00	2.2	W
15-Sep-2016	13:00	2.3	N
15-Sep-2016	14:00	2.3	NE
15-Sep-2016	15:00	2.2	ESE
15-Sep-2016	16:00	2.2	ESE
15-Sep-2016	17:00	2	NE
15-Sep-2016	18:00	1.7	N
15-Sep-2016	19:00	1.5	SSW
15-Sep-2016	20:00	1.2	ENE
15-Sep-2016	21:00	1.2	E
15-Sep-2016	22:00	1.1	NNE
15-Sep-2016	23:00	1.2	SSW
16-Sep-2016	0:00	1.5	W
16-Sep-2016	1:00	1.3	W
16-Sep-2016	2:00	1.1	SW
16-Sep-2016	3:00	1.2	SE
16-Sep-2016	4:00	1.4	SE
16-Sep-2016	5:00	1.2	S
16-Sep-2016	6:00	1.2	SSE
16-Sep-2016	7:00	1.3	SW
16-Sep-2016	8:00	1.3	E
16-Sep-2016	9:00	1.8	ENE
16-Sep-2016	10:00	1.8	SSW
16-Sep-2016	11:00	1.7	W
16-Sep-2016	12:00	2.1	SSW
16-Sep-2016	13:00	2	WNW
16-Sep-2016	14:00	2	WNW
16-Sep-2016	15:00	2.2	NE
16-Sep-2016	16:00	2.1	ESE
16-Sep-2016	17:00	2.1	ENE

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
16-Sep-2016	18:00	1.9	ESE
16-Sep-2016	19:00	1.4	SSE
16-Sep-2016	20:00	1.4	ENE
16-Sep-2016	21:00	1.1	E
16-Sep-2016	22:00	1.1	ENE
16-Sep-2016	23:00	1.1	N
17-Sep-2016	0:00	1.6	NNE
17-Sep-2016	1:00	1.5	ENE
17-Sep-2016	2:00	1.4	ENE
17-Sep-2016	3:00	1.4	E
17-Sep-2016	4:00	1.2	SE
17-Sep-2016	5:00	1.2	ENE
17-Sep-2016	6:00	1.2	SSW
17-Sep-2016	7:00	1.2	NNW
17-Sep-2016	8:00	1.5	SSW
17-Sep-2016	9:00	1.9	WSW
17-Sep-2016	10:00	2.2	SW
17-Sep-2016	11:00	2.7	N
17-Sep-2016	12:00	2.9	N
17-Sep-2016	13:00	3	ENE
17-Sep-2016	14:00	3.1	NE
17-Sep-2016	15:00	3.2	N
17-Sep-2016	16:00	2.9	N
17-Sep-2016	17:00	2.3	N
17-Sep-2016	18:00	2.3	N
17-Sep-2016	19:00	2.3	W
17-Sep-2016	20:00	2.1	N
17-Sep-2016	21:00	1.9	N
17-Sep-2016	22:00	2	SSW
17-Sep-2016	23:00	1.8	SSW
18-Sep-2016	0:00	1.8	N
18-Sep-2016	1:00	1.8	ENE
18-Sep-2016	2:00	1.5	NNE
18-Sep-2016	3:00	1.6	SW
18-Sep-2016	4:00	1.7	W
18-Sep-2016	5:00	1.7	ESE
18-Sep-2016	6:00	1.7	ENE
18-Sep-2016	7:00	1.8	NNE
18-Sep-2016	8:00	2.3	NE
18-Sep-2016	9:00	3	N
18-Sep-2016	10:00	2.7	SSE
18-Sep-2016	11:00	3.2	SSE
18-Sep-2016	12:00	3.5	SSW
18-Sep-2016	13:00	3.4	SSW
18-Sep-2016	14:00	3.4	SSE
18-Sep-2016	15:00	3.4	NNE
18-Sep-2016	16:00	3.3	NNE
18-Sep-2016	17:00	3.1	NNE
18-Sep-2016	18:00	2.8	W
18-Sep-2016	19:00	2.4	WNW
18-Sep-2016	20:00	2.4	W
18-Sep-2016	21:00	1.9	WNW
18-Sep-2016	22:00	2.1	NE
18-Sep-2016	23:00	2.1	SE

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
19-Sep-2016	0:00	2.4	NE
19-Sep-2016	1:00	2.1	ENE
19-Sep-2016	2:00	2.1	NNE
19-Sep-2016	3:00	2.1	NNE
19-Sep-2016	4:00	2.2	NE
19-Sep-2016	5:00	2	NE
19-Sep-2016	6:00	1.4	E
19-Sep-2016	7:00	2	NNE
19-Sep-2016	8:00	2.2	NNE
19-Sep-2016	9:00	3	ENE
19-Sep-2016	10:00	2.8	NE
19-Sep-2016	11:00	2.8	NE
19-Sep-2016	12:00	2.7	NE
19-Sep-2016	13:00	2.5	ENE
19-Sep-2016	14:00	2.4	NE
19-Sep-2016	15:00	2.3	NE
19-Sep-2016	16:00	2.2	E
19-Sep-2016	17:00	2.1	ENE
19-Sep-2016	18:00	1.7	NE
19-Sep-2016	19:00	1.5	NE
19-Sep-2016	20:00	1.6	NE
19-Sep-2016	21:00	1.9	NNE
19-Sep-2016	22:00	1.8	ESE
19-Sep-2016	23:00	1.8	E
20-Sep-2016	0:00	2	E
20-Sep-2016	1:00	2	ENE
20-Sep-2016	2:00	2.1	ENE
20-Sep-2016	3:00	2	NE
20-Sep-2016	4:00	2	NNE
20-Sep-2016	5:00	1.9	ESE
20-Sep-2016	6:00	2	WNW
20-Sep-2016	7:00	1.9	WNW
20-Sep-2016	8:00	1.6	NW
20-Sep-2016	9:00	1.8	NNE
20-Sep-2016	10:00	2.5	NE
20-Sep-2016	11:00	2.6	SW
20-Sep-2016	12:00	2.6	SW
20-Sep-2016	13:00	2.9	SW
20-Sep-2016	14:00	3	WNW
20-Sep-2016	15:00	2.7	NE
20-Sep-2016	16:00	3	WNW
20-Sep-2016	17:00	2.8	WNW
20-Sep-2016	18:00	2.5	W
20-Sep-2016	19:00	2.4	NNE
20-Sep-2016	20:00	2.1	WNW
20-Sep-2016	21:00	1.8	SE
20-Sep-2016	22:00	2	SE
20-Sep-2016	23:00	2	W
21-Sep-2016	0:00	1.8	SSW
21-Sep-2016	1:00	1.6	SSW
21-Sep-2016	2:00	1.7	SSW
21-Sep-2016	3:00	1.9	WSW
21-Sep-2016	4:00	1.9	SW
21-Sep-2016	5:00	1.9	SW

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
21-Sep-2016	6:00	1.5	W
21-Sep-2016	7:00	1.4	SW
21-Sep-2016	8:00	1.8	SW
21-Sep-2016	9:00	2	S
21-Sep-2016	10:00	1.9	NNE
21-Sep-2016	11:00	2.3	ESE
21-Sep-2016	12:00	2.5	NE
21-Sep-2016	13:00	2.6	ENE
21-Sep-2016	14:00	2.6	NNE
21-Sep-2016	15:00	2.4	NE
21-Sep-2016	16:00	2.2	NE
21-Sep-2016	17:00	2.4	W
21-Sep-2016	18:00	2	W
21-Sep-2016	19:00	1.9	SSW
21-Sep-2016	20:00	1.6	NW
21-Sep-2016	21:00	1.9	WNW
21-Sep-2016	22:00	1.4	NNE
21-Sep-2016	23:00	1.6	ENE
22-Sep-2016	0:00	1.5	NE
22-Sep-2016	1:00	1.7	WNW
22-Sep-2016	2:00	1.5	SW
22-Sep-2016	3:00	1.5	SW
22-Sep-2016	4:00	1.2	WNW
22-Sep-2016	5:00	1.2	SE
22-Sep-2016	6:00	1.1	E
22-Sep-2016	7:00	1.3	NE
22-Sep-2016	8:00	1.7	WNW
22-Sep-2016	9:00	1.7	W
22-Sep-2016	10:00	2	SW
22-Sep-2016	11:00	2.1	SW
22-Sep-2016	12:00	2.5	WNW
22-Sep-2016	13:00	2.1	WNW
22-Sep-2016	14:00	2.2	SW
22-Sep-2016	15:00	2	WNW
22-Sep-2016	16:00	1.8	W
22-Sep-2016	17:00	1.6	WNW
22-Sep-2016	18:00	1.7	WNW
22-Sep-2016	19:00	1.3	NNW
22-Sep-2016	20:00	1.3	WNW
22-Sep-2016	21:00	1.3	WNW
22-Sep-2016	22:00	1.3	WNW
22-Sep-2016	23:00	1.5	NNE
23-Sep-2016	0:00	1.3	NNE
23-Sep-2016	1:00	1.3	NE
23-Sep-2016	2:00	1.1	NE
23-Sep-2016	3:00	1.2	ENE
23-Sep-2016	4:00	1.1	ENE
23-Sep-2016	5:00	1	NE
23-Sep-2016	6:00	1.1	NE
23-Sep-2016	7:00	1.6	NE
23-Sep-2016	8:00	1.9	NE
23-Sep-2016	9:00	2.1	NE
23-Sep-2016	10:00	2.7	NE
23-Sep-2016	11:00	2.5	ENE



## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
23-Sep-2016	12:00	2.3	N
23-Sep-2016	13:00	2.7	ENE
23-Sep-2016	14:00	2.6	N
23-Sep-2016	15:00	2.4	NNE
23-Sep-2016	16:00	2.6	N
23-Sep-2016	17:00	2.4	NNE
23-Sep-2016	18:00	2.1	NE
23-Sep-2016	19:00	2.1	ESE
23-Sep-2016	20:00	1.8	NE
23-Sep-2016	21:00	1.9	NNE
23-Sep-2016	22:00	1.9	NNE
23-Sep-2016	23:00	1.8	W
24-Sep-2016	0:00	1.9	WNW
24-Sep-2016	1:00	1.9	W
24-Sep-2016	2:00	1.7	ENE
24-Sep-2016	3:00	1.8	NNE
24-Sep-2016	4:00	1.9	ENE
24-Sep-2016	5:00	2.6	ENE
24-Sep-2016	6:00	2.2	NE
24-Sep-2016	7:00	2.1	ESE
24-Sep-2016	8:00	2.2	ESE
24-Sep-2016	9:00	2.7	N
24-Sep-2016	10:00	2.6	E
24-Sep-2016	11:00	2.5	NNE
24-Sep-2016	12:00	2.8	N
24-Sep-2016	13:00	3.1	NE
24-Sep-2016	14:00	2.9	ENE
24-Sep-2016	15:00	2.4	NE
24-Sep-2016	16:00	2.4	ENE
24-Sep-2016	17:00	2.1	ENE
24-Sep-2016	18:00	1.7	ESE
24-Sep-2016	19:00	1.5	W
24-Sep-2016	20:00	1.7	SW
24-Sep-2016	21:00	2	SW
24-Sep-2016	22:00	1.8	S
24-Sep-2016	23:00	1.9	SW
25-Sep-2016	0:00	1.9	SW
25-Sep-2016	1:00	1.7	SW
25-Sep-2016	2:00	1.6	SSW
25-Sep-2016	3:00	1.7	SW
25-Sep-2016	4:00	1.4	SW
25-Sep-2016	5:00	1.6	SSW
25-Sep-2016	6:00	1.6	SW
25-Sep-2016	7:00	1.1	S
25-Sep-2016	8:00	1.2	SSW
25-Sep-2016	9:00	1.6	SSE
25-Sep-2016	10:00	2.3	W
25-Sep-2016	11:00	2.5	WNW
25-Sep-2016	12:00	2.5	SSW
25-Sep-2016	13:00	2.5	W
25-Sep-2016	14:00	2.5	SW
25-Sep-2016	15:00	2.3	WNW
25-Sep-2016	16:00	2.3	WNW
25-Sep-2016	17:00	1.9	WNW

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
25-Sep-2016	18:00	1.7	WSW
25-Sep-2016	19:00	1.5	W
25-Sep-2016	20:00	1.4	WNW
25-Sep-2016	21:00	1.4	NE
25-Sep-2016	22:00	1.4	NE
25-Sep-2016	23:00	1.3	W
26-Sep-2016	0:00	1.5	WSW
26-Sep-2016	1:00	1.3	NE
26-Sep-2016	2:00	1.1	SSW
26-Sep-2016	3:00	1.3	WNW
26-Sep-2016	4:00	1.1	W
26-Sep-2016	5:00	0.8	WNW
26-Sep-2016	6:00	0.7	W
26-Sep-2016	7:00	0.9	WSW
26-Sep-2016	8:00	1.2	SSW
26-Sep-2016	9:00	1.4	S
26-Sep-2016	10:00	1.6	W
26-Sep-2016	11:00	1.9	SSW
26-Sep-2016	12:00	2.4	SSW
26-Sep-2016	13:00	2.6	E
26-Sep-2016	14:00	2.2	WNW
26-Sep-2016	15:00	1.9	SW
26-Sep-2016	16:00	2.1	WNW
26-Sep-2016	17:00	2.1	ESE
26-Sep-2016	18:00	1.6	WNW
26-Sep-2016	19:00	1.5	ENE
26-Sep-2016	20:00	1.2	SSW
26-Sep-2016	21:00	1.3	SSE
26-Sep-2016	22:00	1	SSE
26-Sep-2016	23:00	1.2	WSW
27-Sep-2016	0:00	1.2	SSE
27-Sep-2016	1:00	1.1	ESE
27-Sep-2016	2:00	1.3	ENE
27-Sep-2016	3:00	1.2	ENE
27-Sep-2016	4:00	1.1	SSE
27-Sep-2016	5:00	0.9	ESE
27-Sep-2016	6:00	0.9	ESE
27-Sep-2016	7:00	0.9	ENE
27-Sep-2016	8:00	1.2	NE
27-Sep-2016	9:00	1.7	NE
27-Sep-2016	10:00	2.1	ENE
27-Sep-2016	11:00	2.4	NE
27-Sep-2016	12:00	2.7	NNE
27-Sep-2016	13:00	2.6	ENE
27-Sep-2016	14:00	2.3	ENE
27-Sep-2016	15:00	2.3	NE
27-Sep-2016	16:00	2.2	ENE
27-Sep-2016	17:00	2	ENE
27-Sep-2016	18:00	1.6	SSE
27-Sep-2016	19:00	1.3	ENE
27-Sep-2016	20:00	1.1	ENE
27-Sep-2016	21:00	1.3	NNE
27-Sep-2016	22:00	1.1	SE
27-Sep-2016	23:00	1.1	S

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
28-Sep-2016	0:00	1.1	NNE
28-Sep-2016	1:00	1.2	NE
28-Sep-2016	2:00	1.2	NE
28-Sep-2016	3:00	1.2	NE
28-Sep-2016	4:00	1.2	ESE
28-Sep-2016	5:00	1.2	E
28-Sep-2016	6:00	1.1	NE
28-Sep-2016	7:00	1.1	NE
28-Sep-2016	8:00	1.5	NE
28-Sep-2016	9:00	1.9	ESE
28-Sep-2016	10:00	2.3	W
28-Sep-2016	11:00	2.4	ENE
28-Sep-2016	12:00	2.6	NW
28-Sep-2016	13:00	2.8	W
28-Sep-2016	14:00	2.6	SSW
28-Sep-2016	15:00	2.5	WSW
28-Sep-2016	16:00	2.4	W
28-Sep-2016	17:00	2.4	W
28-Sep-2016	18:00	1.9	W
28-Sep-2016	19:00	1.5	W
28-Sep-2016	20:00	1.3	WNW
28-Sep-2016	21:00	1.2	WSW
28-Sep-2016	22:00	1.4	W
28-Sep-2016	23:00	1.3	SSW
29-Sep-2016	0:00	1.4	S
29-Sep-2016	1:00	1.4	ENE
29-Sep-2016	2:00	1.5	NE
29-Sep-2016	3:00	1.4	E
29-Sep-2016	4:00	1.4	WSW
29-Sep-2016	5:00	1.7	NE
29-Sep-2016	6:00	1.5	NNE
29-Sep-2016	7:00	1.6	NE
29-Sep-2016	8:00	2	NE
29-Sep-2016	9:00	2.3	ENE
29-Sep-2016	10:00	2.8	ENE
29-Sep-2016	11:00	2.8	NE
29-Sep-2016	12:00	2.6	ENE
29-Sep-2016	13:00	2.6	ENE
29-Sep-2016	14:00	2.7	ENE
29-Sep-2016	15:00	2.6	NE
29-Sep-2016	16:00	2.5	ESE
29-Sep-2016	17:00	2.3	N
29-Sep-2016	18:00	1.8	W
29-Sep-2016	19:00	1.7	WNW
29-Sep-2016	20:00	1.7	ENE
29-Sep-2016	21:00	1.5	ENE
29-Sep-2016	22:00	1.9	SE
29-Sep-2016	23:00	1.5	SW
30-Sep-2016	0:00	1.7	SW
30-Sep-2016	1:00	1.8	S
30-Sep-2016	2:00	1.3	E
30-Sep-2016	3:00	1.5	E
30-Sep-2016	4:00	1.7	WSW
30-Sep-2016	5:00	1.8	N

## Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
30-Sep-2016	6:00	1.7	SSW
30-Sep-2016	7:00	1.4	S
30-Sep-2016	8:00	2.2	WSW
30-Sep-2016	9:00	2.6	SSE
30-Sep-2016	10:00	3	E
30-Sep-2016	11:00	3.4	ENE
30-Sep-2016	12:00	3.2	W
30-Sep-2016	13:00	3.2	WNW
30-Sep-2016	14:00	3.1	WSW
30-Sep-2016	15:00	3.1	WSW
30-Sep-2016	16:00	2.8	WSW
30-Sep-2016	17:00	2.5	S
30-Sep-2016	18:00	2.3	W
30-Sep-2016	19:00	2	W
30-Sep-2016	20:00	2	W
30-Sep-2016	21:00	1.8	SW
30-Sep-2016	22:00	1.8	SW
30-Sep-2016	23:00	1.9	WNW

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**APPENDIX K  
EVENT ACTION PLANS**

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## Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	SO	CONTRACTOR
<b>ACTION LEVEL</b>				
1. Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform IEC and SO;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and SO;</li> <li>3. Advise the SO on the effectiveness of the proposed remedial measures;</li> <li>4. Repeat measurements to confirm findings;</li> <li>5. Increase monitoring frequency to daily;</li> <li>6. Discuss with IEC and Contractor on remedial actions required;</li> <li>7. If exceedance continues, arrange meeting with IEC and SO;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ET on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial to SO within 3 working days of notification;</li> <li>2. Implement the agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>

**LIMIT LEVEL**

<p>1.Exceedance for one sample</p>	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Inform SO, Contractor and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the SO on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>
<p>2.Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> <li>1. Notify IEC, SO, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Arrange meeting with IEC and SO to discuss the remedial actions to</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst SO, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly;</li> <li>3. Supervise the implementation of remedial</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Ensure remedial measures properly implemented;</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by the SO until the exceedance is</li> </ol>

	<p>be taken;</p> <p>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results;</p> <p>8. If exceedance stops, cease additional monitoring.</p>	<p>measures.</p>	<p>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</p>	<p>abated.</p>
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Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, SO – Supervising Office



## Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	IEC	SO	CONTRACTOR
Action Level	<ol style="list-style-type: none"> <li>1. Identify source, investigate the causes of exceedance and propose remedial measures;</li> <li>2. Notify IEC and Contractor;</li> <li>3. Report the results of investigation to the IEC, SO and Contractor;</li> <li>4. Discuss with the Contractor and formulate remedial measures;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the analysed results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the SO accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise problem;</li> <li>4. Ensure remedial measures are properly implemented</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC;</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC, SO, EPD and Contractor;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency;</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented;</li> <li>6. Inform IEC, SO and EPD</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst SO, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the SO accordingly;</li> <li>3. Supervise the implementation of</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Require Contractor to propose remedial measures for the analysed noise</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> </ol>

EVENT	ACTION			
	ET	IEC	SO	CONTRACTOR
	<p>the causes and actions taken for the exceedances;</p> <p>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and SO informed of the results;</p> <p>8. If exceedance stops, cease additional monitoring.</p>	<p>remedial measures.</p>	<p>problem;</p> <p>4. Ensure remedial measures properly implemented;</p> <p>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</p>	<p>5. Stop the relevant portion of works as determined by the SO until the exceedance is abated.</p>

### Event and Action Plan for Water Quality

Event	ET Leader	IEC	SO	Contractor
Action level being exceeded by one sampling day	<p>Repeat <i>in situ</i> measurement on next day of exceedance to confirm findings;</p> <p>Identify source(s) of impact;</p> <p>Inform IEC, contractor and SO;</p> <p>Check monitoring data, all plant, equipment and Contractor's working methods.</p>	<p>Check monitoring data submitted by ET and Contractor's working methods.</p>	<p>Confirm receipt of notification of non-compliance in writing;</p> <p>Notify Contractor.</p>	<p>Inform the SO and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Amend working methods if appropriate.</p>
Action level being exceeded by two or more consecutive sampling days	<p>Repeat measurement on next day of exceedance to confirm findings;</p> <p>Identify source(s) of impact;</p> <p>Inform IEC, contractor, SO and EPD;</p> <p>Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>Ensure mitigation measures are implemented;</p> <p>Increase the monitoring frequency to daily until no exceedance of Action level;</p>	<p>Check monitoring data submitted by ET and Contractor's working method;</p> <p>Discuss with ET and Contractor on possible remedial actions;</p> <p>Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly;</p> <p>Supervise the implementation of mitigation measures.</p>	<p>Discuss with IEC on the proposed mitigation measures;</p> <p>Ensure mitigation measures are properly implemented;</p> <p>Assess the effectiveness of the implemented mitigation measures.</p>	<p>Inform the Supervising Officer and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment and consider changes of working methods;</p> <p>Submit proposal of additional mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO;</p> <p>Implement the agreed mitigation measures.</p>
Limit level being exceeded by one sampling day	<p>Repeat measurement on next day of exceedance to confirm findings;</p> <p>Identify source(s) of impact;</p> <p>Inform IEC, contractor, SO and EPD;</p> <p>Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>Discuss mitigation measures with IEC, SO and Contractor;</p>	<p>Check monitoring data submitted by ET and Contractor's working method;</p> <p>Discuss with ET and Contractor on possible remedial actions;</p> <p>Review the proposed mitigation measures submitted by Contractor and advise the SO accordingly.</p>	<p>Confirm receipt of notification of failure in writing;</p> <p>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>Request Contractor to review the working methods.</p>	<p>Inform the SO and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment and consider changes of working methods;</p> <p>Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO.</p>

Event	ET Leader	IEC	SO	Contractor
<p>Limit level being exceeded by two or more consecutive sampling days</p>	<p>Repeat measurement on next day of exceedance to confirm findings;</p> <p>Identify source(s) of impact;</p> <p>Inform IEC, contractor, SO and EPD;</p> <p>Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>Discuss mitigation measures with IEC, SO and Contractor;</p> <p>Ensure mitigation measures are implemented;</p>	<p>Check monitoring data submitted by ET and Contractor's working method;</p> <p>Discuss with ET and Contractor on possible remedial actions;</p> <p>Review the Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the SO accordingly;</p> <p>Supervise the implementation of mitigation measures.</p>	<p>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</p> <p>Request Contractor to critically review the working methods;</p> <p>Make agreement on the mitigation measures to be implemented;</p> <p>Ensure mitigation measures are properly implemented;</p> <p>Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</p>	<p>Take immediate action to avoid further exceedance;</p> <p>Submit proposal of mitigation measures to SO within 3 working days of notification and discuss with ET, IEC and SO;</p> <p>Implement the agreed mitigation measures;</p> <p>Resubmit proposals of mitigation measures if problem still not under control;</p> <p>As directed by the Supervising Officer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</p>

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**APPENDIX L**  
**SUMMARY OF EXCEEDANCE**

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**Contract No. HY/2011/09**

**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road –  
Section between HKSAR Boundary and Scenic Hill**

**Exceedance Report**

**(A) Exceedance Report for Air Quality**

<b>Environmental Monitoring</b>	<b>Parameter</b>	<b>No. of Exceedance</b>		<b>No. of Exceedance related to the Construction Activities of this Contract</b>	
		<b>Action Level</b>	<b>Limit Level</b>	<b>Action Level</b>	<b>Limit Level</b>
Air Quality	1-hr TSP	0	0	0	0
	24-hr TSP	0	0	0	0

**(B) Exceedance Report for Construction Noise  
(NIL in the reporting period)**

**(C) Exceedance Report for Water Quality**

<b>Environmental Monitoring</b>	<b>Parameter</b>	<b>No. of Exceedance</b>		<b>No. of Exceedance related to the Construction Activities of this Contract</b>	
		<b>Action Level</b>	<b>Limit Level</b>	<b>Action Level</b>	<b>Limit Level</b>
Water Quality	Dissolved Oxygen (DO) (Surface & Middle)	0	0	0	0
	Dissolved Oxygen (DO) (Bottom)	0	0	0	0
	Turbidity	0	0	0	0
	Suspended Solids (SS)	3	5	0	0

**Contract No. HY/2011/09**

**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 2 September 2016

**Part A – Exceedance Summary Tables**

**Table I: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / ~~Turbidity (TURB)~~ / Suspended Solids (SS)**

Station(s)	Tide	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	Control Station(s)	Depth-average Value at Control Stations (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Depth-average Measured Value (mg/L)	Justification*	Validity (Yes/No)
SR6	Mid-ebb	23.5	34.4	CS2	65.5	78.6	85.2	<b>82.2</b>	(2), (3), (5) & (6)	No
IS1	Mid-flood			<b><u>36.9</u></b>	(2) & (6)	No				
IS2				<b><u>36.4</u></b>	(2) & (6)	No				
IS4				CS1	9.2	11.0	12.0	<b>28.2</b>	(2) & (6)	No
SR6				<b><u>35.4</u></b>	(2) & (6)	No				
ST1				<b><u>36.7</u></b>	(2) & (6)	No				
ST2				<b><u>40.4</u></b>	(2) & (6)	No				

Note: ***Bold Italic*** means Action Level exceedance  
***Bold Italic with underline*** means Limit Level exceedance

- \*Remarks
- (1) – No major marine construction activity was conducted.
  - (2) – No pollution discharge from construction activity was observed.
  - (3) – Control Station value already exceeded either the Baseline Action or Limit Levels.
  - (4) – The exceeded results were similar or within the ranges baseline monitoring results.
  - (5) – Monitoring station is situated at the upstream of the construction sites.
  - (6) – Other(s): Please specify – Localized sediment plume due to the rough water condition was observed.

**Part B – Conclusion:** No direct evidence that the exceedances were due to the Contract, therefore the exceedances are considered due to the other external factors rather than the contract works.

**Part C – Recommendation:** As the exceedances were not related to the contract works, no further action to be required.

Contract No. HY/2011/09

**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
- Notification of Environmental Quality Limit Exceedances**

**Location Plan:**



Reviewed by: Dr. Priscilla Choy

Title: Environmental Team Leader

Date: 7 October 2016



**Contract No. HY/2011/09**

**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
- Notification of Environmental Quality Limit Exceedances**

**Date of Water Quality Monitoring:** 21 September 2016

**Part A – Exceedance Summary Tables**

**Table I: Parameter(s) – ~~Dissolved Oxygen (DO)~~ / ~~Turbidity (TURB)~~ / Suspended Solids (SS)**

Station(s)	Tide	Baseline Action Level (mg/L)	Baseline Limit Level (mg/L)	Control Station(s)	Depth-average Value at Control Stations (mg/L)	120% of Control Station Action Level (mg/L)	130% of Control Station Limit Level (mg/L)	Depth-average Measured Value (mg/L)	Justification*	Validity (Yes/No)
IS4	Mid-ebb	23.5	34.4	CS2	7.4	8.9	9.6	<b>27.3</b>	(2) and (4)	No

Note: ***Bold Italic*** means Action Level exceedance  
***Bold Italic with underline*** means Limit Level exceedance

- \*Remarks
- (1) – No major marine construction activity was conducted.
  - (2) – No pollution discharge from construction activity was observed.
  - (3) – Control Station value already exceeded either the Baseline Action or Limit Levels.
  - (4) – The exceeded results were similar or within the ranges baseline monitoring results. (Please refer to Table I)
  - (5) – Monitoring station is situated at the upstream of the construction sites.
  - (6) – Other(s): Please specify – \_\_\_\_\_

**Table I – Summary of Baseline Water Quality Monitoring Results during Mid-Ebb Tide**

Station(s)	Suspended Solids (mg/L)	
	Min	Max
IS4	9.3	24.3

**Part B – Conclusion:** No direct evidence that the exceedances were due to the Contract, therefore the exceedances are considered due to the other external factors rather than the contract works.

**Part C – Recommendation:** As the exceedances were not related to the contract works, no further action to be required.

Contract No. HY/2011/09

**Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
- Notification of Environmental Quality Limit Exceedances**

**Location Plan:**



Reviewed by: Dr. Priscilla Choy

Title: Environmental Team Leader

Date: 7 October 2016

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**APPENDIX M**  
**SITE AUDIT SUMMARY**

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Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge

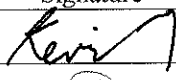

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	160906
Date	6 September 2016 (Tuesday)
Time	9:15 – 12:30 and 13:30 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	<b>B. Water Quality</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>C. Ecology</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>D. Air Quality</b>	
160906-R04	• Cement bags should be covered properly near P107.	D20
	<b>E. Noise</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>F. Waste / Chemical Management</b>	
160906-R01	• To properly clear the oil leakage as chemical waste and provide drip trays for oil containers near P47, P34 and P30.	F8, 9
160906-R02	• Waste water inside drip trays near P44 and P37 should be cleared as chemical waste.	F2i, 2ii
160906-R03	• Chemical material should be properly stored in chemical storage area at Portion C.	F2i, 2ii
	<b>G. Permits/Licences</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>H. Others</b>	
	• Follow-up on previous site audit session (Ref. No. 160830), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Kevin Lam		6 September 2016
Checked by	Dr. Priscilla Choy		6 Septmeber 2016

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*

**Environmental Observations Identified during the Environmental Site Inspection**  
**(6 September 2016)**



**P47**



**P34**



**P30**

**Ref No:** 160906-R01

**Impact:**

Waste / Chemical Management (F8, 9)

**Details:**

To properly clear the oil leakage as chemical waste and provide drip trays for oil containers near P47, P34 and P30.

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill



P44



P37



**Ref No:** 160906-R02

**Impact:**  
Waste / Chemical Management (F2i, 2ii)

**Details:**  
Waste water inside drip trays near P44 and P37 should be cleared as chemical waste.

**Ref No:** 160906-R03

**Impact:**  
Waste / Chemical Management (F2i, 2ii)

**Details:**  
Chemical material should be properly stored in chemical storage area at Portion C.

*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*



**Ref No:** 160906-R04

**Impact:**  
Air Quality (D20)

**Details:**  
Cement bags should be covered properly near P107.

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

**Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session**

	<p><b>Ref No:</b> 160830-R01</p> <p><b>Impact:</b> Waste / Chemical Management (F8 &amp; F9)</p> <p><b>Details:</b> To provide a drip tray for oil drums and label it properly at P60 and LF3.</p> <p><b>Follow up:</b> Oil drum was observed removed.</p>
	<p><b>Ref No:</b> 160830-R02</p> <p><b>Impact:</b> Waste / Chemical Management (F2i)</p> <p><b>Details:</b> To properly store the chemical containers or remove it near P60.</p> <p><b>Follow up:</b> Chemical containers were observed removed.</p>
	<p><b>Ref No:</b> 160830-R03</p> <p><b>Impact:</b> Waste / Chemical Management (F2i)</p> <p><b>Details:</b> Chemical material should be properly stored in chemical storage area at Portion C.</p> <p><b>Follow up:</b> Chemical material was observed removed.</p>



*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*



**Ref No:** 160830-R04

**Impact:**

Waste / Chemical Management (F1i & F1iii)

**Details:**

Waste water should be cleared from waste skip near P83.

**Follow up:**

Waste water was observed cleared.

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


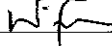
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	160913
Date	13 September 2016 (Tuesday)
Time	9:15 – 12:30 and 13:30 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	<b>B. Water Quality</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>C. Ecology</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>D. Air Quality</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>E. Noise</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>F. Waste / Chemical Management</b>	
160913-R01	• Drip trays should be provided to oil containers at P47 to prevent oil leakage.	F8, 9
160913-R02	• General refuse near P82 should be cleared to avoid accumulation.	F1i, Iii
	<b>G. Permits/Licences</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>H. Others</b>	
	• Follow-up on previous site audit session (Ref. No. 160906), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		13 September 2016
Checked by	Dr. Priscilla Choy		13 Septmeber 2016

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*

**Environmental Observations Identified during the Environmental Site Inspection**  
**(13 September 2016)**



**Ref No:** 160913-R01

**Impact:**

Waste / Chemical Management (F8, 9)

**Details:**

Drip trays should be provided to oil containers at P47 to prevent oil leakage.



**Ref No:** 160913-R02

**Impact:**

Waste / Chemical Management (F1i, 1ii)

**Details:**

General refuse near P82 should be cleared to avoid accumulation.

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*

**Rectification Actions taken by the Contractor for Environmental Deficiencies  
Identified during Previous Audit Session**



**P47**



**P34**



**P30**

Ref No: 160906-R01

Impact:

Waste / Chemical Management (F8, 9)

Details:

To properly clear the oil leakage as chemical waste and provide drip trays for oil containers near P47, P34 and P30.

**Follow up:**

All chemical containers have been stored properly and removed accordingly.

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill



P44



P37

Ref No: 160906-R02

Impact:  
Waste / Chemical Management (F2i, 2ii)

Details:  
Waste water inside drip trays near P44 and P37 should be cleared as chemical waste.

**Follow up:**  
The drip tray with wastewater at near P44 and P37 was cleared.



Ref No: 160906-R03

Impact:  
Waste / Chemical Management (F2i, 2ii)

Details:  
Chemical material should be properly stored in chemical storage area at Portion C.

**Follow up:**  
Chemical material was observed removed.

*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*



Ref No: 160906-R04

Impact:  
Air Quality (D20)

Details:  
Cement bags should be covered properly near P107.

**Follow up:**  
Cement bags were observed covered properly.

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


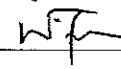
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	160920
Date	20 September 2016 (Tuesday)
Time	9:15 – 11:30 and 13:30 – 15:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	<b>B. Water Quality</b>	
160920-R01	<ul style="list-style-type: none"><li>Silt curtain near P68 should be repaired properly.</li></ul>	B25
	<b>C. Ecology</b>	
	<ul style="list-style-type: none"><li>No environmental deficiency was identified during site inspection.</li></ul>	
	<b>D. Air Quality</b>	
	<ul style="list-style-type: none"><li>No environmental deficiency was identified during site inspection.</li></ul>	
	<b>E. Noise</b>	
	<ul style="list-style-type: none"><li>No environmental deficiency was identified during site inspection.</li></ul>	
	<b>F. Waste / Chemical Management</b>	
	<ul style="list-style-type: none"><li>No environmental deficiency was identified during site inspection.</li></ul>	
	<b>G. Permits/Licences</b>	
	<ul style="list-style-type: none"><li>No environmental deficiency was identified during site inspection.</li></ul>	
	<b>H. Others</b>	
	<ul style="list-style-type: none"><li>Follow-up on previous site audit session (Ref. No. 160913), all environmental deficiencies were improved/rectified by contractor during the site inspection.</li></ul>	

	Name	Signature	Date
Recorded by	Ivy Tam		20 September 2016
Checked by	Dr. Priscilla Choy		20 Septmeber 2016

*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*

**Environmental Observations Identified during the Environmental Site Inspection**  
**(20 September 2016)**



**Ref No:** 160920-R01

**Impact:**  
Water Quality (B25)

**Details:**  
Silt curtain near P68 should be repaired properly.



Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

**Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session**



**Ref No:** 160913-R01

**Impact:**

Waste / Chemical Management (F8, 9)

**Details:**

Drip trays should be provided to oil containers at P47 to prevent oil leakage.

**Follow up:**

The chemical containers were stored with drip tray properly at P47.



**Ref No:** 160913-R02

**Impact:**

Waste / Chemical Management (F1i, 1ii)

**Details:**

General refuse near P82 should be cleared to avoid accumulation.

**Follow up:**

The general refuse was cleared properly.

Contract HY/2011/09

**Hong Kong-Zhuhai-Macao Bridge**



**Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill**

**Weekly Site Inspection Record Summary**

**Inspection Information**

Checklist Reference Number	160927
Date	27 September 2016 (Tuesday)
Time	9:15 – 11:30 and 13:30 – 15:30


Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	<b>B. Water Quality</b>	
160927-R01	• Sandbag bunds should be provided before kicking plates to prevent leakage from grouting works for P53 to P58.	B22
160927-R02	• Stagnant water in the deck holes of the bridge should be cleared properly at P53 to P59.	B8
	<b>C. Ecology</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>D. Air Quality</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>E. Noise</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>F. Waste / Chemical Management</b>	
160927-R03	• Drip trays for chemical containers should be plugged and suitable labels should be provided to chemical containers of P57.	F8 & F9
160927-R04	• House-keeping should be enhanced at P58 and P80.	F1i & 1ii & 1iii
	<b>G. Permits/Licences</b>	
	• No environmental deficiency was identified during site inspection.	
	<b>H. Others</b>	
	• Follow-up on previous site audit session (Ref. No. 160920), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		27 September 2016
Checked by	Dr. Priscilla Choy		27 Septmeber 2016

Hong Kong-Zhuhai-Macao Bridge

Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

**Environmental Observations Identified during the Environmental Site Inspection**  
**(27 September 2016)**

	<p><b>Ref No:</b> 160927-R01</p> <p><b>Impact:</b> Water Quality (B22)</p> <p><b>Details:</b> Sandbag bunds should be provided before kicking plates to prevent leakage from grouting works for P53 to P58.</p>
	<p><b>Ref No:</b> 160927-R02</p> <p><b>Impact:</b> Water Quality (B8)</p> <p><b>Details:</b> Stagnant water in the deck holes of the bridge should be cleared properly at P53 to P59.</p>
	<p><b>Ref No:</b> 160927-R03</p> <p><b>Impact:</b> Waste / Chemical Management (F8 &amp; F9)</p> <p><b>Details:</b> Drip trays for chemical containers should be plugged and suitable labels should be provided to chemical containers of P57.</p>

*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*



**P58**



**P80**

**Ref No:** 160927-R04

**Impact:**

Waste / Chemical Management (F1i & 1ii & 1iii)

**Details:**

House-keeping should be enhanced at P58 and P80.

*Contract HY/2011/09*

*Hong Kong-Zhuhai-Macao Bridge*

*Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill*

**Rectification Actions taken by the Contractor for Environmental Deficiencies  
Identified during Previous Audit Session**

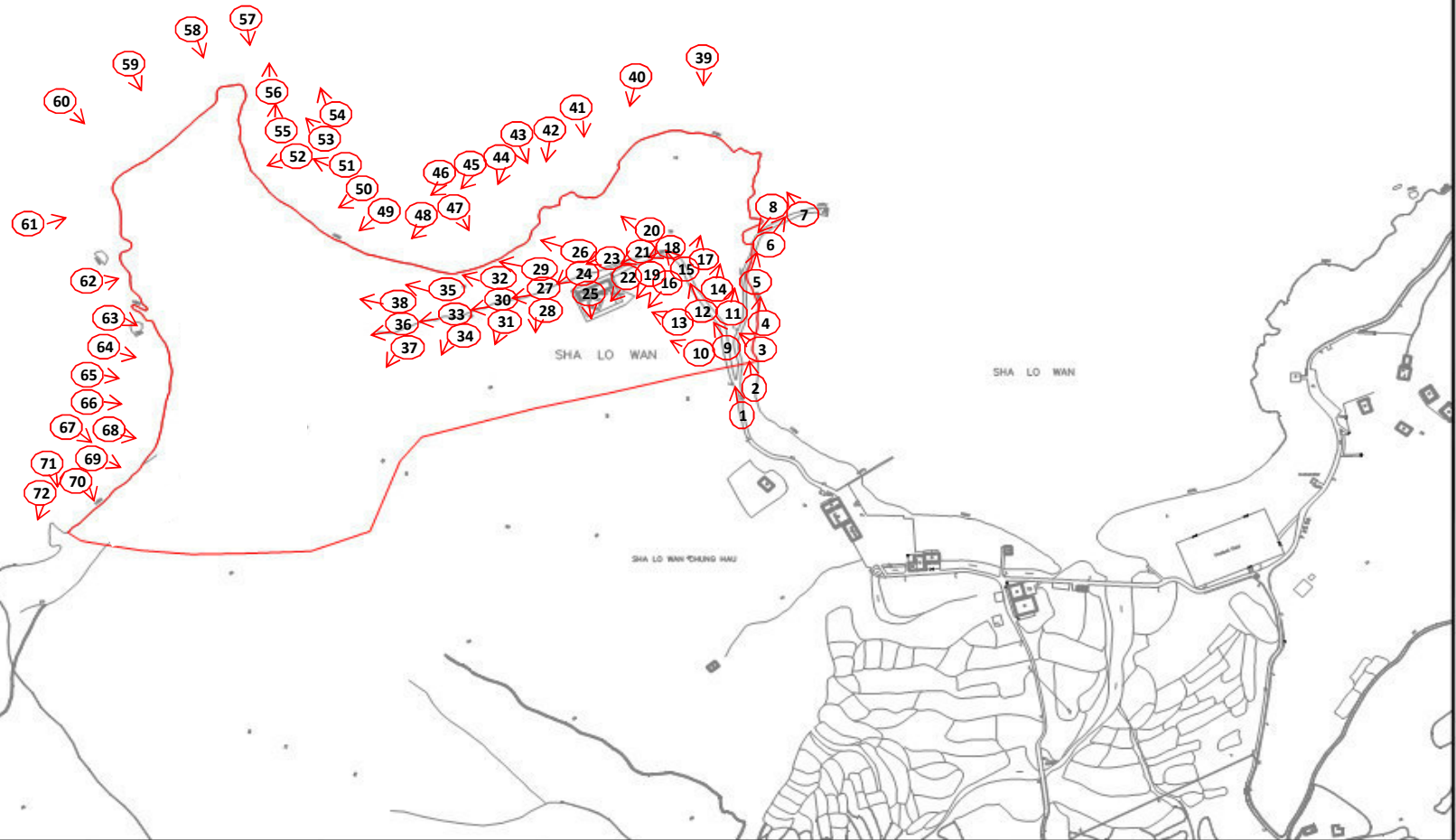


**Ref No:** 160920-R01

**Impact:**  
Water Quality (B25)

**Details:**  
Silt curtain near P68 should be repaired properly.

**Follow up:**  
The damaged silt curtain was repaired by the workers.



**LEGEND**

- Sha Lo Wan (West) Archaeological Site



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge  
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill  
LOCATION OF SHA LO WAN (WEST) ARCHAEOLOGICAL SITE

SCALE	1:100	DATE	September 2016
CHECK	IT	DRAWN	JW
JOB No.	MA12014	FIGURE NO.	1
		REV	—



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE

N.T.S.

DATE

Sep-16

Project No.

MA12014

Appendix

M1



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11

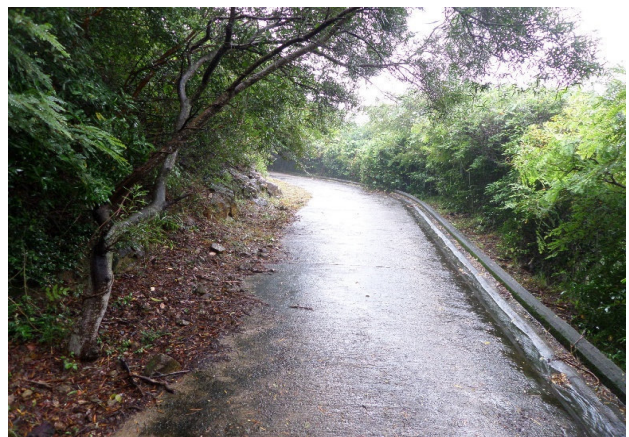


Photo 12



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE

N.T.S.

DATE

Sep-16

Project No.

MA12014

Appendix

M2





Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18


	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road- Section between HKSAR Boundary and Scenic Hill  Photographic Records for Sha Lo Wan (West) Archaeological Site	SCALE	DATE
		N.T.S.	Sep-16
		Project No.	Appendix
		MA12014	M3



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23



Photo 24



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE

N.T.S.

DATE

Sep-16

Project No.

MA12014

Appendix

M4



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE

N.T.S.

DATE

Sep-16

Project No.

MA12014

Appendix

M5



Photo 31



Photo 32



Photo 33



Photo 34

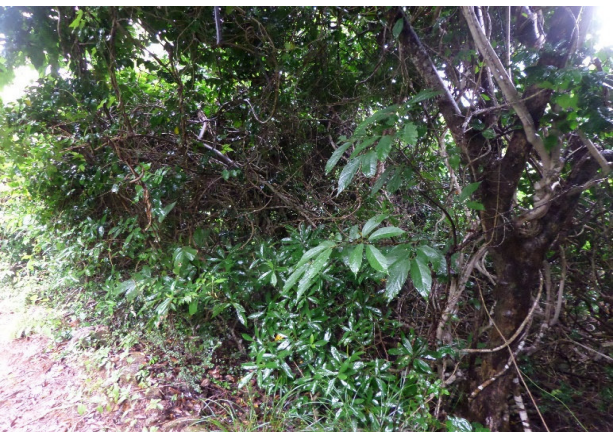


Photo 35

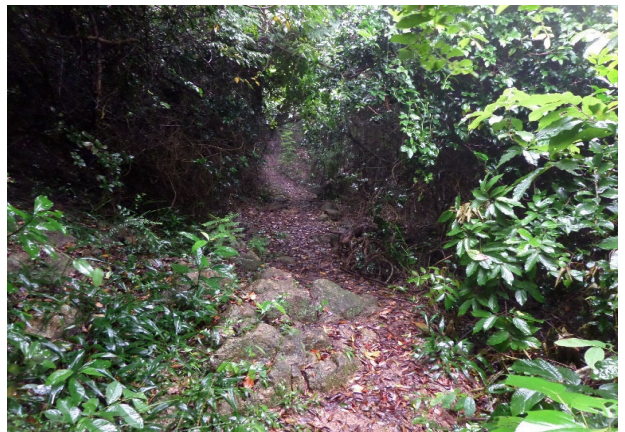


Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE

N.T.S.

DATE

Sep-16

Project No.

MA12014

Appendix

M7



Photo 43



Photo 44



Photo 45



Photo 46



Photo 47



Photo 48



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE

N.T.S.

DATE

Sep-16

Project No.

MA12014

Appendix

M8



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54



Photo 55



Photo 56



Photo 57



Photo 58



Photo 59



Photo 60



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE	N.T.S.	DATE	Sep-16
Project No.	MA12014	Appendix	M10





Photo 61



Photo 62



Photo 63



Photo 64



Photo 65



Photo 66



Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-  
Section between HKSAR Boundary and Scenic Hill

Photographic Records for  
Sha Lo Wan (West) Archaeological Site

SCALE	N.T.S.	DATE	Sep-16
Project No.	MA12014	Appendix	M11



Photo 67



Photo 68



Photo 69



Photo 70



Photo 71



Photo 72

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**APPENDIX N  
UPDATED ENVIRONMENTAL  
MITIGATION IMPLEMENTATION  
SCHEDULE (EMIS)**

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EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
<b>Air Quality</b>							
S5.5.6.1	A1	1) The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	^
S5.5.6.2	A2	2) Proper watering of exposed spoil should be undertaken throughout the construction phase: <ul style="list-style-type: none"> <li>• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;</li> <li>• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;</li> <li>• A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones.</li> <li>• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle;</li> <li>• Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;</li> </ul>	Good construction site practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.	Contractor	All construction sites	Construction stage	^  ^  ^  ^
S5.5.6.2	A2	<ul style="list-style-type: none"> <li>• When there are open excavation and reinstatement works, hoarding</li> </ul>	Good construction site	Contractor	All construction	Construction	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<p>of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;</p> <ul style="list-style-type: none"> <li>• The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;</li> <li>• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously;</li> <li>• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet;</li> <li>• Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;</li> <li>• Any skip hoist for material transport should be totally enclosed by impervious sheeting;</li> <li>• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;</li> </ul>	<p>practices to control the dust impact at the nearby sensitive receivers to within the relevant criteria.</p>		sites	stage	<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">^</p> <p style="text-align: center;">*</p>



EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<p>materials should be carried out in totally enclosed system;</p> <ul style="list-style-type: none"> <li>All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP;</li> <li>Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;</li> <li>The materials which may generate airborne dusty emissions should be wetted by water spray system;</li> <li>All receiving hoppers should be enclosed on three sides up to 3m above unloading point;</li> <li>All conveyor transfer points should be totally enclosed;</li> <li>All access and route roads within the premises should be paved and wetted; and</li> <li>Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body.</li> </ul>	<p>monitoring stations to ensure compliance with relevant criteria throughout the construction period.</p>		monitoring station		<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
S5.5.2.7	A7	<p>The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:</p> <ul style="list-style-type: none"> <li>All road surface within the barging facilities will be paved;</li> <li>Dust enclosures will be provided for the loading ramp;</li> <li>Vehicles will be required to pass through designated wheels wash facilities; and</li> <li>Continuous water spray at the loading points.</li> </ul>	Control construction dust	Contractor	All construction sites	Construction stage	<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
<b>Construction Noise (Air borne)</b>							
S6.4.10	N1	1) Use of good site practices to limit noise emissions by considering the	Control construction airborne	Contractor	All construction	Construction	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<p>following:</p> <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;</li> <li>• machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;</li> <li>• silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;</li> <li>• mobile plant should be sited as far away from NSRs as possible and practicable;</li> <li>• material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul>	noise by means of good site practices		sites	stage	^  ^  ^  ^  ^
S6.4.11	N2	2) Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites	Construction stage	^
S6.4.12	N3	3) Install movable noise barriers (typically density @14kg/m <sup>2</sup> ), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.	Screen the noisy plant items to be used at all construction sites	Contractor	For plant items listed in Appendix 6D of the EIA report at all construction sites	Construction stage	^
S6.4.13	N4	4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM	Reduce the noise levels of	Contractor	For plant items	Construction	^



EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		standards.	plant items		listed in Appendix 6D of the EIA report at all construction sites	stage	
S6.4.14	N5	5) Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	^
	N6	6) Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction stage	^
<b>Waste Management (Construction Waste)</b>							
S8.3.8	WM1	<u>Construction and Demolition Material</u> The following mitigation measures should be implemented in handling the waste: <ul style="list-style-type: none"> <li>Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;</li> <li>Carry out on-site sorting;</li> <li>Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;</li> <li>Implement a trip-ticket system for each works contract to ensure that</li> </ul>	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	^  ^  ^  N/A  ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<p>the disposal of C&amp;D materials are properly documented and verified; and</p> <ul style="list-style-type: none"> <li>Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – “Environmental Management on Construction Sites” to encourage on-site sorting of C&amp;D materials and to minimize their generation during the course of construction.</li> <li>In addition, disposal of the C&amp;D materials onto any sensitive locations such as agricultural lands, etc. should be avoided. The Contractor shall propose the final disposal sites to the Project Proponent and get its approval before implementation</li> </ul>					<p>^</p> <p>^</p>
S8.3.9 - S8.3.11	WM2	<p><u>C&amp;D Waste</u></p> <ul style="list-style-type: none"> <li>Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&amp;D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.</li> <li>The Contractor should recycle as much of the C&amp;D materials as possible on-site. Public fill and C&amp;D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different</li> </ul>	<p>Good site practice to minimize the waste generation and recycle the C&amp;D materials as far as practicable so as to reduce the amount for final disposal</p>	Contractor	All construction sites	Construction stage	<p>^</p> <p>^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		areas of the sites should be considered for such segregation and storage.					
S8.2.12- S8.3.15	WM3	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> <li>Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.</li> <li>The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.</li> <li>Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical</li> </ul>	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	*  ^  ^  ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.					
S8.3.16	WM4	<u>Sewage</u> <ul style="list-style-type: none"> <li>• Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.</li> </ul>	Proper handling of sewage from worker to avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	^
S8.3.17	WM5	<u>General Refuse</u> <ul style="list-style-type: none"> <li>• General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.</li> <li>• A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.</li> <li>• Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible.</li> <li>• Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminum cans,</li> </ul>	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	*  *  ^  ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<p>plastic bottles etc., should be provided.</p> <ul style="list-style-type: none"> <li>Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes.</li> </ul>					^
<b>Water Quality (Construction Phase)</b>							
S9.11.1 – S9.11.1.2	W1	<ul style="list-style-type: none"> <li>Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below and summarised in the Environmental Mitigation Implementation Schedule in EM&amp;A Manual.</li> <li>Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts;</li> <li>For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing;</li> <li>where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be controlled to 25%;</li> <li>single layer silt curtains will be applied around all works;</li> <li>during the first two months of dredging work for HKLR, the silt-removal efficiency of the silt-curtains shall be verified by examining the results of water quality monitoring points. The water quality monitoring points to be selected for the above shall be those close to the locations of the initial period of dredging work. Details in this regard shall be determined by the ENPO to be established,</li> </ul>	To control construction water quality	Contractor	During seawall dredging and filling	Construction stage	^  ^  N/A  ^  N/A



EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<ul style="list-style-type: none"> <li>• all vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; and</li> <li>• the works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site.</li> </ul>					<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>
S9.11.1.3	W2	<p><u>Land Works</u></p> <p>General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:</p> <ul style="list-style-type: none"> <li>• wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;</li> <li>• sewage effluent and discharges from on-site kitchen facilities shall be directed to Government sewer in accordance with the requirements of the WPCO or collected for disposal offsite. The use of soakaways shall be avoided;</li> <li>• storm drainage shall be directed to storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels, earth bunds or sand bag barriers should be provided on site to properly direct stormwater to such silt removal facilities. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks;</li> <li>• silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including</li> </ul>	To control construction water quality	Contractor	During seawall dredging and filling	Construction stage	<p style="text-align: center;">*</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<p>specifically at the onset of and after each rainstorm;</p> <ul style="list-style-type: none"> <li>• temporary access roads should be surfaced with crushed stone or gravel;</li> <li>• rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;</li> <li>• measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;</li> <li>• open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms;</li> <li>• manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers;</li> <li>• discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;</li> <li>• all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit;</li> <li>• wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;</li> <li>• the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel;</li> </ul>					<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">*</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p>



EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<ul style="list-style-type: none"> <li>wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects;</li> <li>vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be located under roofed areas. The drainage in these covered areas shall be connected to foul sewers via a petrol interceptor in accordance with the requirements of the WPCO or collected for off site disposal;</li> <li>the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;</li> <li>waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance;</li> <li>all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and</li> <li>surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.</li> </ul>					<p>^</p> <p>N/A</p> <p>*</p> <p>^</p> <p>^</p> <p>^</p>
S9.14	W3	Implement a water quality monitoring programme	Control water quality	Contractor	At identified monitoring location	During construction period	^
<b>Ecology (Construction Phase)</b>							
S10.7	E1	<ul style="list-style-type: none"> <li>Good site practices to avoid runoff entering woodland habitats in Scenic Hill</li> </ul>	Avoid potential disturbance on habitat of Romer's Tree	Designer; Contractor	Scenic Hill	During construction	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<ul style="list-style-type: none"> <li>Reinstate works areas in Scenic Hill</li> <li>Avoid stream modification in Scenic Hill</li> </ul>	Frog in Scenic Hill				N/A ^
S10.7	E2	<ul style="list-style-type: none"> <li>Use closed grab in dredging works.</li> <li>Install silt curtain during the construction.</li> <li>Limit dredging and works fronts.</li> <li>Good site practices</li> <li>Strict enforcement of no marine dumping.</li> <li>Site runoff control</li> <li>Spill response plan</li> </ul>	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^ ^
S10.7	E3	<ul style="list-style-type: none"> <li>Reprovision of replacement Artificial Reefs (of the same volume as the existing ARs inside Marine Exclusion Zone)</li> </ul>	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S10.7	E4	Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater	Prevent Sedimentation from Land-based works areas	Contractor	Land-based works areas	During construction	^
S10.7	E5	Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time	Prevent disturbance to terrestrial fauna and habitats	Contractor	Land-based works areas	During construction	^
S10.7	E6	<ul style="list-style-type: none"> <li>Dolphin Exclusion Zone;</li> <li>Dolphin watching plan</li> </ul>	Minimize temporary marine habitat loss impact to dolphins	Contractor	Marine works	During marine works	^ ^
S10.7	E7	<ul style="list-style-type: none"> <li>Decouple compressors and other equipment on working vessels</li> <li>Avoidance of percussive piling</li> <li>Marine underwater noise monitoring</li> </ul>	Minimise marine noise impacts on dolphins	Contractor	Marine works	During marine works	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<ul style="list-style-type: none"> <li>Temporal suspension of drilling bored pile casing in rock during peak dolphin calving season in May and June</li> </ul>					N/A
S10.7	E8	<ul style="list-style-type: none"> <li>Control vessel speed</li> <li>Skipper training.</li> <li>Predefined and regular routes for working vessels; avoid Brothers Islands.</li> </ul>	Minimise marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works	^ ^ ^
S10.10	E9	<ul style="list-style-type: none"> <li>Dolphin vessel monitoring</li> </ul>	Minimise marine traffic disturbance on dolphins	Contractor	North Lantau and West Lantau	Prior to construction, during construction, and 1 year after operation	^
<b>Fisheries</b>							
S11.7	F1	<ul style="list-style-type: none"> <li>Reprovision of replacement Artificial Reefs(of the same volume as the existing ARs inside Marine Exclusion Zone)</li> </ul>	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S11.7	F2	<ul style="list-style-type: none"> <li>Reduce re-suspension of sediments</li> <li>Limit dredging and works fronts.</li> <li>Good site practices</li> <li>Strict enforcement of no marine dumping</li> <li>Spill response plan</li> </ul>	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^
<b>Landscape &amp; Visual (Construction Phase)</b>							
S14.3.3.3	LV2	<p>Mitigate both Landscape and Visual Impacts</p> <ul style="list-style-type: none"> <li>G1. Grass-hydroseed bare soil surface and stock pile areas.</li> </ul>	Minimise visual & landscape impact	Contractor	HKLR	Construction stage	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		<ul style="list-style-type: none"> <li>• G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic.</li> <li>• G3. For HKLR, providing aesthetic design on the viaduct, tunnel portals, at-grade roads (e.g. subtle colour tone and slim form for viaduct, featured form of tunnel portals, roadside planting along at-grade roads and landscape berm on) to beautify the HKLR alignment.</li> <li>• G5. Vegetation reinstatement and upgrading to disturbed areas.</li> <li>• G6. Maximize new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed.</li> <li>• G7. Provide planting area around peripheral of and within HKLR for tree screening buffer effect.</li> <li>• G8. Plant salt tolerant native tree and shrubs etc along the planter strip at affected seawall.</li> <li>• G9. Reserve of loose natural granite rocks for re-use. Provide new coastline to adopt “natural-look” by means of using armour rocks in the form of natural rock materials and planting strip area accommodating screen buffer to enhance “natural-look” of the new coastline (see Figure 14.4.2 for example).</li> </ul>					<p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</p>
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <ul style="list-style-type: none"> <li>• V1.Minimize time for construction activities during construction period.</li> <li>• V2.Provide screen hoarding at the portion of the project site / works areas / storage areas near VSRs who have close low-level views to the Project during HKLR construction.</li> </ul>					<p style="text-align: center;">^</p> <p style="text-align: center;">^</p>

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
<b>EM&amp;A</b>							
S15.2.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A Performance	Project Proponent	All construction sites	Construction stage	^
S15.5 - S15.6	EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures. 3) An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Contractor	All construction sites	Construction stage	^  ^  ^

Remarks: ^ Compliance of mitigation measure  
 \* Recommendation was made during site audit but improved/rectified by the contractor  
 N/A Not Applicable at this stage as no such site activities were conducted in the reporting month (e.g. concrete batching plan, barging point, seawall dredging and filling, bored piling, landscaping works etc)

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**APPENDIX O  
WASTE GENERATION IN THE  
REPORTING MONTH**

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## Appendix: C6 Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No.: HY/2011/09

### Monthly Summary Waste Flow Table for 2016 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated <sup>9</sup>	Hard Rock and Large Broken Concrete <sup>6</sup>	Reused in the Contract <sup>7</sup>	Reused in other Projects <sup>5,7,11</sup>	Disposed as Public Fill <sup>7</sup>	Imported Fill <sup>6,7</sup>	Metals <sup>10</sup>	Paper/ cardboard packaging	Plastics <sup>3</sup>	Chemical Waste	Others, e.g. general refuse <sup>7</sup>
	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 kg )	( in '000 kg )	( in '000 kg )	( in '000 m <sup>3</sup> )
Jan	1.095	0.000	0.000	0.000	0.283	0.812	0.020	1.145	0.000	0.000	0.241
Feb	0.209	0.000	0.000	0.000	0.209	0.000	0.113	0.811	0.000	4.099	0.241
Mar	0.388	0.000	0.086	0.000	0.302	0.000	0.023	1.201	0.000	1.387	0.260
Apr	2.094	0.000	0.286	1.512	0.297	0.000	0.131	0.818	0.000	0.000	0.208
May	4.436	0.000	0.000	3.982	0.454	0.000	0.078	0.917	0.000	1.586	0.189
Jun	6.100	0.000	0.000	5.777	0.322	0.000	0.025	0.626	0.000	2.973	0.202
Sub-Total	14.323	0.000	0.372	11.270	1.869	0.812	0.390	5.518	0.000	10.045	1.339
Jul	0.431	0.000	0.000	0.122	0.310	0.000	0.062	0.626	0.000	0.991	0.189
Aug	1.366	0.000	1.103	0.000	0.262	0.000	0.111	0.936	0.000	2.775	0.195
Sep	1.889	0.000	0.000	0.000	0.445	1.444	0.033	0.651	0.000	0.000	0.189
Oct											
Nov											
Dec											
Total	18.009	0.000	1.475	11.392	2.885	2.257	0.596	7.731	0.000	13.811	1.911



Forecast of Total Quantities of C&D Materials to be Generated from the Contract <sup>8</sup>										
Total Quantity Generated <sup>9</sup>	Hard Rock and Large Broken Concrete <sup>6</sup>	Reused in the Contract <sup>7</sup>	Reused in other Projects <sup>5,7</sup>	Disposed as Public Fill <sup>6</sup>	Imported Fill <sup>6,7</sup>	Metals <sup>10</sup>	Paper/ cardboard packaging	Plastics <sup>3</sup>	Chemical Waste	Others, e.g. general refuse <sup>7</sup>
( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 m <sup>3</sup> )	( in '000 kg )	( in '000 kg )	( in '000 kg )	( in '000 m <sup>3</sup> )
232.111	0.000	5.000	73.111	100.000	54.000	5.000	40.000	0.000	35.000	20.000

Notes:

- (1) The performance targets are given in ER Appendix 8J Clause 14 and the EM&A Manual.
- (2) The waste flow table shall also include C&D materials to be imported for use at the Site.
- (3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging material.
- (4) The Contractor shall also submit the latest forecast of the total amount of C&D materials expected to be generated from the Works, together with a breakdown of the nature where the total amount of C&D materials expected to be generated from the Works is equal to or exceeding 50,000 m<sup>3</sup>. (ER Part 8 Clause 8.8.5 (d) (ii) refers).
- (5) The materials reused in other Project shall not be treated as waste under the Waste Disposal Ordinance (CAP354).
- (6) According to the EIA Appendix 8B, the density of rock (bulked) and soil (bulked) are 2.0 tonnes/m<sup>3</sup> and 1.8 tonnes/m<sup>3</sup> respectively.
- (7) Assuming the loading quantities of a 30-tonne truck and a 24-tonne truck are 8.0m<sup>3</sup> and 6.5m<sup>3</sup> respectively.
- (8) The forecast of C&D materials to be generated from the Contract is sourced from the works program in May 2016.
- (9) The volume of Total Quantity Generated means the volume of Hard Rock and Large Broken Concrete+Disposed as Public Fill+Imported Fill-Reused in the Contract-Reused in other Projects.
- (10) The density of metal is 7,850 kg/m<sup>3</sup>.
- (11) The C&D materials were delivered to TM-CLKL Project.



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**APPENDIX P  
COMPLAINT LOG**

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**Appendix P - Complaint Log**

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2013-04-001	Near Tung Chung New Development Pier	8 April 2013	EPD received the complaint on 8 April 2013. The complainant complained about oil was dumped from various vessels operating for Hong Kong-Zhuhai-Macao Bridge Hong Kong (HZMB HK) Projects near Tung Chung New Development Pier over the past few months.	1) The vessels photos in the complainant's photo are not the working vessels under Contract No. HK/2011/09. 2) No oil dumped from Contract No. HK/2011/09's working vessels was observed according to ET's site inspection conducted on 9 April 2013 at near Tung Chung New Development Ferry Pier. 3) Joint site inspection (DCVJV and ARUP) was conducted on 10 April 2013 and confirmed that Contract No. HY/2011/09's vessels are not involved the complaint case. 4) DCVJV will keep remind their boat crews not discharging contaminated effluent directly into the sea.	Closed
Com-2013-05-001	WA6	2 May 2013	ARUP received the complaint on 2 May 2013. The complainant alleged the noise nuisance was generated from the Works Area WA6 at around 13:00 on 1 May 2013 (Wednesday).	The site diary report was reviewed and confirmed that no works were carried out at WA6 on 1 May 2013. In addition, no noise was heard from WA6 according to the security guard who on duty at WA6 on 1 May 2013. Based on the information provided, the complaint regarding the construction noise at WA6 is not considered justifiable.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2013-05-002	WA6	18 May 2013	ARUP received the complaint on 18 May 2013. The complainant advised that the noise nuisance due to loading of metal parts at barge near the seawall of Works Area WA6 early morning (around 8:45a.m) on 18 May 2013 (Saturday).	Based on the record of site activities at WA6 on 18 May 2013, 4 metal plates and 2 oxygen-acetylene set were lifted onto a derrick boat “Chiu Kee” by a crane near seawall at WA6 in the morning on that day. Such operation was commenced around 8:40a.m and completed in 10 minutes during the normal construction working hour (0700 – 1900 Monday to Saturday). However, the duration of aforesaid activities is very short and infrequent. Nevertheless, the Contractor was reminded to strengthen their site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents and the specific mitigation measures for the complaint including but not limited to:- <ul style="list-style-type: none"> <li>•To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and</li> <li>•To deploy professional personnel to supervise the works.</li> </ul>	Closed
Com-2013-05-003	Near Tung Chung New Development Pier	18 May 2013	EPD received the public complaint on 18 May 2013. This complaint was a follow-up of a previous complaint received by EPD on 8	After receiving the complaint, additional site inspection was conducted at near Tung Chung New Development Pier on 30 May 2013 to investigate whether oil	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			<p>April 2013 (Com-2013-04-001).</p> <p>The complainant complained again about the oil was dumped from various vessels operating for Hong Kong-Zhuhai-Macao Bridge Hong Kong (HZMB HK) Projects near Tung Chung New Development Pier over the past months.</p>	<p>dumped was due to Contract No. HY/2011/09's vessels. During the site inspection, three working vessels under Contract No.HY/2011/09 was anchored off near Tung Chung New Development Pier. No oil dumped from Contract No. HY/2011/09's vessels were observed and the water around the vessels was clear. The following mitigation measures have been implemented by DCVJV:</p> <ul style="list-style-type: none"> <li>• DCVJV has sent the letter to the shipping agent to remind them to ensure the vessels under Contract No. HY/2011/09 are in good condition and any oil dumped to sea should be avoided to prevent water pollution.</li> <li>• Provide training to the vessel skippers for prevention of pollution from ships.</li> <li>• DCVJV requested vessel skippers to provide engine oil disposal records The vessel skippers assured to us that all waste lubricants were sent to waste collectors regularly and no oil discharge into seawater.</li> </ul>	
Com-2013-07-001	Southeast Quay of Chek Lap Kok near the junction of Chek Lap Kok South Road and Scenic Road	17 July 2013	The complaint was received by EPD on 17 <sup>th</sup> July 2013. According to the EPD's letter, the complainant was concerned for the noise nuisance generated from the	In response to the complaint, ET conducted two times site inspections at Southeast Quay at Chek Lap Kok between 18:45 and 20:30 hours on 23 July 2013 and 20:30 to 22:30 hours on 30 July 2013.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			<p>operation of concrete lorry mixers during evening and night-time period at Southeast Quay of Chek Lap Kok.</p>	<p>During the inspections, the Ro-Ro barge was observed anchored off Southeast Quay at Chek Lap Kok but no concrete lorry mixer was observed throughout the inspection.</p> <p>On 23 July 2013, at about 19:35, one tug boat was observed travelling to Southeast Quay, Chek Lap Kok and left at about 19:40.</p> <p>On 30 July 2013, no tug boat and concrete lorry mixers were observed during the inspection.</p> <p>According to the Contractor, there was no concreting works for the pier sites on 23 July 2013 and therefore no loading and unloading operation at Southeast Quay at Chek Lap Kok.</p> <p>Concreting works were performed at Pier 0 on 30 July 2013. As the Contractor anticipated the arrival time of tug boat and flap-top barge at Southeast Quay will exceed 23:00 hours after the concreting works, they decided to arrange the tug boat and flap-top barge with concrete</p>	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				<p>lorry mixers anchored off around Pier 66 after 23:00 hours. So, no loading and unloading operation at Southeast Quay at Chek Lap Kok was observed.</p> <p>Further night time site inspection was conducted on 22 August 2013 during the loading and unloading operation at Southeast Quay of Chek Lap Kok, the construction works conducted under Contract No. HY/2011/09 complied with the conditions in the CNP No. GW-RS0895-13.</p>	
Com-2013-11-001	Chek Lap Kok (CLK) South Road	16 November 2013	The complaint was received by project customer services on 16 <sup>th</sup> November 2013 regarding the dust problem at Chek Lap Kok (CLK) South Road.	<p>After receiving the complaint, ET conducted the site inspection on 19 and 29 November 2013 to check the appropriate environmental protection and pollution control measures which are properly implemented by the Contractor under HY/2011/09 (DCVJV). The observation are summarized as below:-</p> <ul style="list-style-type: none"> <li>• Dust generation works was conducted by the other Contractor at South East Quay</li> <li>• Proper watering of haul road to avoid dust generation during vehicle / plant equipment movement.</li> <li>• Vehicle washing facilities provided</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				<p>at every site exit at CLK South Road and South Perimeter Road.</p> <ul style="list-style-type: none"> <li>No dark smoke was observed emitting from the plant equipments.</li> </ul> <p>Based on the information collected, the complaint of dust problem at Check Lap Kok South Road is considered not related to Contract No. HY/2011/09 as dust suppression measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.</p>	
Com-2014-01-001	Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	3 January 2014	The complaint was received by EPD on 3 <sup>rd</sup> January 2014. According to the EPD’s letter, a resident in Tai O District was concerned for the noise nuisance occasionally arising from the hammering or hitting of metals from Contract No. HY/2011/09.	<p>In response to the complaint, ET conducted an ad hoc night time site inspection at P0, P18 and P19 on 14 January 2014 between around 23:00 and 00:30 hours of 15 January 2014.</p> <p>In accordance with the site activities record and site inspections, the construction works conducted under Contract No. HY/2011/09 complied with the conditions in the CNP No. GW-RS1108-13.</p> <p>Nevertheless, the Contractor was advised to strictly follow the conditions of the permit because any deviation from the</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				<p>conditions may lead to cancellation of the permit, subsequent prosecution action and the Authority’s refusal to issue further permit.</p> <p>In addition, the following environmental mitigation measures were recommended:</p> <ul style="list-style-type: none"> <li>• Review and adjust the lighting directions of the barge, under safety consideration, to avoid potential visual impacts to residents in vicinities;</li> <li>• To ensure the equipment are maintaining in good operation condition; and</li> <li>• To strengthen site supervision and provide training for the workers regularly to increase awareness of their environmental responsibilities to minimize the noise impact to the nearby residents and the specific mitigation measures.</li> </ul>	
Com-2014-01-002	Hong Kong-Zhuhai-Macao Bridge	16 January 2014	The complaint was received by HyD’s PR Team on 16 January 2014 that the complainant advised that the heavy exhaust fume affecting Tung Chung Crescent.	After receiving the complaint, ET conducted the site inspection on 21 January 2014 to check all the plant equipments which were operated for the construction works and air quality	Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				<p>mitigation measures.</p> <p>Based on the information collected, the complaint of heavy exhausts affecting Tung Chung Crescent is considered not related to Contract No. HY/2011/09 due to the following reason(s):-</p> <ol style="list-style-type: none"> <li>1) The work sites at Portion C and South East Quay at Portion A under Contract No. HY/2011/09 are approximately 800m from Tung Chung Crescent. Any unpleasant smell of exhaust fume would not be anticipated.</li> <li>2) No heavy smoke was observed emitting from plants / equipment during the site inspection on 21 January 2014.</li> <li>3) The vehicles and equipments were switched off while not in use.</li> <li>4) All plant and equipment were well maintained and in good operating condition.</li> <li>5) Air quality mitigation measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.</li> </ol>	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2014-03-001	Oil Spillage at near Sha Lo Wan	5 March 2014	The complaint was received by EPD on 5 March 2014. The complainant suspected the oil leakage from the works area of Contract No. HY/2011/09 near Sha Lo Wan	Based on ET site inspection, no oil spillage from the works area under Contract No. HY/2011/09 at near Sha Lo Wan was observed. In addition, spill kits are ready on site in order to dealing with spillage cases promptly. Nevertheless, DCVJV was also recommended the mitigation measures as below: <ul style="list-style-type: none"> <li>• Provide training for the workers regularly regarding the mitigation measures on waste / chemical management.</li> <li>• Provide sufficient chemical spillage kit (e.g. oil absorbent) to all vessels and working platform.</li> <li>• Regular check the condition of vessels and plant equipments to ensure no leakage of oil.</li> </ul>	Closed
Com-2014-03-002	Construction Noise in the vicinity of the waters outside Sha Lo Wan	11 March 2014	The complaint was received by EPD on 11 March 2014. According to the EPD's letter, the complainant was concerned for the mobile crane which operating in the vicinity of the waters outside Sha Lo Wan after 23:00.	In accordance with an ad hoc site inspection on 18 March 2014, no construction works were conducted during the restricted hours. The 1 <sup>st</sup> investigation report has been submitted to EPD on 21 March 2014 and the 2 <sup>nd</sup> investigation report was submitted to EPD on 26 June 2014. The Contractor was advised to strictly	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				<p>follow the conditions of the permit because any deviation from the conditions may lead to cancellation of the permit, subsequent prosecution action and the Authority’s refusal to issue further permit. Nevertheless, the Contractor was reminded to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community:</p> <ul style="list-style-type: none"> <li>· To space out noisy equipment and position it as far away as possible from the sensitive receivers;</li> <li>· To avoid concurrent uses of noisy equipment near the sensitive area;</li> <li>· To ensure the equipment are maintaining in good operation condition;</li> <li>· To turned off any idle equipment on site; and</li> <li>· To enclose the noisy part of the machine by acoustic insulation material if feasible.</li> <li>· To arrange tailor-made training for the Production Team including the management and foremen to explain to them the conditions and requirements listed on the CNP.</li> <li>· To delegate one Engineer for ensuring that all construction activities and PMEs used are in full compliance with the CNP</li> </ul>	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				and legislative requirements.	
Com-2014-04-001	Construction marine works by the company Bauer Hong Kong in Tung Chung	14 April 2014	The complaint was received by Agriculture, Fisheries and Conservation Department (AFCD) on 14 April 2014, the complainant complained that the dead dolphin was found under a platform at construction marine works by the company Bauer Hong Kong in Tung Chung (Macau Bridge Piling Works)	<p>In accordance with the photos showing a date of 27 November 2013 (08:00 – 08:25a.m.) which provided by the complainant, the dolphin was observed has been dead for some time and shows signs of decomposition. It was difficult to determine the cause of death of the deceased dolphin based on the photographs and the dead dolphin was found a few months ago. By examining the photos, it is found that the body was beside a barge, not under a working platform.</p> <p>In addition, the dead dolphin was found in the early morning in which the marine construction works have not been commenced. Therefore, from the above information the dead dolphin is considered to be washed to the work site. However, there is no significant increase of cetacean stranding were found in Hong Kong since the commencement of Contact No. HY/2011/09.</p> <p>In regard to the complaint, the following recommendations were made:</p>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				<ul style="list-style-type: none"> <li>➤ In case stranded cetaceans are found, the AFCD shall be contacted immediately and provide the following information to facilitate AFCD’s investigation:                             <ol style="list-style-type: none"> <li>1. Name and telephone number;</li> <li>2. Date and time of discovery;</li> <li>3. Location (as specific as possible);</li> <li>4. Status of the stranded animal (i.e. alive, freshly dead, slightly decomposed, rotten, mummified);</li> <li>5. Type and size of the stranded animal.</li> </ol> </li> <li>➤ To implement Dolphin Exclusion Zone during the installation of bored pile casing located in the waters to the west of Airport.</li> <li>➤ To implement Dolphin Watching Plan after the bored piling casing is installed.</li> </ul>	
Com-2014-05-001	At the shore of Sha Lo Wan	13 May 2014	The complaint was received by EPD on 13 May 2014. According to the EPD’s email, the complainant was concerned about the sand material that was excavated on the shore of Sha Lo Wan for the construction of Hong Kong -	After receiving the complaint from a Sha Lo Wan’s village resident, the sub-contractor was instructed to stop the sand excavation and leave immediately. In addition, all sands excavated from the shore of Sha Lo Wan were returned back to the original area on 13 May 2014.	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			Zhuhai - Macao Bridge (HZMB) Project on 11 May 2014.	<p>Nevertheless, the Contractor was advised to arrange tailor-made training for Production Team including the management and foremen to explain to them the conditions and requirements listed on the Environmental Permit.</p> <p>In addition, indicative poles and flags are recommended to put within the site boundary to identify the extent of land areas in Sha Lo Wan / Sha Lo Wan (West) Archaeological site.</p>	
Com-2014-05-002	At the shore of Sha Lo Wan	27 May 2014	The complaint was received by EPD on 27 May 2014. According to the EPD's email, the complainant was concerned about the dumping rubbles along the shore area of Sha Lo Wan on 27 May 2014.	<p>The complaint investigation report for the complaint of dumping rubbles along the shore area of Sha Lo Wan was submitted to EPD on 4 June 2014.</p> <p>EPD and AFCD provided their comments on 5 and 9 June 2014 respectively.</p> <p>A meeting among DCVJV, ARUP, IEC, ET, EPD and AFCD was held on 17 June 2014. According to the meeting, further information is required to include in the complaint investigation report and the report was submitted to EPD on 4 March 2015.</p>	Complaint investigation report is under review by EPD

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
Com-2014-05-003	Pier 39 to 50	29 May 2014	ARUP received the complaint on 29 May 2013. The complainant advised that the workers disposed hundreds of kg of waste spoils (concrete and earth) into the sea every day in the existing locations of HZMB site area.	Based on the investigation findings, the waste spoils (concrete and earth) were disposed to HY/2010/02 Project according to approved WMP. The following recommendations were made: <ul style="list-style-type: none"> <li>• To check for any accumulation of waste spoils (concrete and earth) on site.</li> <li>• To cover the wastes skip with waste spoils before removing from site.</li> <li>• To carry out inspection of pier(s) regularly to ensure the frontline staff loads inert materials to approved barge properly.</li> <li>• To clean the waste storage areas regularly and do not cause dust nuisance.</li> </ul>	Closed
Com-2014-08-001	Near Sha Lo Wan	27 August 2014	ARUP received the complaint on 27 August 2013. The complainant was concerned about the dust on the surface of the roro-barge.	Based on the investigation findings, dusty materials at the ro-ro barge at P63 and dust generation when vehicles passing by at the roro-barge at Southeast Quay were observed. The following recommendations were made: <ul style="list-style-type: none"> <li>• To check for any accumulation of dusty materials at roro-barge.</li> <li>• To cover the stockpile of dusty materials before removing from site.</li> <li>• To clean the surface of roro-barge</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				regularly and do not cause dust and water quality nuisance. <ul style="list-style-type: none"> <li>• To maintain the surface of ro-ro-barge wet especially during the vehicle movements. Water misting is considered an acceptable measure to control dust emissions.</li> <li>• To check and replace the worn sand bags at the surface of ro-ro-barge to prevent the turbid water from entering to the sea when watering the barge surface.</li> </ul>	
Com-2014-11-001	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	11 November 2014	The complaint was received by EPD on 11 November 2014. According to the EPD’s email, the complaint was received from one of the green groups Sea Shepherd. They complained that the residual concrete had been washed off from the deck surface of a flat-top barge into the sea, and marine littering had been spotted by a worker of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	Based on the investigation findings, residue concrete or wastewater contaminated with concrete overflowing/spilling into the sea from the ro-ro barge and marine littering were suspected. The following recommendations were made: <ul style="list-style-type: none"> <li>➢ Properly clear the concrete stains on the three ro-ro barges (e.g. hand-held equipments such as shovel etc). Tarpaulin sheet is also recommended to provide when clearing the concrete stains at the edge of ro-ro barge to prevent these removed materials from getting into the sea. The worker should also pay special care to remove the concrete stains to</li> </ul>	Closed
Com-2014-11-002	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill	18 November 2014	The complaint was received by EPD on 18 November 2014. According to the EPD’s email, it was alleged that residual concrete		Closed



Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
	(Contract No. HY/2011/09)		had been poured out directly from the concrete lorry mixers on a ro-ro barge into the sea during night-time by the workers of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	minimize the water quality nuisance. <ul style="list-style-type: none"> <li>➤ Keep cleanliness of the surface of ro-ro-barge and do not cause water quality nuisance.</li> <li>➤ To check and reinforce the concrete / sand bag bund between baffles erected near the edge of the three ro-ro barges to avoid accidental leakage of wastewater from the deck regularly.</li> <li>➤ Keep all debris/ aggregate away from the edge of ro-ro barge to prevent them from falling into the sea.</li> <li>➤ Provide sufficient skips for temporary storage of concrete residue/wastewater.</li> <li>➤ To check for any accumulation of residual waste concrete at the waste skip on ro-ro-barge.</li> <li>➤ Provide spare and sufficient sand bags at each ro-ro barges to confine the concerned area in the event of accidental spillage of concrete when discharge the concrete from the concrete lorry mixers to pump truck.</li> <li>➤ Provide absorptive materials to absorb the wastewater in case of accidental spillage of wastewater</li> </ul>	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				during washing concrete lorry mixers or other equipments. ➤ Assign trained staff to ensure proper management of environmental matters on each of the ro-ro barges in particular the handling of concrete residue/wastewater generated during operation. ➤ Keep record for collection of skip or temporary storage tank for wastewater and excess concrete. ➤ Ensure sufficient garbage bag / rubbish bin are provided at working barge / pier site. ➤ Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	
Com-2014-11-003	Floating Concrete Batching Plant (FCBP)	28 November 2014	The complaint was received by EPD on 28 November 2014. The complaint was received from one of the green groups Green Lantau Association. They complained about the hauling of the floating concrete batching plant (FCBP) by the tug boat to the site of Contract No. HY/2011/09 from the north-	Based on the information collected, the following conclusions were drawn:  1) It is suspected that the wake following the FCBP was resulted from disturbance to the bottom sediment when it was traveling during the lowest tide on that day. 2) The FCBP was traveling within the	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			<p>east side had disturbed the seabed causing an increase of turbidity in marine waters at around noon of 15 November 2014.</p>	<p>site area and the maximum number of movement of a floating plant (and therefore tug boat) is two times per day. Average duration of each movement is around 1 hour/day. Therefore, the disturbance to the bottom sediment is considered temporary, localized and infrequent.</p> <p>3) No illegally discharge of wastewater or domestic wastewater to the sea from FCBP.</p> <p>4) Relevant environmental mitigation measures as shown in EP-352/2009/C were properly implemented.</p> <p>5) No deterioration of marine water quality based on the marine water quality monitoring results on 15 November 2014.</p> <p>Nevertheless, DCVJV was also recommended the mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• The vessel skipper should pay special care about the movement of deep draught vessel to avoid seabed disturbance. (e.g. speed restrictions)</li> <li>• In case of sediment plume was found behind vessel, the vessel skipper</li> </ul>	

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				should further reduce vessel speed. • Minimum clearance of 0.6m should be maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash. (Reference: EIA-081/2002 - Construction of Lung Kwu Chau Jetty)	
Com-2014-12-001	Shores of Po Chue Tam and Shek Tsai Po, Tai O	7 December 2014	The complaint was received from one of the green groups Green Lantau Association. They complained about some waste materials (including a number of grey plastic mats and buoys) suspected in relation to the HZMB works have recently washed up on the shores of Po Chue Tam and Shek Tsai Po, Tai O	The owner of objects found on the shores could not be identified. DCVJV has taken initiative to remove these materials after receiving the complaint.  Nevertheless, DCVJV was also recommended the mitigation measures as below:  • Gather up and remove debris to keep the work site orderly. • Maintain site housekeeping. Designate areas for waste materials and provide containers. • Secure loose or light material that is stored on open floors. • Do not permit rubbish to fall freely from any level of the pier sites. • Provide training for the workers	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection.	
Com-2014-12-002	Site Office of HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill	2 December 2014	Highways Department (HyD) received a public complaint from a resident of Le Bleu Duex on 2 December 2014. According to the email from ARUP dated 3 December 2014, the complainant advised that the noise nuisance due to the metal parts were dropped onto the ground by people repetitively and loading or unloading a boat at the pier. The complaint was quoted, “A resident living in Le Bleu Duex addressed a complaint to CE of HyD at about 20:04 hrs last night. He complained about the noise nuisance coming from site office since 19:30 hrs last night. Repetitively metal parts had been dropped on the ground by people who seem to	Based on the information collected, the noise generated is considered due to the metal parts were dropped onto the ground at the seashore area near Le Bleu Duex.  The metal pipe was unloaded at non-designated area and no powered mechanical equipment was used for unloading works at WA6 during restricted hour.  The Contractor was reminded to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community as recommended in the approved EIA report and the specific mitigation measures for the complaint including but not limited to:-  <ul style="list-style-type: none"> <li>• To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and</li> <li>• To deploy professional personnel to</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
			<i>be loading or unloading a boat at the pier. Noise was still going on right now at 20:04.”</i>	supervise the works.	
Com-2014-12-003	Along the shore from Yat Tung to Tai O	24 December 2014	The complainant was concerned about the increase of marine refuse (water bottles and debris) along the shore from Yat Tung to Tai O suspected in relation to the HZMB works.	<p>The owner of marine refuse found on the shores could not be identified. DCVJV has taken initiative to remove these wastes after receiving the complaint. DCVJV will also take the initiative to clear the marine refuse along the shore from Yat Tung to Tai O, if necessary.</p> <p>Nevertheless, DCVJV was also recommended the mitigation measures as below:</p> <ul style="list-style-type: none"> <li>• Gather up and remove debris to keep the work site orderly.</li> <li>• Maintain site housekeeping. Designate areas for waste materials and provide containers.</li> <li>• Secure loose or light material that is stored on open floors.</li> <li>• Do not permit rubbish to fall freely from any level of the pier sites.</li> <li>• Provide training for the workers regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				protection.	
Com-2015-06-001	The sea side at WA6 vertical seawall	6 June 2015	A resident living in Le Bleu Duex complained about noise from a barge which unloading materials at about 21:00 hrs last Saturday i.e. 6 June 2015	<p>Based on the information collected, the noise generated is considered due to the unloading of steel casings to the seashore area opposite to the China State Site Office.</p> <p>The person-in-charge of the barge has been reprimanded by the Contractor for causing noise nuisance to resident nearby. In addition, the Contractor had also reminded their subcontractors to avoid unloading of materials during restricted hours (i.e. 19:00 to 07:00 hours on any day and any time on public holidays including Sundays) without Construction Noise Permit (CNP).</p> <p>The Contractor was reminded to obtain Construction Noise Permit (CNP) for PME use in restricted hours.</p> <p>The Contractor was reminded again to take sufficient noise mitigation measures to minimize the environmental impact on the nearby community as recommended in the approved EIA report and the specific mitigation measures for the complaint including but not limited to:-</p> <ul style="list-style-type: none"> <li>• To place wooden planks or rubber</li> </ul>	Closed

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
				mats on ground for loading and unloading heavy or metal objects; and <ul style="list-style-type: none"> <li>• To deploy professional personnel to supervise the works.</li> </ul>	



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**APPENDIX Q  
SUMMARY OF SUCCESSFUL  
PROSECUTION**

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**Appendix Q - Summary of Successful Prosecution**

<b>Date of Successful Prosecution</b>	<b>Details of the Successful Prosecution</b>	<b>Status</b>	<b>Follow Up</b>
20 October 2014	The non-compliance of construction noise permit (CNP) numbered GW-RS1217-13 that use of powered mechanical equipment not permitted in the CNP on 15 March 2014 between the hours of 7p.m. and 7a.m. at Pier 72.	The subcontractor was fined.	To ensure the construction works would comply with the CNP during restricted hours, a Permit-to-work system was formulated to control daily operation of the CNPs.