

Ref.: HYDHZMBEEM00_0_2635L.15

15 January 2015

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 December 2014 (EP-352/2009/D)**

Reference is made to the revised Monthly EM&A Report No. 23 (December 2014) Version 2.0 certified by the Environmental Team Leader (ETL) and received by us on 14 January 2015.

We are pleased to verify the captioned Revised Monthly EM&A Report No. 23 (December 2014) in accordance with Condition 4.4 of EP-352/2009/D.

The ETL shall be aware that the verification to the captioned report does not release the ETL of any of his obligations to comply with the EM&A Manual and the approved monitoring methodologies.

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,



Antony Wong
Independent Environmental Checker
Hong Kong Link Road


c.c. HyD – Mr. Matthew Fung (By Fax: 3188 6614)
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ARUP – Mr. Eric Chan (By Fax: 2268 3970)
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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
December 2014
(Version 2.0)

Certified By 
Dr. H.F. Chan
Environmental Team Leader
(Date: 14 January 2015)

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 23rd 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 December 2014.

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	1 st , 5 th , 11 th , 17 th , 23 rd and 29 th December 2014.
24-hr TSP Monitoring	1 st , 5 th , 11 th , 17 th , 23 rd and 29 th December 2014.
Noise Monitoring	2 nd , 8 th , 18 th , 24 th and 30 th December 2014
Water Quality Monitoring	1 st , 3 rd , 5 th , 8 th , 10 th , 12 th , 15 th , 17 th , 20 th , 22 nd , 24 th , 27 th , 29 th and 31 st December 2014
Dolphin Monitoring (Line-transect Vessel Surveys)	3 rd and 10 th December 2014
Additional Land-based Dolphin Behaviour and Movement Monitoring	5 th and 18 th December 2014
Environmental Site Inspection	2 nd , 9 th , 16 th , 23 rd and 30 th December 2014
Archaeological Site Inspection	30 th December 2014

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		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
	24-hr TSP	0	0	0	0
Noise	L _{eq} (30min)	0	0	0	0
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)	1	1	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 one Action Level and one Limit Level exceedances for suspended solids were

recorded. 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 as sediment plume discharging to the monitoring stations from the area outside the site boundary was observed and the exceeded result was within the ranges baseline monitoring results.

Complaint Log

9. Three environmental complaints were 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

- Fabrication of rebar cages
- Fabrication of temporary piling platforms

WA7

- Fabrication of rebar cages
- Loading and Unloading of rebar materials

Marine Viaduct (P0 to P80)

Reverse Circulation Drill (RCD) Method:

- Excavation works and concreting of piles
- Interface core, sonic testing and grouting works for piling works

Kelly Method:

- Piling platform removal and temporary pile extraction
- Interface coring, sonic testing and grouting works

Pile Cap, Column and Portal Construction:

- Pile cap construction
- Pier stem and pier head construction
- Precast column erection
- Preparation works for Segments on Pier (SOP) installation
- Construction of double blade column
- Commence falsework of the Portal
- Commence construction of Portal

Deck Erection:

- Complete stitch concrete works

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

- Piling works
- Pre-bored for sheet pile for cofferdam construction
- Pile head excavation / trimming
- Column construction
- Backfilling and remove ELS
- Portals construction works
- Dismantling of falsework system for Portals
- Erection of steel bracket and falsework system for Portals
- Installation of temporary jacks and nailing and removal of falsework system

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 23rd EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme in December 2014.

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 (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. H.F Chan	2151 2088	3107 1388

2.8 ENVIRON Hong Kong Ltd. (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:

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

- (a) Pile construction is in progress at P82 to P83 and 3 piles were concreted in this reporting period.
- (b) Total 147 pours for column were completed with 8 pours in this reporting period; 54 columns were completed to top level (26 gridlines – P88, P90 to P114).
- (c) Pilecap P84L and P84R was completed.
- (d) Pre-bored for sheet pile for cofferdam construction at P81R & L in progress.
- (e) Sewage diversion at P83 is in progress.
- (f) P83L piling work is in progress.
- (g) P82L piling work was completed.
- (h) Portal P107 dismantling of falsework and steel girder system was completed on 15 December 2014.
- (i) Portal P106 falsework dismantling is in progress.
- (j) Portal P95 erection of steel cross beams and planking at P95R is in progress.
- (k) Portal P108 dismantling of falsework and steel bracket system was completed.
- (l) Portal P114 installation of temporary supports and temporary jacks are in progress.
- (m) Portal P102 was concreted on 29 November 2014 and removal of falsework is in progress.
- (n) Portal P101 was cast on 9 December 2014 and removal of formwork is in progress.
- (o) Portal P97 was concreted on 17 December 2014 and removal of side formwork was in progress.
- (p) Portal P98 erection of side formwork is in progress.
- (q) Portal P100 steel fixing is in progress.
- (r) Portal P99 erection formwork is in progress.
- (s) Portal P96 erection of falsework and planking are in progress.

Marine Viaduct (P0 to P80)**RCD Method:**

- (a) Construction works at P68 and P69 may be resumed on 23 December 2014.
- (b) Remobilization for P75's works started on 25 September 2014. Excavation by backhoe on flat top barge is on-going and steel boxes are under construction at WA7.
- (c) Piling jackets were installed at D18 & P8.
- (d) Piling jackets were dismantled at D17 & D20.
- (e) Pile excavations and casing installation are in progress at P5, P10 & D18 with 6 nos. piles concreted in the reporting period.
- (f) Inter-face coring tests were carried out at P15, P23, P24 & P80.
- (g) Full depth coring test was carried at P24.
- (h) Sonic tests were carried out at P15, P23, P55 & P80.
- (i) Grouting works were carried out at P23, P24, P25 & P31.

Kelly Method:

- (k) Piling platform removal and temporary pile extraction were carried out at P3, P4, P21 & P31.
- (l) Pile excavation by Kelly method are in progress at P2, & P7 and 4 piles concreted in the reporting period.
- (m) All friction piles by Kelly Method were completed.
- (n) All inter-face core tests were completed.
- (o) Full depth coring was carried out at P12-R3.
- (p) Sonic tests were carried out at P1, P2, P7 & P12.
- (q) Toe grouting works were carried out at P1, P2, P3 & P7.

Disposal from Marine Works

- (a) The disposals in this reporting period are shown in below table.

Disposal Location	No of Trip	Type of Materials
TM38	2	Inert Materials
TMCLK	0	Inert Materials
HK Open Sea Mud Pits	3	Type II Materials
Cross Boundary Disposal	4	Marine Mud

Pilecap Construction:

- (a) 10 precast cap shells were installed P14, P16, P30, P32 & P59.
- (b) Stage 1 concreting was completed at P27, P28, P30, P32 & P59.
- (c) Stage 1 works is in progress at P14, P16, P27, P28, P30, P32 & P52.
- (d) Stage 2 concreting was completed at P27, P28, P29, P67.
- (e) Stage 2 works is in progress at P27, P28, P29, P32, P67.
- (f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P14, P16, P21, P30, P31 & P53.
- (g) Concrete trimming and advanced trimming (inside casing) works were carried out at P16, P21, P24, P25, P27, P28, P31, P53, P58 & P59.
- (h) Submerged pilecap works with cofferdam:

Pier Location	Side	Progress
P70	L	Formwork installation for pile cap is in progress;
	R	Formwork installation for pile cap completed; Re-bar steel fixing is in progress.
P71	L	Concreting works of pile cap completed on 6-Oct-14
	R	Concreting works of pile cap completed on 18-Dec-14
P72	L	Concrete plug was casted on 24-Dec-14; Curing is in progress.
	R	Installation of 3rd layer of waling & strut completed; Dewatering to the bottom of cofferdam is in progress.
P73	L	Concreting works of pile cap completed on 4-Dec-14
	R	Formwork installation for pile cap completed; Re-bar steel fixing is in progress.
P74	L	Excavation works in progress
	R	Excavation works in progress
P76	L	Installation of 1 st & 2 nd waling & strut completed; Installation of 3 rd waling & strut is in progress.
	R	Installation of 1 st & 2 nd waling & strut completed; Excavation works to be started.
P77	L	Installation of 1 st & 2 nd waling & strut completed; Excavation works is in progress.
	R	Installation of 1 st & 2 nd waling & strut completed; Installation of 3 rd waling & strut to be started.
P78	L	Installation of 3 rd waling & strut completed; Cleaning & drainage works is in progress.
	R	Concrete plug was casted on 17-Dec-14; Installation of 3 rd waling & strut to be started.

In-situ Column Construction

- (a) 1st lift works is in progress at P33, P34, P50, P61, P63 & P64.
- (b) 1st lift concrete was poured at P33, P34, P50 & P64.
- (c) 2nd lift works is in progress : P50.
- (d) 2nd lift concreting was poured: N/A.

- (e) Pier head works is in progress at: P49, P51, P60, P65 & P66.
(f) Pier head concreting in progress at P49, P60 & P66.

Precast Column Erection

- (g) P37 and P38 – base units installed.
(h) P39 to P41 – all units installed.
(i) P43 to P44 – all units installed.

In-situ Double Blade Column Construction

Pier Location	Side	Progress
P19	L	1st lift works in progress
	R	1st lift works in progress
P20	L	completed 3rd lift and 4th lift works in progress
	R	completed 2nd lift and 3rd lift works in progress
P71	L	completed 1st lift and 2nd lift works in progress
	R	Column works to be started by end of December

Marine Portal

- (a) Portal construction at P52 commence on 11 Dec 2014. Temporary barrier piles were driven at the location for safety measures.

Deck Erection

- (a) Setting up of Equipment:

Type of Equipment	Status
Segment Unloading Frame (SUF)	Fully operational
Lifting Frames 1 (LF1)	Assembly of the first set of LF1 is on-going at WA4 but is still hampered by lack of available area; Steelwork for the 4 th set of Lifting Frames is under fabrication with some deliveries commenced;
Lifting Frames 2 (LF2)	LF2 at P109-P110 L & R have now been removed and preliminary works are underway in preparation to erect P109 span by crane.
Launching Gantry 1 (LG1)	LG1 assembly continues at Portion C with all components on site; LCB's and all main truss elements erected (with the exception of the link trusses).
Launching Gantry 2 (LG2)	Assembly of truss has commenced with main elements lifted on to pile-caps at P47/P46. Further erection will be continued after completion of in-situ SOP works.

- A total of 22 segments have been erected to date with P45 SOP and one of P46 segments delivered to site and off-loaded into temporary storage on a “flat-top” barge during this reporting period.

Precast Segment

(a) Progress for mould assembly:

Type of Segment	Number of Mould	Status
A	10	Completed (including 2 nos. SPO)
B	1	Completed
D	2	Completed
E	4	Completed
CH1	2	Completed
CH2	2	Completed
CH3	2	Completed
CH4	2	Completed
CH5	2	Completed
CP (long span SOP)	4	Completed (2 x CPA and 2 x CPB)
DT	1	Completed
E/EV	2	Completed

(b) Segment Casting and Delivery

Item	Number in this reporting period	Cumulative No. of Precast Shell Completed (up to 28th of each month)
Segment Cast	215	1601
Segment Delivered	4	80

(c) Off-site Storage:

Area	No. in Off-site Storage
A1	134
A2	240

Precast Concrete Shell Casting

(a) Summary of precast shell cast in the precast yard:

Type of Shell	Number of Precast Shell Cast in this reporting period	Cumulative No. of Precast Shell Completed (up to 28th of each month)
CP1	5	61
CP2	Completed	12
CP3	2	4
CP4	Completed	8
CP5	2	6
CP6	2	2

Precast Column & Precast Pier Head Casting

(a) Progress of the precast column & precast pier head casting:

- All the 5 moulds are in service for precast production;

- Totally 21 precast elements (14 piers with 6m high, 4 monolithic pier heads and 3 pier heads supporting bearings) were cast in this reporting period.
- Cumulatively 93 precast elements have been produced.

(b) Delivery Progress:

Item	No. of units delivered in this reporting period	Cumulative No
Segment Delivered	12 (3 trips)	32 (8 trips)

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	
Environmental Permit (EP)			
EP-352/2009/D	22/12/2014	N/A	Valid
Construction Noise Permit (CNP)			
WA4: GW-RW0496-14	10/07/2014 (19:00)	01/01/2015 (23:00)	Cancelled on 15 December 2014
WA7: GW-RW0509-14	14/07/2014 (19:00)	13/01/2015 (07:00)	Valid
Portion A: GW-RW0838-14	23/08/2014 (19:00)	22/02/2015 (23:00)	Valid
P101 – P113: GW-RS0903-14	05/09/2014 (19:00)	04/12/2014 (05:30)	Expired
P81 – P82: GW-RS1064-14	11/10/2014 (00:00)	10/04/2015 (24:00)	Valid
P0 – P68: GW-RS1163-14	23/10/2014 (19:00)	22/01/2015 (24:00)	Valid
P75 – P80: GW-RS1179-14	01/11/2014(19:00)	31/01/2015(24:00)	Cancelled on 22 December 2014
P81 – P114: GW-RS1250-14	06/11/2014(19:00)	05/02/2015(23:00)	Valid
P101 – P113: GW-RS1297-14	21/11/2014(19:00)	31/03/2015 (06:30)	Valid
P69 – P74: GW-RS1340-14	30/11/2014 (00:00)	31/03/2015(24:00)	Valid
P101 – P113: GW-RS1372-14	08/12/2014(19:00)	31/01/2015(05:30)	Valid
WA4: GW-RW0984-14	15/12/2014(19:00)	14/06/2015(23:00)	Valid
P75 – P80 : GW-RS1421-14	22/12/2014(19:00)	31/03/2015(24:00)	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
345773	04/06/2012	N/A	Receipt acknowledged by EPD
Billing Account for Construction Waste Disposal			
A/C# 7015341 (Construction Site)	11/06/2012	N/A	Valid
A/C# 7016948 (Vessel Disposal)	18/11/2014	28/02/2015	Valid
Registration of Chemical Waste Producer			
WPN 5213-951-D2499-01	18/07/2012	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WA6A(DCVJV site office): WT00014053-2012	12/09/2012	30/09/2017	Valid
WA6B (SOR site office): WT00014447-2012	30/10/2012	31/10/2017	Valid
WA3: WT00015118-2013	30/01/2013	31/01/2018	Valid
Portion C: WT00015356-2013	22/02/2013	28/02/2018	Valid
Portion A: WT00016076-2013	21/05/2013	31/05/2018	Valid
WA4B: WT00014750-2012	12/08/2013	31/08/2018	Valid
WA7: WT00015722-2013	16/01/2013	31/01/2019	Valid
P0 – P80: WT00018203-2014	30/01/2013	31/01/2019	Valid

Permit / License No.	Valid Period		Status
	From	To	
P114: WT00018631-2014	31/03/2014	31/03/2019	Valid
Marine Dumping Permit			
<u>Dumping of Phase 1, 2a, 2b, 2c and 2d (Type 1-Open Sea Disposal) marine sediment</u> EP/MD/15-078	06/08/2014	31/01/2015	Valid
<u>Cross-border dumping of dredged sediment of Category L and Category Mp at Erchau Island in China</u> EP/MD/15-143	10/11/2014	09/12/2014	Expired
<u>Dumping of Phase 1, 2a, 2b, 2c and 2d (Type 1D and Type 2) marine sediment</u> EP/MD/15-163	01/12/2014	31/12/2014	Valid
<u>Cross-border dumping of dredged sediment of Category L and Category Mp at Erchau Island in China</u> EP/MD/15-170	10/12/2014	09/01/2015	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 ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than ± 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 m³/min. and 1.4 m³/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 ($\mu\text{g}/\text{m}^3$)		Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
	Average	Range		
AMS1	41	17 – 91	381	500
AMS4	42	16 – 73	352	

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

Monitoring Station	Concentration ($\mu\text{g}/\text{m}^3$)		Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
	Average	Range		
AMS1	87	37 – 128	170	260
AMS4	76	15 – 116	171	

- 3.14 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances were recorded.
- 3.15 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. 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 air quality monitoring stations.

Table 4.1 Location for Noise Monitoring Locations

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	SVAN 957	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 ₁₀ (30 min.) dB(A) L ₉₀ (30 min.) dB(A) L _{eq} (30 min.) dB(A) (as six consecutive L _{eq, 5min} 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	71	68 - 73	75 dB(A)
NMS4	62	57 - 64	

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 ± 1.75 hours of the predicted time) and mid flood tides (within ± 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	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"> • Temperature(°C) • pH(pH unit) • turbidity (NTU) • water depth (m) • salinity (ppt) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L) 	<ul style="list-style-type: none"> • 3 water depths: 1m below sea surface, mid-depth and 1m above sea bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted. 	<ul style="list-style-type: none"> • Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides during the construction period of the Contract

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									0	0
IS2	Action Level									0	0
	Limit Level									0	0
IS3	Action Level								12/12/2014	0	1
	Limit Level									0	0
IS4	Action Level									0	0
	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									0	0
	Limit Level									0	0
ST1	Action Level									0	0
	Limit Level								24/12/2014	0	1
ST2	Action Level									0	0
	Limit Level									0	0
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	0	2		
	Limit Level	0	0	0	0	0	0	0	0		

5.38 All water quality monitoring was conducted as scheduled in the reporting month. There are one Action Level and one Limit Level exceedances for suspended solids were recorded. 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 as sediment plume discharging to the monitoring stations from the area outside the site boundary was observed and the exceeded result was within 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 3rd and 10th December 2014. The dolphin monitoring schedule for the reporting period is shown in **Appendix D**.

Monitoring Results

6.8 From these surveys, a total of 66.37 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 66.37 km of survey effort, the total survey effort conducted on primary lines (the vertical lines perpendicular to the coastlines) was 43.64 km.

6.9 3 groups of 24 Chinese White Dolphins were sighted from primary lines. Distribution of the 9 dolphin sightings made during December’s surveys is shown in **Figure 4 of Appendix I**. These sightings ranged from Tai O Peninsula in the north to Fan Lau in the south, with no particular concentration (**Figure 4 of Appendix I**). All dolphin groups were not located in the proximity of 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 December’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: December 3 rd	13.8	110.3
	Set 2: December 10 th	0.0	0.0

6.11 The average group size of Chinese White Dolphins was 6.44 individuals per group during December’s surveys, which was much higher than the ones in previous months of monitoring surveys. The higher average was attributed by two large groups of 14 dolphins each as well as three medium groups of 5-7 dolphins sighted during this month

of monitoring surveys.

- 6.12 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.
- 6.13 Evaluation of impacts on dolphins due to construction work will be conducted in the quarterly EM&A report.
- 6.14 Detailed monitoring methodology and results can be found in **Appendix I**.

Additional Land-based Dolphin Behaviour and Movement Monitoring

- 6.15 Additional land-based dolphin behavior and movement monitoring was conducted on 5th and 18th December 2014 in the reporting month. The progress of the monitoring is summarized in the **Table 6.3**.

Table 6.3 Progress Record of Additional Land-based Dolphin Behaviour and Movement Monitoring in December 2014

Date	Time	Weather		Number of Staff	Number of Dolphin Sighting
		Beaufort	Visibility		
5/12/2014	09:04 - 14:38	2	3	3	0
18/12/2014	09:00 - 14:15	2	2.5	3	0

- 6.16 Detailed monitoring methodology and results will be provided in a separate report after the completion of full set of additional land-based dolphin behavior and movement monitoring.

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 2nd, 9th, 16th, 23rd and 30th December 2014 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 23rd December 2014. 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 8th inspection to the Sha Lo Wan (West) Archaeological Site was conducted on 30th December 2014 and next inspection will be conducted in March 2015.

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>	02/12/2014	Properly erect sand bag bund to avoid discharging the wastewater to the sea at WA4.	Rectification/improvement was observed during the follow-up audit session on 9 December 2014.
	16/12/2014	Properly deploy the silt curtain at P100.	Rectification/improvement was observed during the follow-up audit session on 23 December 2014.
	23/12/2014	Clear the concrete wastes at the platform at P25 and seal the gap to prevent the wastes falling into the sea.	Rectification/improvement was observed during the follow-up audit session on 30 December 2014.
	23/12/2014	Properly repair the damage silt curtain at P73.	Rectification/improvement was observed during the follow-up audit session on 30 December 2014.
<i>Ecology</i>	09/12/2014	Properly clear the construction wastes at near the trees at P98 and P88.	Rectification/improvement was observed during the follow-up audit session on 16 December 2014.
	16/12/2014	Clear the construction materials / wastes at near the trees and provide tree protection zone at near P113.	Rectification/improvement was observed during the follow-up audit session on 23 December 2014.
<i>Air Quality</i>	16/12/2014	Provide water spray for the dry exposed area at Portion C more frequently.	Rectification/improvement was observed during the follow-up audit session on 23 December 2014.
	30/12/2014	Properly check and maintain the generator to avoid heavy smoke at the barge near P53.	Rectification/improvement was observed during the follow-up audit session on 8 January 2015.
<i>Noise</i>	23/12/2014	Provide noise emission label for the air compressor at P25.	Rectification/improvement was observed during the follow-up audit session on 30 December 2014.
	23/12/2014	To replace the damage acoustic material for the noise enclosure for generator at P73	Rectification/improvement was observed during the follow-up audit session on 30 December 2014.
<i>Waste / Chemical Management</i>	09/12/2014	Properly clear the construction wastes at near the trees at P98 and P88.	Rectification/improvement was observed during the follow-up audit session on 16 December 2014.
	09/12/2014	Properly store the chemical containers at P95.	Rectification/improvement was observed during the follow-up audit session on 16 December 2014.
	09/12/2014	Clear the discarded chemical container as chemical waste at P92.	Rectification/improvement was observed during the follow-up audit session on 16 December 2014.
	23/12/2014	Clear the oil leakage and provide the drip tray for the container at P25.	Rectification/improvement was observed during the follow-up audit session on 30 December 2014.

Parameters	Date	Observations and Recommendations	Follow-up
	23/12/2014	Clear the oil spillage and provide spill kit at P73.	Rectification/improvement was observed during the follow-up audit session on 30 December 2014.
	30/12/2014	Provide drip tray for the oil containers at the barge near P48.	Rectification/improvement was observed during the follow-up audit session on 8 January 2015.
	30/12/2014	Clear the accumulated wastes and provide waste sorting at the barge near P48.	Rectification/improvement was observed during the follow-up audit session on 8 January 2015.
	30/12/2014	Clear the sand which soaks up the oil around the generator as chemical waste at the barge near P48.	Rectification/improvement was observed during the follow-up audit session on 8 January 2015.
	30/12/2014	Clear the accumulated concrete debris and provide sufficient skip for temporary storage of concrete debris at P48.	Rectification/improvement was observed during the follow-up audit session on 8 January 2015.
Landscape & Visual Impact	N/A ⁽¹⁾	N/A ⁽¹⁾	N/A ⁽¹⁾
Permits/Licences	16/12/2014	To display the Environmental Permit at the site exit near P106 (Portion C) and update the Construction Noise Permit at the site exit at Portion C (near Southeast Quay).	Rectification/improvement was observed during the follow-up audit session on 23 December 2014.
Other	N/A ⁽¹⁾	N/A ⁽¹⁾	N/A ⁽¹⁾
Cultural Heritage (Sha Lo Wan (West) Archaeological Site)	30/12/2014	N/A ⁽¹⁾	N/A ⁽¹⁾

Remark: N/A⁽¹⁾ - 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, 4,506m³ 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 All water quality monitoring was conducted as scheduled in the reporting month. There are one Action Level and one 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 as sediment plume discharging to the monitoring stations from the area outside the site boundary was observed and the exceeded result was within the ranges baseline monitoring results.

Summary of Environmental Complaint

- 8.5 Three environmental related complaints were 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

- Fabrication of rebar cages
- Fabrication of temporary piling platforms

WA7

- Fabrication of rebar cages
- Loading and Unloading of rebar materials

Marine Viaduct (P0 to P80)

Reverse Circulation Drill (RCD) Method:

- Excavation works and concreting of piles
- Interface core, sonic testing and grouting works for piling works

Kelly Method:

- Piling platform removal and temporary pile extraction
- Interface coring, sonic testing and grouting works

Pile Cap, Column and Portal Construction:

- Pile cap construction
- Pier stem and pier head construction
- Precast column erection
- Preparation works for Segments on Pier (SOP) installation
- Construction of double blade column
- Commence falsework of the Portal
- Commence construction of Portal

Deck Erection:

- Complete stitch concrete works

Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)

- Piling works
- Pre-bored for sheet pile for cofferdam construction
- Pile head excavation / trimming
- Column construction
- Backfilling and remove ELS
- Portals construction works
- Dismantling of falsework system for Portals
- Erection of steel bracket and falsework system for Portals

- Installation of temporary jacks and nailing and removal of falsework system

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**.

10 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 10.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken in December 2014 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 monitoring, there are one Action Level and one Limit Level exceedances for suspended solids were recorded. In addition, no Action/Limit Level exceedance for dissolved oxygen and turbidity were recorded.
- 10.4 According to the investigation, the exceedances are considered not due to the Contract as sediment plume discharging to the monitoring stations from the area outside the site boundary was observed and the exceeded result was within the ranges baseline monitoring results.
- 10.5 Dolphin transect survey was carried out on 3rd and 10th December 2014. No adverse impact on Chinese White Dolphins was noticeable from general observations.
- 10.6 Two days of additional Land-based Dolphin Behaviour and Movement Monitoring were conducted on 5th and 18th December 2014.
- 10.7 Environmental site inspection was conducted on 2nd, 9th, 16th, 23rd and 30th December 2014 by ET in the reporting month. All deficiencies identified during the site inspection have already rectified / improved during the follow-up audit session.
- 10.8 The inspection to the Sha Lo Wan (West) Archaeological Site was conducted on 30th December 2014. No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed.
- 10.9 There were three environmental complaints, no notification of summons and successful prosecution received in the reporting month.
- 10.10 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

- 10.11 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

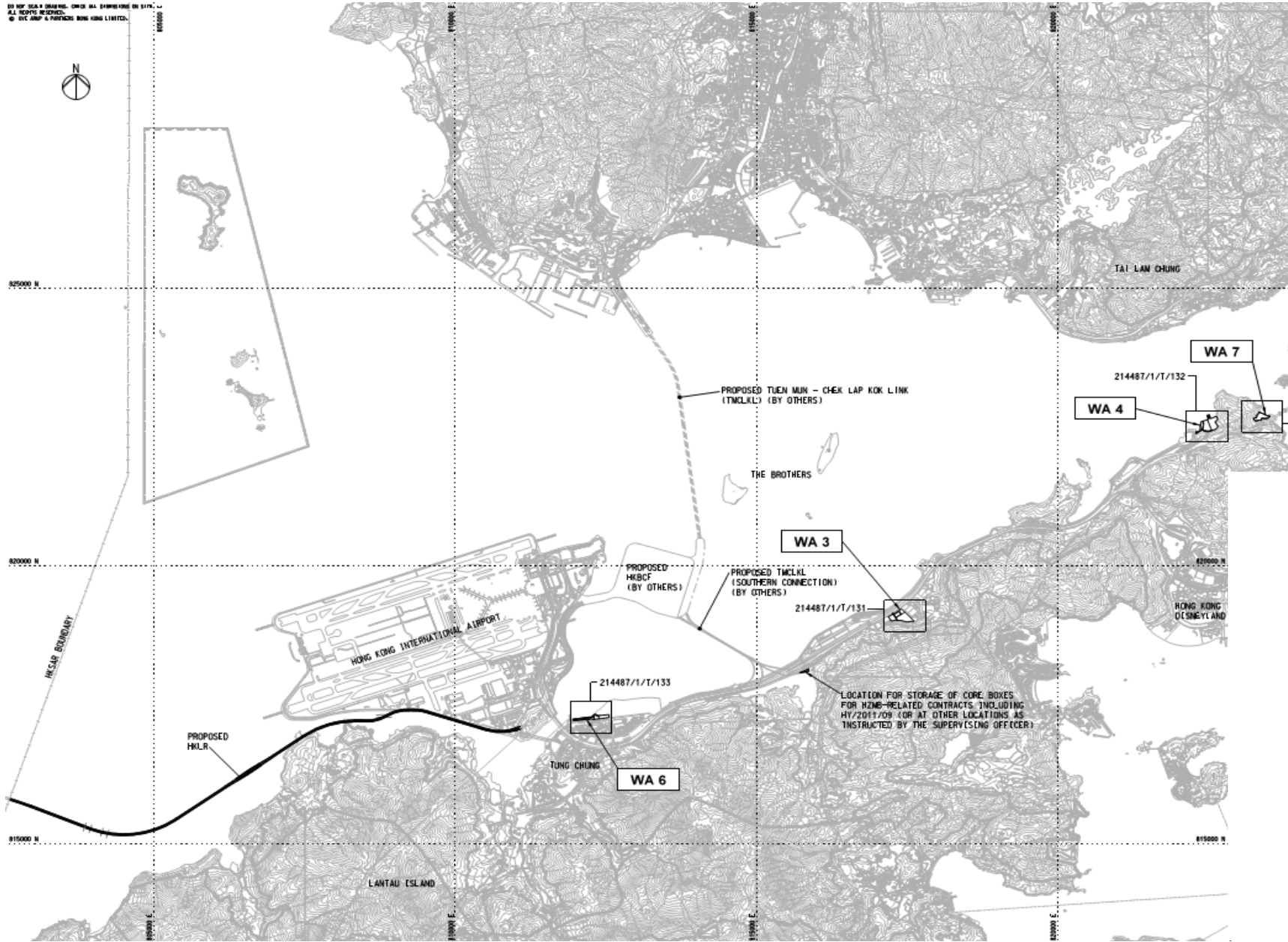
- To implement Spill Response Plan in the event of accidental spillage of or other hazardous chemicals.
- To implement Dolphin Exclusion Zone during the installation of bored pile casing located in the waters to the west of Airport.
- To implement Dolphin Watching Plan after the bored piling casing is 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.

FIGURE(S)

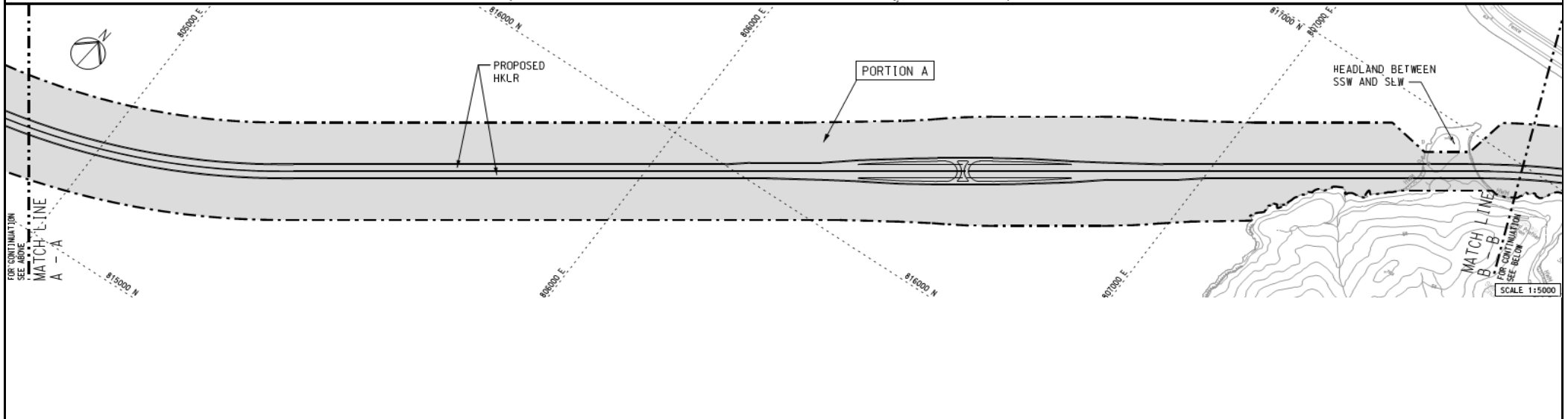
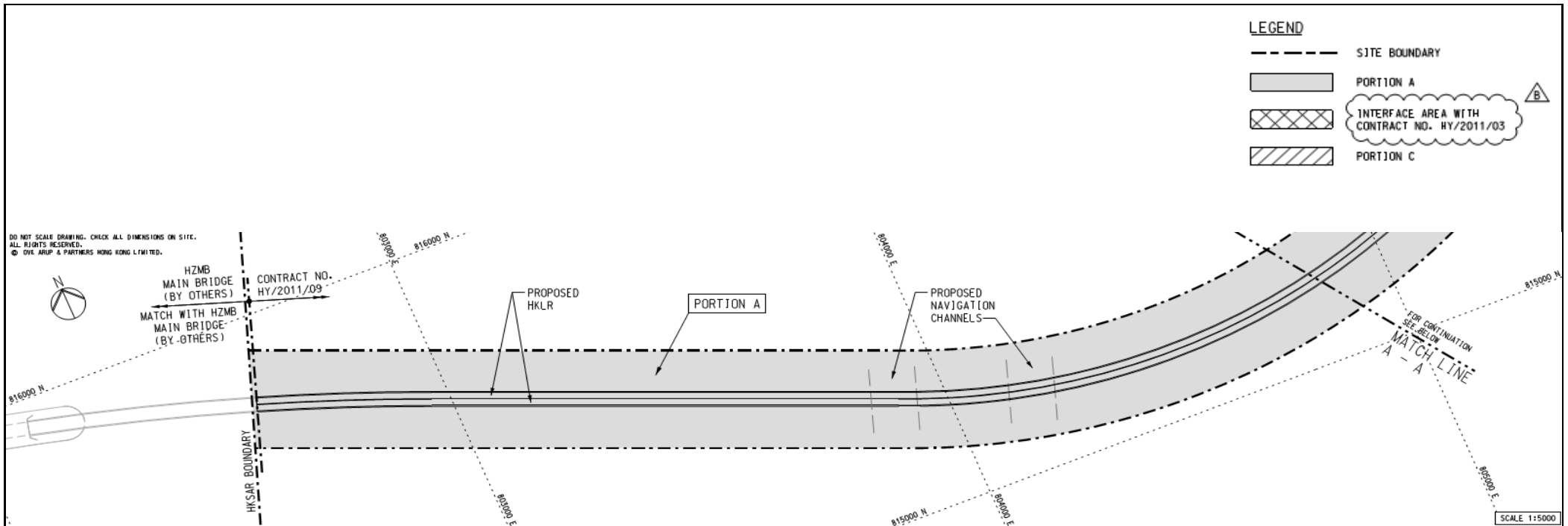
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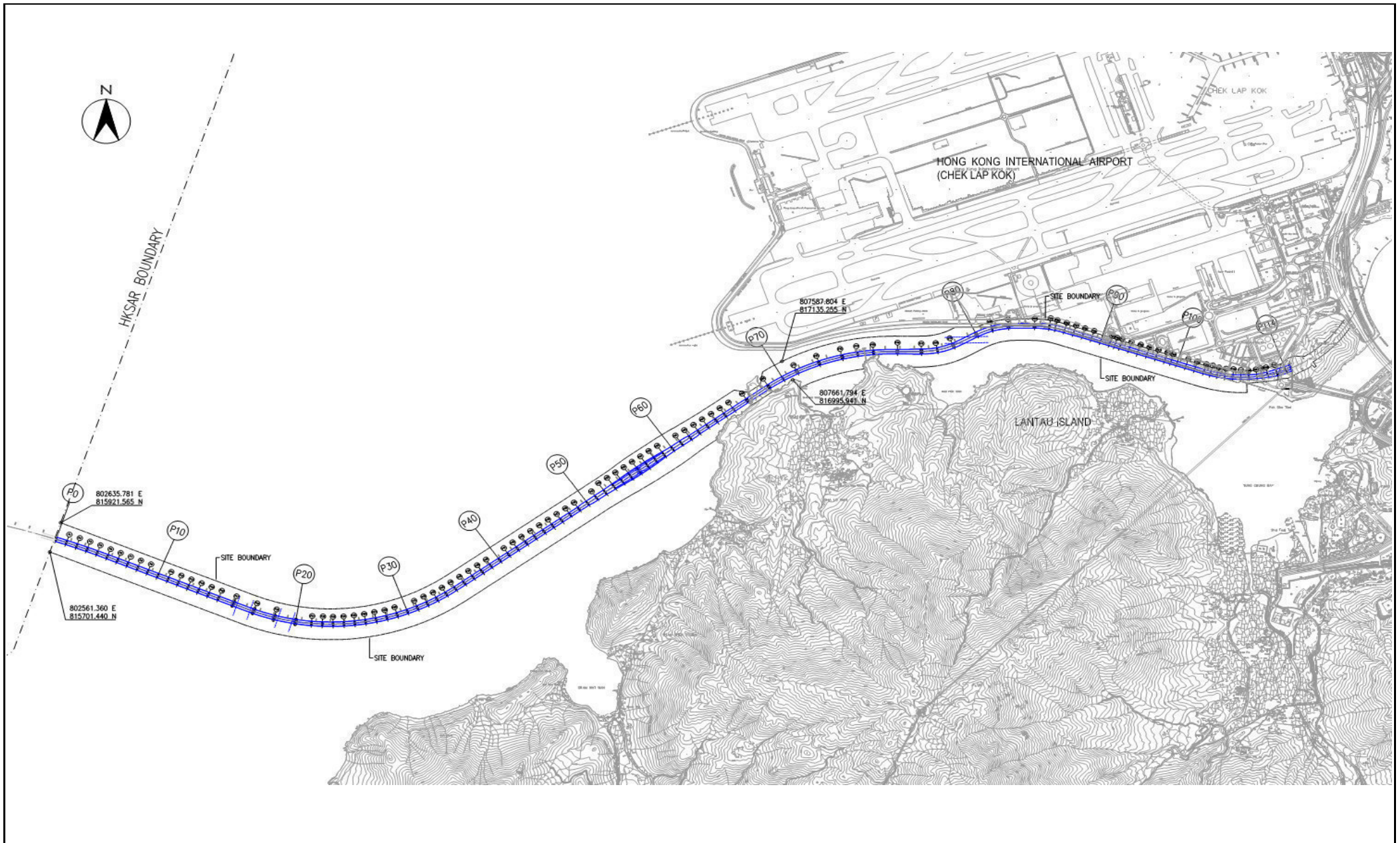
Title
 Contract No. HY/2011/09
 Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill
 Site Layout Plan (WA3, WA4, WA6 and WA7)

Scale	N.T.S	Propose No.	MA12014
Date	Feb-13	Figure	1a

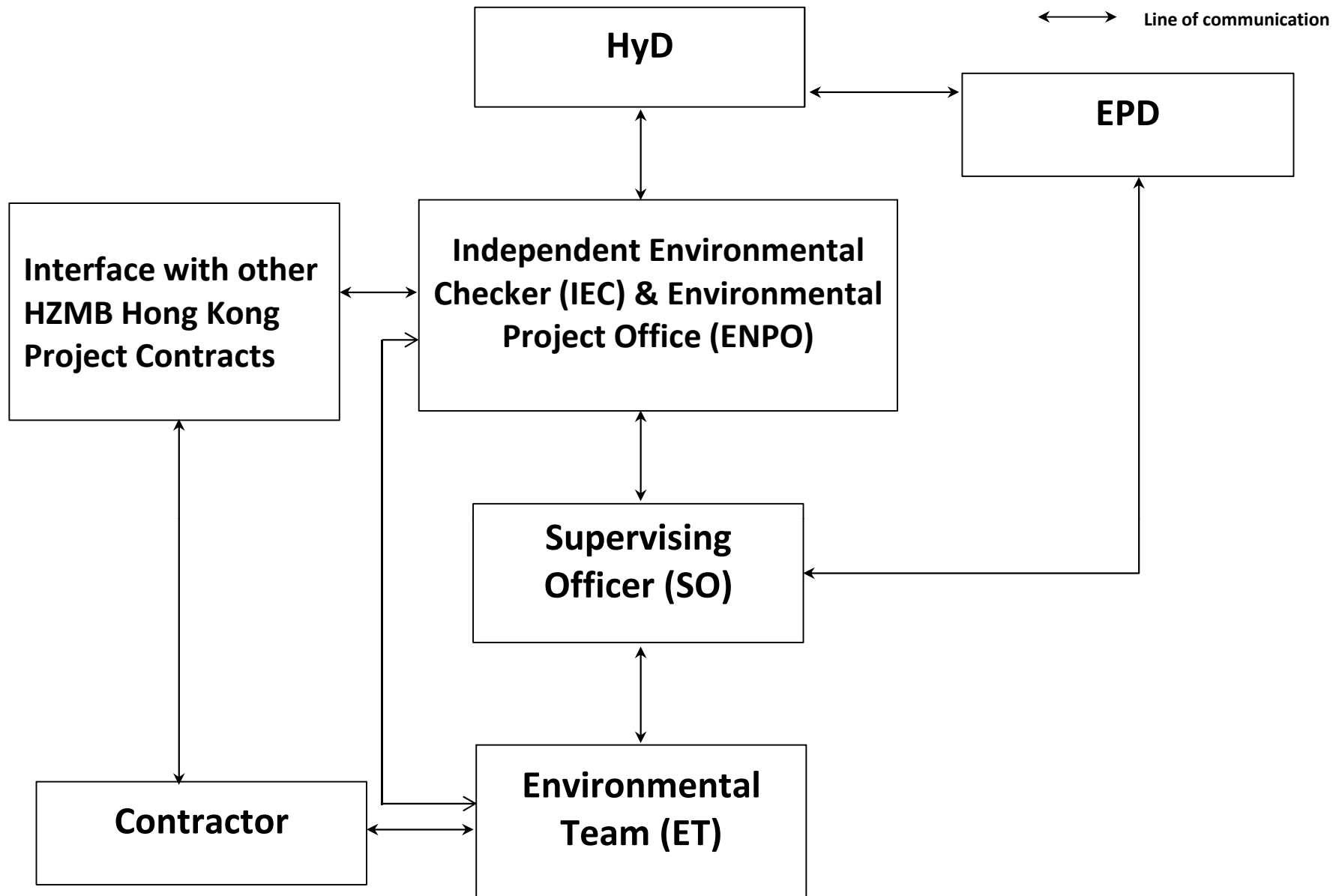




Title	Contract No. HY/2011/09		Scale	N.T.S	Propose No.	MA12014	CINOTECH
	Hong Kong-Zhuhai-Macao Bridge						
Title	Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill		Date	May-13	Figure	1b	
	Site Layout Plan (Portion A)						



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)		Feb-13	1d	

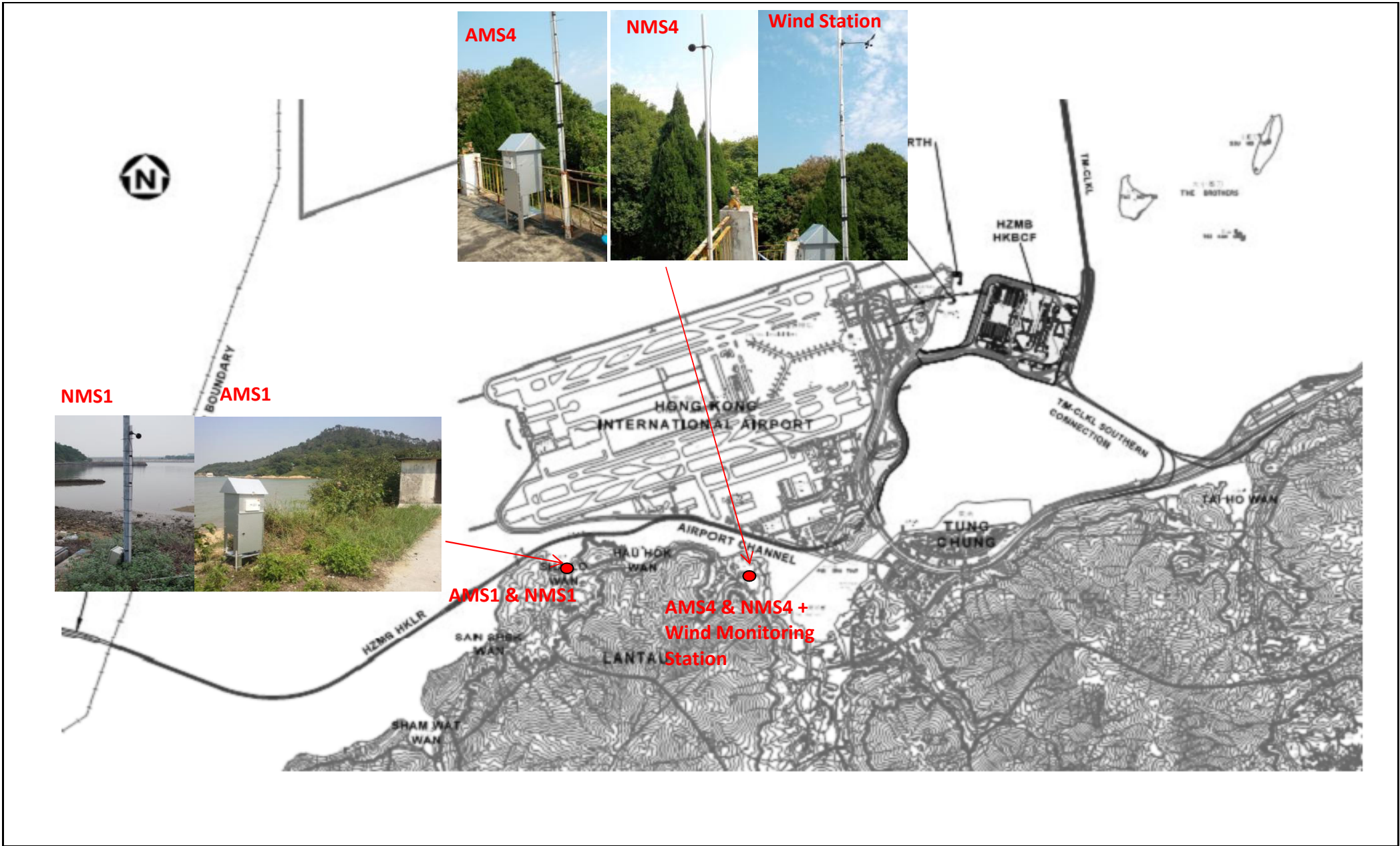


Title Contract No. HY/2011/09
 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between
 HKSAR Boundary and Scenic Hill
 Project Organisation for Environmental Works

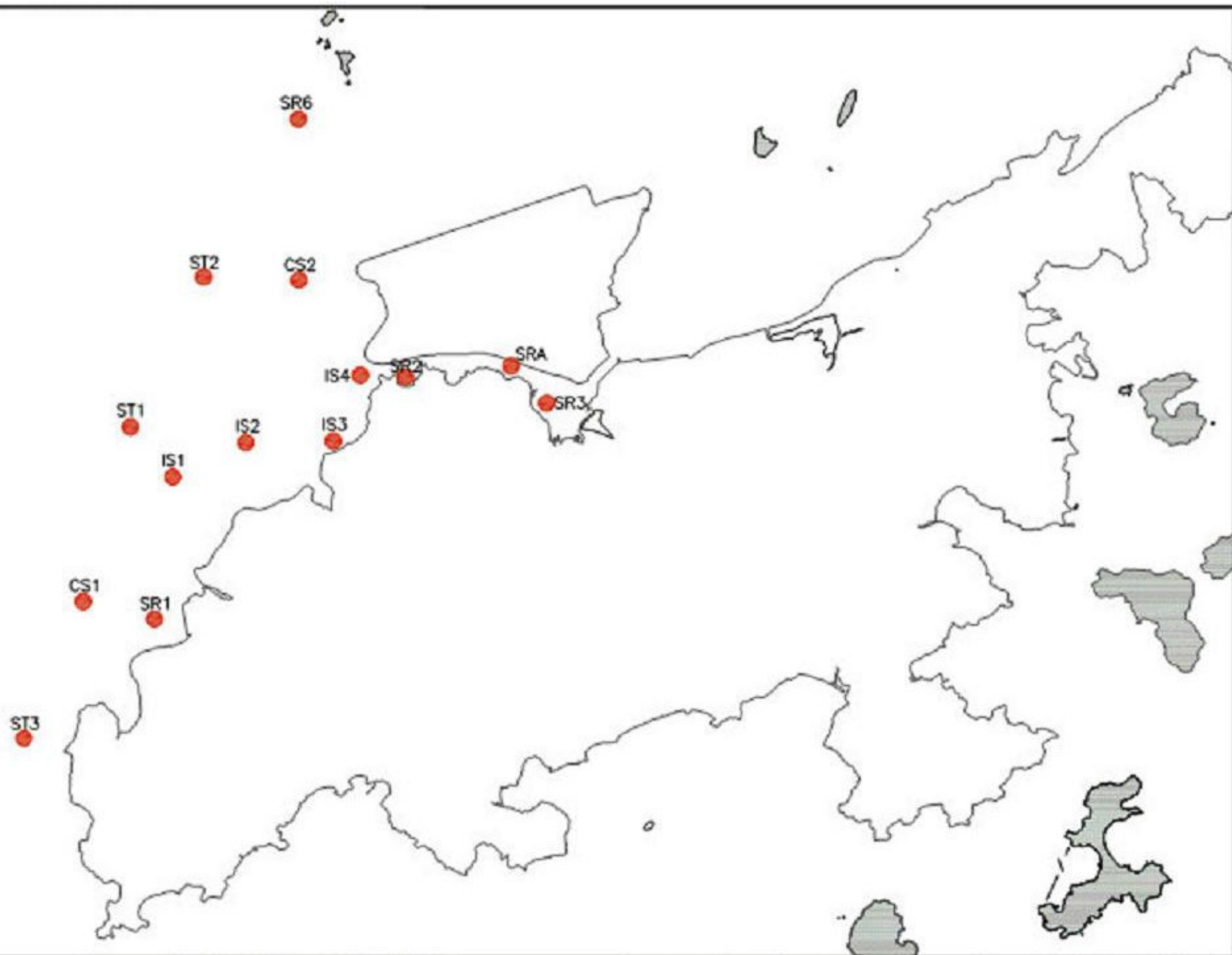
Scale N.T.S
 Date Feb-13

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
	Locations of Air Quality and Noise Monitoring Stations		Date	Feb-13	Figure	3	



**APPENDIX A
CONSTRUCTION PROGRAMME**



Dragages - China Harbour - VSL Joint Venture 寰島 - 中國港務 - 威達利聯營

Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014				2015												
									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
HKZB Hong Kong Link Road - 3 Months Rolling Programme 1412 (Based on DWP01dOP1)																									
Design and Design Checking of the Works																									
General Design Submission																									
GDS1150	Seismic Performance Assessment Report of Bridge/Viaduct	0	0	0%	28/12/14*			19/06/14	Seismic Performance Assessment Report of Bridge/Viaduct																
Detailed Design Approval (DDA)																									
Geotechnical Works																									
DDAGEO-50	Submit to GEO for Approval- Geotechnical Works	60	0	100%	26/11/13 A	28/12/14	06/05/15	04/07/15																	
Project General Submission																									
Construction Noise Permit																									
PGS2445	Submit and approve CNP for Bored Piles (P0 to P84)	75	0	0%	31/10/12 A	28/12/14	26/02/13	11/05/13	Submit and approve CNP for Bored Piles (P0 to P84)																
PGS2455	Submit and approve CNP for LG2	90	0	0%	30/11/13 A	28/12/14	19/06/14	16/09/14	Submit and approve CNP for LG2																
MTTA for existing navigation channel																									
PGS1620	Divert marine traffic to permanent navigation channel (P17 to P20)	0	0	0%		28/12/14		19/06/14	Divert marine traffic to permanent navigation channel (P17 to P20)																
Temporary Piling Platform/Cofferdem																									
PGS1680	Design approval of temporary cofferdem	21	0	100%	16/09/13 A	28/12/14	25/08/14	14/09/14	Design approval of temporary cofferdem																
PGS1690	Deliver maternal for temporary cofferdem	45	0	100%	30/09/13 A	28/12/14	20/06/14	03/08/14	Deliver maternal for temporary cofferdem																
Segment Casting Yard																									
Segment Moulds																									
PGS2325	Fabrication & 2nd Deliver segment mould (Long span)	201	0	100%	04/11/13 A	28/12/14	19/06/14	05/01/15	Fabrication & 2nd Deliver segment mould (Long span)																
PGS2335	Fabrication & 3rd Deliver segment mould (Long End span)	146	15	90%	16/02/14 A	11/01/15	19/06/14	11/11/14	Fabrication & 3rd Deliver segment mould (Long End span)																
Interface Contract																									
PGS1950	Complete deck erection by Mainland section at P0	243	85	65%	07/03/14 A	23/03/15	19/06/14	16/02/15	Co																
Major Method Statement																									
PGS2385	Prepare MS for Column & Portal	60	0	100%	01/01/13 A	28/12/14	02/02/13	02/04/13	Prepare MS for Column & Portal																
PGS2395	Approve MS for Column & Portal	60	0	100%	25/12/13 A	28/12/14	26/06/14	24/08/14	Approve MS for Column & Portal																
PGS2405	Prepare MS for SOP Installation	60	0	100%	05/08/13 A	28/12/14	19/06/14	17/08/14	Prepare MS for SOP Installation																
PGS2415	Approve MS for SOP Installation	60	0	100%	09/12/13 A	28/12/14	26/06/14	24/08/14	Approve MS for SOP Installation																
PGS2425	Prepare MS for Segment Erection	60	0	100%	05/08/13 A	28/12/14	19/06/14	17/08/14	Prepare MS for Segment Erection																
PGS2435	Approve MS for Segment Erection	60	0	100%	24/12/13 A	28/12/14	26/06/14	24/08/14	Approve MS for Segment Erection																
Procurement and Fabrication																									
PGS2184	Deliver gantry crane for LG1 & 2	90	1	98.89%	08/07/13 A	28/12/14	19/06/14	16/09/14	Deliver gantry crane for LG1 & 2																
PGS2485	Fabrication & Deliver Lift Frames LF1	90	14	85%	30/11/13 A	10/01/15	19/06/14	16/09/14	Fabrication & Deliver Lift Frames LF1																

DWP_01d Programme
 Critical Remaining Work
 Actual Work
 Milestone
 Remaining Work

3MRP DWP_01d 1412

Date	Revision	Checked	Approved
02/01/15	1412 rolling based on DWP01d OP1	Tim	

Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014											
									December				January				2015			
									01	08	15	22	29	05	12	19	26	02	09	16
PGS2488	Fabrication & Deliver Lift Frames LF2	90	0	100%	30/11/13 A	28/12/14	19/06/14	16/09/14	Fabrication & Deliver Lift Frames LF2											
PGS2495	Fabrication & Deliver Lift Frames LF3	90	0	100%	13/11/13 A	28/12/14	05/07/14	02/10/14	Fabrication & Deliver Lift Frames LF3											
PGS2505	Fabrication & Deliver Lift Frames LF4	90	23	75%	13/11/13 A	19/01/15	05/07/14	02/10/14	Fabrication & Deliver Lift Frames LF4											
Pile Cap Shell Casting																				
Type CP1 & CP5																				
PC1010	Pile cap shell casting for P1 - 2nos.	16	16	0%	01/02/15	17/02/15	13/12/14	30/12/14	Pile cap shell casting for P1 - 2nos.											
PC1020	Pile cap shell casting for P2 - 2nos.	16	16	0%	25/02/15	13/03/15	31/12/14	16/01/15	Pile cap shell casting for P2 - 2nos.											
PC1030	Pile cap shell casting for P3 - 2nos.	16	16	0%	25/02/15	13/03/15	31/12/14	16/01/15	Pile cap shell casting for P3 - 2nos.											
PC1040	Pile cap shell casting for P4 - 2nos.	16	16	0%	14/03/15	30/03/15	17/01/15	02/02/15	Pile cap shell casting for P4 - 2nos.											
PC1050	Pile cap shell casting for P5 - 2nos.	16	16	0%	14/03/15	30/03/15	17/01/15	02/02/15	Pile cap shell casting for P5 - 2nos.											
PC1140	Pile cap shell casting for P14 - 2nos.	16	0	100%	14/11/14 A	28/11/14 A	19/04/15	13/05/15	Pile cap shell casting for P14 - 2nos.											
PC1150	Pile cap shell casting for P15 - 2nos.	16	8	50%	13/12/14 A	22/06/15	19/04/15	13/05/15	Pile cap shell casting for P15 - 2nos.											
PC1170	Pile cap shell casting for P21 - 2nos.	16	0	100%	05/12/14 A	17/12/14 A	30/09/14	23/10/14	Pile cap shell casting for P21 - 2nos.											
PC1180	Pile cap shell casting for P22 - 2nos.	16	16	0%	01/02/15	17/02/15	13/12/14	30/12/14	Pile cap shell casting for P22 - 2nos.											
PC1190	Pile cap shell casting for P23 - 2nos.	16	16	0%	15/01/15	31/01/15	27/11/14	12/12/14	Pile cap shell casting for P23 - 2nos.											
PC1200	Pile cap shell casting for P24 - 2nos.	16	16	0%	15/01/15	31/01/15	27/11/14	12/12/14	Pile cap shell casting for P24 - 2nos.											
PC1210	Pile cap shell casting for P25 - 2nos.	16	16	0%	29/12/14	14/01/15	10/11/14	26/11/14	Pile cap shell casting for P25 - 2nos.											
PC1220	Pile cap shell casting for P26 - 2nos.	16	16	0%	29/12/14	14/01/15	10/11/14	26/11/14	Pile cap shell casting for P26 - 2nos.											
PC1270	Pile cap shell casting for P31 - 2nos.	16	0	100%	24/11/14 A	08/12/14 A	12/09/14	29/09/14	Pile cap shell casting for P31 - 2nos.											
Type CP2 & CP3																				
PC1490	Pile cap shell casting for P53 - 2nos.	18	0	100%	23/11/14 A	19/12/14 A	22/08/14	09/09/14	Pile cap shell casting for P53 - 2nos.											
PC1500	Pile cap shell casting for P54 - 2nos.	18	18	0%	29/12/14	16/01/15	30/09/14	25/10/14	Pile cap shell casting for P54 - 2nos.											
PC1510	Pile cap shell casting for P55 - 2nos.	18	18	0%	05/02/15	02/03/15	14/11/14	02/12/14	Pile cap shell casting for P55 - 2nos.											
PC1520	Pile cap shell casting for P56 - 2nos.	18	18	0%	23/03/15	09/04/15	22/12/14	09/01/15	Pile cap shell casting for P56 - 2nos.											
PC1530	Pile cap shell casting for P57 - 2nos.	18	18	0%	03/03/15	21/03/15	03/12/14	21/12/14	Pile cap shell casting for P57 - 2nos.											
PC1540	Pile cap shell casting for P58 - 2nos.	18	18	0%	17/01/15	04/02/15	26/10/14	13/11/14	Pile cap shell casting for P58 - 2nos.											
Type CP4, CP6, F1 & F2																				
PC1680	Pile cap shell casting for P79 - 2nos.	45	14	70%	15/11/14 A	12/01/15	30/08/14	24/10/14	Pile cap shell casting for P79 - 2nos.											
PC1690	Pile cap shell casting for P80 - 2nos.	45	45	0%	12/01/15	07/03/15	24/10/14	10/12/14	Pile cap shell casting for P80 - 2nos.											
PC1730	Pile cap shell casting for P20 dolphin - 2nos.	45	45	0%	07/03/15	24/04/15	28/01/15	24/03/15	Pile cap shell casting for P20 dolphin - 2nos.											
Column Casting																				
PC1750	Precast Column & Columnhead P2	12	12	0%	10/03/15	23/03/15	20/03/15	01/04/15	Precast Column & Columnhead P2											

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									December				January				February				March			
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16
SC5738	Segment Casting for P53 field segment	38	38	0%	01/02/15	20/03/15	06/11/14	16/12/14	[Gantt bar: 01/02/15 to 20/03/15]															
SC5748	Segment Casting for P54 SOP	10	3	75%	03/11/14 A	03/02/15	27/10/14	05/11/14	[Gantt bar: 03/11/14 to 03/02/15]															
SC5758	Segment Casting for P54 field segment	36	32	11%	15/12/14 A	04/04/15	07/11/14	15/12/14	[Gantt bar: 15/12/14 to 04/04/15]															
SC5768	Segment Casting for P55 SOP	10	5	50%	24/10/14 A	09/02/15	06/11/14	16/11/14	[Gantt bar: 24/10/14 to 09/02/15]															
SC5778	Segment Casting for P55 field segment	36	36	0%	15/03/15	22/04/15	26/11/14	02/01/15	[Gantt bar: 15/03/15 to 22/04/15]															
SC5848	Segment Casting for P59 SOP	10	5	50%	19/11/14 A	27/01/15	29/09/14	15/10/14	[Gantt bar: 19/11/14 to 27/01/15]															
SC5858	Segment Casting for P59 field segment	38	38	0%	27/01/15	15/03/15	16/10/14	25/11/14	[Gantt bar: 27/01/15 to 15/03/15]															
SC5918	Segment Casting for P62 field segment	20	12	40%	11/12/14 A	09/01/15	29/08/14	18/09/14	[Gantt bar: 11/12/14 to 09/01/15]															
SC5938	Segment Casting for P63 field segment	30	0	100%	24/07/14 A	19/12/14 A	20/08/14	20/09/14	[Gantt bar: 24/07/14 to 19/12/14]															
SC5958	Segment Casting for P64 field segment	40	19	53%	20/10/14 A	17/01/15	14/08/14	24/09/14	[Gantt bar: 20/10/14 to 17/01/15]															
SC6008	Segment Casting for P67 SOP	5	5	0%	31/12/14	05/01/15	07/09/14	11/09/14	[Gantt bar: 31/12/14 to 05/01/15]															
Type C Segment (Long Span End Span)																								
SC6216	Segment Casting for P21 SOP	5	5	0%	17/03/15	23/03/15	09/01/15	14/01/15	[Gantt bar: 17/03/15 to 23/03/15]															
SC6218	Segment Casting for P21 field segment	18	18	0%	23/03/15	10/04/15	15/01/15	02/02/15	[Gantt bar: 23/03/15 to 10/04/15]															
SC6226	Segment Casting for P67 SOP	5	5	0%	05/01/15	10/01/15	12/09/14	17/09/14	[Gantt bar: 05/01/15 to 10/01/15]															
SC6236	Segment Casting for P70 SOP	10	10	0%	10/01/15	21/01/15	18/09/14	27/09/14	[Gantt bar: 10/01/15 to 21/01/15]															
SC6238	Segment Casting for P70 field segment	24	24	0%	21/01/15	16/02/15	29/09/14	30/10/14	[Gantt bar: 21/01/15 to 16/02/15]															
SC6246	Segment Casting for P74 SOP	10	10	0%	17/02/15	06/03/15	19/12/14	29/12/14	[Gantt bar: 17/02/15 to 06/03/15]															
SC6256	Segment Casting for P78 SOP	10	10	0%	06/03/15	17/03/15	30/12/14	08/01/15	[Gantt bar: 06/03/15 to 17/03/15]															
Type D Segment (P49 to P63)																								
SC6048	Segment Casting for P50 field segment	60	32	47%	14/07/14 A	31/01/15	29/06/14	01/09/14	[Gantt bar: 14/07/14 to 31/01/15]															
SC6058	Segment Casting for P51 field segment	60	45	25%	06/09/14 A	27/03/15	01/09/14	11/11/14	[Gantt bar: 06/09/14 to 27/03/15]															
SC6088	Segment Casting for P61 field segment	60	60	0%	27/03/15	06/06/15	11/11/14	14/01/15	[Gantt bar: 27/03/15 to 06/06/15]															
Type DT Segment																								
SC6038	Segment Casting for P49 field segment (DT)	55	0	100%	19/07/14 A	21/12/14 A	19/06/14	16/08/14	[Gantt bar: 19/07/14 to 21/12/14]															
SC6049	Segment Casting for P50 field segment (DT)	55	28	50%	14/07/14 A	27/01/15	22/10/14	18/12/14	[Gantt bar: 14/07/14 to 27/01/15]															
SC6099	Segment Casting for P62 field segment (DT)	55	36	35%	19/10/14 A	13/03/15	19/12/14	15/02/15	[Gantt bar: 19/10/14 to 13/03/15]															
SC6108	Segment Casting for P63 field segment (DT)	55	0	100%	28/07/14 A	28/11/14 A	17/08/14	21/10/14	[Gantt bar: 28/07/14 to 28/11/14]															
Type E Segment (Total 5 set Moulds)																								
Land Viaduct (P85 to Easternmost Abutment)																								
SC6408	Segment Casting for P96 field segment	36	36	0%	23/03/15	30/04/15	22/12/14	29/01/15	[Gantt bar: 23/03/15 to 30/04/15]															
SC6418	Segment Casting for P97 field segment	36	36	0%	01/03/15	08/04/15	09/12/14	17/01/15	[Gantt bar: 01/03/15 to 08/04/15]															

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									December				January				February				March			
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16
SC6438	Segment Casting for P99 field segment	12	12	0%	10/02/15	01/03/15	27/11/14	09/12/14	Segment Casting for P99															
SC6448	Segment Casting for P100 field segment	72	72	0%	14/03/15	05/06/15	29/11/14	13/02/15	Segment Casting for P100															
SC6458	Segment Casting for P101 field segment	36	36	0%	05/02/15	23/03/15	14/11/14	21/12/14	Segment Casting for P101															
SC6468	Segment Casting for P102 field segment	36	36	0%	16/02/15	01/04/15	10/11/14	17/12/14	Segment Casting for P102															
SC6478	Segment Casting for P103 field segment	36	36	0%	02/01/15	10/02/15	20/10/14	27/11/14	Segment Casting for P103 field segment															
SC6488	Segment Casting for P104 field segment	18	18	0%	28/01/15	15/02/15	22/10/14	08/11/14	Segment Casting for P104 field segment															
SC6498	Segment Casting for P105 field segment	32	32	0%	02/01/15	05/02/15	11/10/14	13/11/14	Segment Casting for P105 field segment															
SC6508	Segment Casting for P106 field segment	64	64	0%	29/12/14*	13/03/15	15/09/14	28/11/14	Segment Casting for P106															
SC6518	Segment Casting for P107 field segment	28	28	0%	29/12/14*	27/01/15	15/09/14	21/10/14	Segment Casting for P107 field segment															
SC6528	Segment Casting for P108 field segment	32	5	85%	30/11/14 A	02/01/15	31/08/14	10/10/14	Segment Casting for P108 field segment															
SC6588	Segment Casting for P114 field segment	57	5	92%	20/10/14 A	02/01/15	13/08/14	20/10/14	Segment Casting for P114 field segment															
Type B Segment (Total 1 set Mould)																								
Turnaround																								
SC6128	Segment Casting for P53 field segment	69	69	0%	29/12/14	18/03/15	12/08/14	30/10/14	Segment Casting for P53															
SC6138	Segment Casting for P54 field segment	65	65	0%	19/03/15	03/06/15	31/10/14	07/01/15	Segment Casting for P54															
SC6148	Segment Casting for P55 field segment	65	33	50%	07/07/14 A	09/07/15	08/01/15	25/03/15	Segment Casting for P55															
SC6188	Segment Casting for P59 field segment	76	65	15%	02/12/14 A	16/09/15	26/03/15	21/06/15	Segment Casting for P59															
Type CH Segment (Total 12 set Moulds)																								
ML03 (P16 TO P21)																								
SC1098	Segment Casting for P20R CH14 to CH19 (MCH5) Learning	24	0	100%	13/11/14 A	02/12/14 A	23/07/14	17/08/14	Segment Casting for P20R CH14 to CH19 (MCH5) Learning															
SC1318	Segment Casting for P19L CH14' to CH19' (MCH5)	12	4	67%	06/12/14 A	01/01/15	25/09/14	14/10/14	Segment Casting for P19L CH14' to CH19' (MCH5)															
SC1408	Segment Casting for P18R CH14' to CH19' (MCH5)	12	0	100%	01/12/14 A	21/12/14 A	17/09/14	29/09/14	Segment Casting for P18R CH14' to CH19' (MCH5)															
SC1448	Segment Casting for P18R CH9 to CH13 (MCH4)	13	0	100%	11/11/14 A	30/11/14 A	15/09/14	27/09/14	Segment Casting for P18R CH9 to CH13 (MCH4)															
SC1458	Segment Casting for P18R CH14 to CH19 (MCH5)	12	12	0%	01/01/15	14/01/15	15/10/14	27/10/14	Segment Casting for P18R CH14 to CH19 (MCH5)															
SC1468	Segment Casting for P18L CH1' to CH4' (MCH2)	16	4	75%	03/12/14 A	01/01/15	05/08/14	21/08/14	Segment Casting for P18L CH1' to CH4' (MCH2)															
SC1478	Segment Casting for P18L CH5' to CH8' (MCH3)	12	12	0%	02/01/15	14/01/15	29/08/14	09/09/14	Segment Casting for P18L CH5' to CH8' (MCH3)															
SC1488	Segment Casting for P18L CH9' to CH13' (MCH4)	13	13	0%	15/01/15	28/01/15	29/09/14	18/10/14	Segment Casting for P18L CH9' to CH13' (MCH4)															
SC1498	Segment Casting for P18L CH14' to CH19' (MCH5)	12	12	0%	29/01/15	10/02/15	28/10/14	08/11/14	Segment Casting for P18L CH14' to CH19' (MCH5)															
SC1528	Segment Casting for P17L CH5 to CH8 (MCH3)	12	0	100%	18/11/14 A	29/11/14 A	26/01/16	06/02/16	Segment Casting for P17L CH5 to CH8 (MCH3)															
SC1538	Segment Casting for P17L CH9 to CH13 (MCH4)	13	5	60%	04/12/15 A	11/04/16	14/02/16	27/02/16	Segment Casting for P17L CH9 to CH13 (MCH4)															
SC1628	Segment Casting for P17R CH9 to CH13 (MCH4)	13	10	20%	26/11/14 A	16/04/16	14/02/16	27/02/16	Segment Casting for P17R CH9 to CH13 (MCH4)															
SC1668	Segment Casting for P17L CH9' to CH13' (MCH4)	13	0	100%	03/11/14 A	20/12/14 A	02/03/16	15/03/16	Segment Casting for P17L CH9' to CH13' (MCH4)															

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014												2015																
									December				January				February				March				April				May								
									01	08	15	22	29	05	12	19	26	02	09	16	23	30	06	13	20	27	03	10	17	24	31	07	14				
ML10 (P67 TO P70)																																					
SC2338	Segment Casting for P69L SOP (MSOP)	24	24	0%	17/03/15	11/04/15	13/01/15	06/02/15	[Gantt bar: Dec 17-22, Jan 13-19, Feb 06-12]																												
SC2348	Segment Casting for P69L CH1 to CH6 (MCH1)	24	24	0%	22/01/15	17/02/15	03/11/14	28/11/14	[Gantt bar: Jan 22-29, Feb 03-10, Nov 28-Dec 05]																												
SC2358	Segment Casting for P69L CH7 to CH10 (MCH2)	16	16	0%	10/03/15	26/03/15	07/12/14	23/12/14	[Gantt bar: Dec 10-17, Jan 07-14, Dec 23-30]																												
SC2368	Segment Casting for P69L CH11 to CH14 (MCH3)	12	12	0%	27/03/15	07/04/15	24/12/14	05/01/15	[Gantt bar: Dec 27-Jan 04, Dec 24-Jan 01]																												
SC2398	Segment Casting for P69R CH1' to CH6' (MCH1)	24	24	0%	17/02/15	21/03/15	29/11/14	23/12/14	[Gantt bar: Dec 17-24, Jan 21-28, Nov 29-Dec 06]																												
SC2408	Segment Casting for P69R CH7' to CH10' (MCH2)	16	16	0%	27/03/15	11/04/15	24/12/14	09/01/15	[Gantt bar: Dec 27-Jan 04, Dec 24-Jan 01, Jan 09-16]																												
SC2448	Segment Casting for P69R SOP (MSOP)	24	24	0%	27/02/15	25/03/15	13/01/15	06/02/15	[Gantt bar: Dec 27-Jan 04, Jan 13-20, Feb 06-13]																												
SC2458	Segment Casting for P69R CH1 to CH6 (MCH1)	24	24	0%	23/01/15	17/02/15	03/11/14	28/11/14	[Gantt bar: Jan 23-30, Feb 03-10, Nov 28-Dec 05]																												
SC2508	Segment Casting for P69L CH1' to CH6' (MCH1)	24	24	0%	25/02/15	21/03/15	29/11/14	23/12/14	[Gantt bar: Dec 25-Jan 02, Dec 29-Jan 06, Nov 29-Dec 06]																												
SC2568	Segment Casting for P68L CH1 to CH6 (MCH1)	24	24	0%	21/03/15	16/04/15	24/12/14	18/01/15	[Gantt bar: Dec 21-Jan 08, Dec 24-Jan 01, Jan 18-25]																												
SC2668	Segment Casting for P68R SOP (MSOP)	24	24	0%	25/03/15	19/04/15	07/02/15	11/03/15	[Gantt bar: Dec 25-Jan 02, Feb 07-14, Mar 03-10]																												
SC2678	Segment Casting for P68R CH1 to CH6 (MCH1)	24	24	0%	23/03/15	16/04/15	24/12/14	18/01/15	[Gantt bar: Dec 23-Jan 09, Dec 24-Jan 01, Jan 18-25]																												
ML11 (P70 TO P74)																																					
SC1688	Segment Casting for P71L SOP (MSOP)	28	28	0%	29/12/14	27/01/15	24/10/14	21/11/14	[Gantt bar: Dec 29-Jan 06, Oct 24-Nov 01]																												
SC1708	Segment Casting for P71L CH8 to CH11 (MCH3)	12	0	100%	02/12/14 A	15/12/14 A	29/08/14	09/09/14	[Gantt bar: Dec 02-09, Aug 29-Sep 06]																												
SC1718	Segment Casting for P71L CH12 to CH16 (MCH4)	13	10	20%	20/12/14 A	08/01/15	17/09/14	30/09/14	[Gantt bar: Dec 20-Jan 07, Sep 17-24, Sep 30-Oct 07]																												
SC1728	Segment Casting for P71L CH17 to CH22 (MCH5)	12	12	0%	08/01/15	21/01/15	08/10/14	20/10/14	[Gantt bar: Jan 08-15, Oct 08-15, Oct 20-27]																												
SC1738	Segment Casting for P71R CH1' to CH3' (MCH1) Learning	24	0	100%	01/12/14 A	12/12/14 A	12/08/14	05/09/14	[Gantt bar: Dec 01-08, Dec 12-19, Aug 12-19, Sep 05-12]																												
SC1748	Segment Casting for P71R CH4' to CH7' (MCH2)	16	12	25%	18/12/14 A	09/01/15	06/09/14	22/09/14	[Gantt bar: Dec 18-Jan 05, Sep 06-13, Sep 22-29]																												
SC1758	Segment Casting for P71R CH8' to CH11' (MCH3)	12	12	0%	10/01/15	22/01/15	23/09/14	12/10/14	[Gantt bar: Jan 10-17, Jan 22-29, Sep 23-Oct 01]																												
SC1768	Segment Casting for P71R CH12' to CH16' (MCH4)	13	13	0%	23/01/15	05/02/15	13/10/14	26/10/14	[Gantt bar: Jan 23-Feb 09, Oct 13-20, Oct 26-Nov 02]																												
SC1778	Segment Casting for P71R CH17' to CH22' (MCH5)	12	12	0%	06/02/15	25/02/15	27/10/14	07/11/14	[Gantt bar: Feb 06-13, Feb 25-Mar 05, Oct 27-Nov 04]																												
SC1788	Segment Casting for P71R SOP (MSOP)	28	18	34%	13/11/14 A	17/01/15	24/10/14	21/11/14	[Gantt bar: Nov 13-Dec 20, Jan 17-24, Oct 24-Nov 01, Nov 21-Dec 28]																												
SC1808	Segment Casting for P71R CH4 to CH7 (MCH2)	16	16	0%	02/01/15	18/01/15	22/08/14	07/09/14	[Gantt bar: Jan 02-09, Jan 18-25, Aug 22-Sep 08]																												
SC1818	Segment Casting for P71R CH8 to CH11 (MCH3)	12	12	0%	19/01/15	31/01/15	10/09/14	22/09/14	[Gantt bar: Jan 19-Feb 05, Sep 10-17, Sep 22-29]																												
SC1828	Segment Casting for P71R CH12 to CH16 (MCH4)	13	13	0%	01/02/15	14/02/15	20/10/14	01/11/14	[Gantt bar: Feb 01-08, Oct 20-27, Oct 31-Nov 07]																												
SC1838	Segment Casting for P71R CH17 to CH22 (MCH5)	12	12	0%	15/02/15	05/03/15	10/11/14	21/11/14	[Gantt bar: Feb 15-Mar 05, Nov 10-17, Nov 21-28]																												
SC1858	Segment Casting for P71L CH4' to CH7' (MCH2)	16	16	0%	19/01/15	04/02/15	08/09/14	24/09/14	[Gantt bar: Jan 19-Feb 05, Sep 08-15, Sep 24-Oct 01]																												
SC1868	Segment Casting for P71L CH8' to CH11' (MCH3)	12	12	0%	05/02/15	17/02/15	25/09/14	14/10/14	[Gantt bar: Feb 05-12, Feb 17-24, Sep 25-Oct 02, Oct 14-21]																												
SC1878	Segment Casting for P71L CH12' to CH16' (MCH4)	13	13	0%	25/02/15	10/03/15	02/11/14	15/11/14	[Gantt bar: Feb 25-Mar 05, Mar 10-17, Nov 02-09, Nov 15-22]																												
SC1888	Segment Casting for P71L CH17' to CH22' (MCH5)	12	12	0%	11/03/15	23/03/15	22/11/14	04/12/14	[Gantt bar: Mar 11-18, Mar 23-30, Nov 22-Dec 06, Dec 04-11]																												

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014												2015											
									December				January				February				March				April				May			
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23	30	06	13	20	27	03	10
SC1898	Segment Casting for P72L SOP (MSOP)	24	24	0%	28/01/15	28/02/15	22/11/14	17/12/14	Segment Casting for P72L SOP (MSOP)																							
SC1928	Segment Casting for P72L CH8 to CH11 (MCH3)	12	12	0%	23/01/15	04/02/15	17/10/14	29/10/14	Segment Casting for P72L CH8 to CH11 (MCH3)																							
SC1938	Segment Casting for P72L CH12 to CH16 (MCH4)	13	13	0%	06/02/15	26/02/15	30/10/14	12/11/14	Segment Casting for P72L CH12 to CH16 (MCH4)																							
SC1948	Segment Casting for P72L CH17 to CH22 (MCH5)	12	12	0%	27/02/15	11/03/15	13/11/14	25/11/14	Segment Casting for P72L CH17 to CH22 (MCH5)																							
SC1958	Segment Casting for P72R CH1' to CH3' (MCH1)	12	4	67%	12/12/14 A	01/01/15	19/09/14	08/10/14	Segment Casting for P72R CH1' to CH3' (MCH1)																							
SC1968	Segment Casting for P72R CH4' to CH7' (MCH2)	16	16	0%	10/01/15	27/01/15	17/10/14	02/11/14	Segment Casting for P72R CH4' to CH7' (MCH2)																							
SC1978	Segment Casting for P72R CH8' to CH11' (MCH3)	12	12	0%	05/02/15	17/02/15	03/11/14	15/11/14	Segment Casting for P72R CH8' to CH11' (MCH3)																							
SC1988	Segment Casting for P72R CH12' to CH16' (MCH4)	13	13	0%	27/02/15	12/03/15	16/11/14	29/11/14	Segment Casting for P72R CH12' to CH16' (MCH4)																							
SC1998	Segment Casting for P72R CH17' to CH22' (MCH5)	12	12	0%	13/03/15	25/03/15	30/11/14	11/12/14	Segment Casting for P72R CH17' to CH22' (MCH5)																							
SC2008	Segment Casting for P72R SOP (MSOP)	24	24	0%	17/01/15	12/02/15	22/11/14	17/12/14	Segment Casting for P72R SOP (MSOP)																							
SC2028	Segment Casting for P72R CH4 to CH7 (MCH2)	16	0	100%	29/11/14 A	14/12/14 A	25/09/14	18/10/14	Segment Casting for P72R CH4 to CH7 (MCH2)																							
SC2038	Segment Casting for P72R CH8 to CH11 (MCH3)	12	12	0%	25/02/15	09/03/15	20/10/14	31/10/14	Segment Casting for P72R CH8 to CH11 (MCH3)																							
SC2048	Segment Casting for P72R CH12 to CH16 (MCH4)	13	13	0%	11/03/15	24/03/15	16/11/14	29/11/14	Segment Casting for P72R CH12 to CH16 (MCH4)																							
SC2058	Segment Casting for P72R CH17 to CH22 (MCH5)	12	12	0%	25/03/15	05/04/15	05/12/14	17/12/14	Segment Casting for P72R CH17 to CH22 (MCH5)																							
SC2068	Segment Casting for P72L CH1' to CH3' (MCH1)	12	0	100%	21/11/14 A	03/12/14 A	19/09/14	08/10/14	Segment Casting for P72L CH1' to CH3' (MCH1)																							
SC2078	Segment Casting for P72L CH4' to CH7' (MCH2)	16	16	0%	05/02/15	28/02/15	20/10/14	04/11/14	Segment Casting for P72L CH4' to CH7' (MCH2)																							
SC2088	Segment Casting for P72L CH8' to CH11' (MCH3)	12	12	0%	10/03/15	21/03/15	05/11/14	17/11/14	Segment Casting for P72L CH8' to CH11' (MCH3)																							
SC2098	Segment Casting for P72L CH12' to CH16' (MCH4)	13	13	0%	25/03/15	06/04/15	30/11/14	12/12/14	Segment Casting for P72L CH12' to CH16' (MCH4)																							
SC2118	Segment Casting for P73L SOP (MSOP)	24	16	34%	13/12/14 A	17/03/15	18/12/14	12/01/15	Segment Casting for P73L SOP (MSOP)																							
SC2128	Segment Casting for P73L CH1 to CH3 (MCH1)	12	8	33.99%	18/12/14 A	09/01/15	09/10/14	21/10/14	Segment Casting for P73L CH1 to CH3 (MCH1)																							
SC2138	Segment Casting for P73L CH4 to CH7 (MCH2)	16	16	0%	28/01/15	13/02/15	03/11/14	19/11/14	Segment Casting for P73L CH4 to CH7 (MCH2)																							
SC2148	Segment Casting for P73L CH8 to CH11 (MCH3)	12	12	0%	25/02/15	09/03/15	20/11/14	02/12/14	Segment Casting for P73L CH8 to CH11 (MCH3)																							
SC2158	Segment Casting for P73L CH12 to CH16 (MCH4)	13	13	0%	13/03/15	26/03/15	03/12/14	16/12/14	Segment Casting for P73L CH12 to CH16 (MCH4)																							
SC2168	Segment Casting for P73L CH17 to CH22 (MCH5)	12	12	0%	27/03/15	07/04/15	17/12/14	29/12/14	Segment Casting for P73L CH17 to CH22 (MCH5)																							
SC2178	Segment Casting for P73R CH1' to CH3' (MCH1)	12	12	0%	09/01/15	22/01/15	22/10/14	02/11/14	Segment Casting for P73R CH1' to CH3' (MCH1)																							
SC2188	Segment Casting for P73R CH4' to CH7' (MCH2)	16	16	0%	14/02/15	09/03/15	20/11/14	06/12/14	Segment Casting for P73R CH4' to CH7' (MCH2)																							
SC2198	Segment Casting for P73R CH8' to CH11' (MCH3)	12	12	0%	10/03/15	21/03/15	07/12/14	19/12/14	Segment Casting for P73R CH8' to CH11' (MCH3)																							
SC2208	Segment Casting for P73R CH12' to CH16' (MCH4)	13	13	0%	27/03/15	08/04/15	20/12/14	02/01/15	Segment Casting for P73R CH12' to CH16' (MCH4)																							
SC2228	Segment Casting for P73R SOP (MSOP)	24	8	67%	25/11/14 A	27/02/15	18/12/14	12/01/15	Segment Casting for P73R SOP (MSOP)																							
SC2238	Segment Casting for P73R CH1 to CH3 (MCH1)	12	12	0%	29/12/14	09/01/15	09/10/14	21/10/14	Segment Casting for P73R CH1 to CH3 (MCH1)																							
SC2248	Segment Casting for P73R CH4 to CH7 (MCH2)	16	16	0%	01/03/15	17/03/15	05/11/14	21/11/14	Segment Casting for P73R CH4 to CH7 (MCH2)																							
SC2258	Segment Casting for P73R CH8 to CH11 (MCH3)	12	12	0%	23/03/15	03/04/15	22/11/14	04/12/14	Segment Casting for P73R CH8 to CH11 (MCH3)																							

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014				2015												
									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
Foundation - Bored Pile																									
WW1510	Construct bored piles P6 - 6 nos.	35	35	0%	13/01/15	25/02/15	25/10/14	04/12/14	Construct bored piles P6 - 6 nos.																
WW1520	Pile testing P6	28	28	0%	26/02/15	25/03/15	05/12/14	01/01/15	Pile testing P6																
Pier P7L/R																									
Foundation - Bored Pile																									
WW1590	Construct bored piles P7 - 6 nos. (Friction Pile)	50	0	100%	24/10/14 A	17/12/14 A	13/12/14	12/02/15	Construct bored piles P7 - 6 nos. (Friction Pile)																
WW1600	Pile testing P7	28	21	25%	19/12/14 A	17/01/15	13/02/15	19/03/15	Pile testing P7																
ML02L/R 75mx8 - Stage 4 of Works																									
Pier P8L/R (M.J.)																									
Foundation - Bored Pile																									
WW1670	Construct bored piles P8 - 6 nos.	34	32	5%	29/11/14 A	14/03/15	31/10/14	09/12/14	Construct bored piles P8 - 6 nos.																
WW1680	Pile testing P8	28	28	0%	14/03/15	11/04/15	10/12/14	06/01/15	Pile testing P8																
Pier P9L/R																									
Foundation - Bored Pile																									
WW1760	Pile testing P9	28	28	0%	26/02/15	25/03/15	21/01/15	17/02/15	Pile testing P9																
Pier P10L/R																									
Foundation - Bored Pile																									
WW1830	Construct bored piles P10 - 6 nos.	37	5	86.49%	27/10/14 A	03/01/15	19/11/14	03/01/15	Construct bored piles P10 - 6 nos.																
WW1840	Pile testing P10	28	28	0%	04/01/15	31/01/15	04/01/15	31/01/15	Pile testing P10																
Pier P11L/R																									
Foundation - Bored Pile																									
WW1920	Pile testing P11	28	28	0%	28/12/14	24/01/15	26/07/14	22/08/14	Pile testing P11																
Pier P12L/R																									
Foundation - Bored Pile																									
WW2000	Pile testing P12	28	7	75%	06/11/14 A	03/01/15	19/11/14	16/12/14	Pile testing P12																
Pier P13L/R																									
Foundation - Bored Pile																									
WW2080	Pile testing P13	28	28	0%	28/12/14	24/01/15	21/08/14	17/09/14	Pile testing P13																
Pier P14L/R																									
Pile Cap Construction																									
WW2170	Construct pile cap P14 - 2 nos.	30	26	15%	17/12/14 A	29/08/15	02/06/15	14/07/15	Construct pile cap P14 - 2 nos.																
Pier P15L/R																									

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
Foundation - Bored Pile																									
WW2240	Pile testing P15	28	14	50%	09/12/14 A	10/01/15	30/11/14	27/12/14	Pile testing P15																
ML03L/R 109.661m+150mx3+109.661m Navigation Channel - Stage 4 of Works																									
Pier P16L/R (M.J.)																									
Pile Cap Construction																									
NC1080	Construct pile cap P16 - 2 nos.	30	26	15%	18/12/14 A	15/04/15	16/01/15	23/02/15	Construct pile cap P16 - 2 nos.																
Pier P17L/R																									
Foundation - Bored Pile																									
NC1190	Pile testing P17 (Dolphin)	28	28	0%	28/12/14	24/01/15	19/09/14	16/10/14	Pile testing P17 (Dolphin)																
Pier P18L/R																									
Foundation - Bored Pile																									
NC1285	Construct bored piles P18 - 1 nos. (1 outstanding upstream dolphin)	10	10	0%	29/12/14	09/01/15	18/09/14	03/10/14	Construct bored piles P18 - 1 nos. (1 outstanding upstream dolphin)																
NC1302	Construct bored piles P18 - 3 nos. (Downstream Dolphin)	20	19	5%	15/12/14 A	31/01/15	06/10/14	30/10/14	Construct bored piles P18 - 3 nos. (Downstream Dolphin)																
NC1310	Pile testing P18 (Dolphin)	28	28	0%	01/02/15	07/03/15	31/10/14	27/11/14	Pile testing P18 (Dolphin)																
Pile Cap Construction																									
NC1320	Construct pile cap P18 - 2 nos.	60	0	100%	11/10/14 A	05/12/14 A	13/10/14	22/12/14	Construct pile cap P18 - 2 nos.																
Column Construction																									
NC1340	Construct column P18 - 4 nos.	92	92	0%	07/02/15	08/06/15	07/02/15	08/06/15	Construct column P18 - 4 nos.																
Pier P19L/R																									
Column Construction																									
NC1460	Construct column P19 - 4 nos.	92	54	41.3%	24/11/14 A	05/03/15	12/11/14	05/03/15	Construct column P19 - 4 nos.																
Pier P20L/R																									
Foundation - Bored Pile																									
NC1550	Pile testing P20 (Dolphin)	28	28	0%	28/12/14	24/01/15	17/10/14	13/11/14	Pile testing P20 (Dolphin)																
Column Construction																									
NC1580	Construct column P20 - 4 nos.	92	34	63.04%	23/10/14 A	06/02/15	20/10/14	06/02/15	Construct column P20 - 4 nos.																
ML04L/R 74.5mx8 - Stage 4 of Works																									
Pier P21L/R (M.J.)																									
Pile Cap Construction																									
WW5045	Construct pile cap P21 - 2 nos.	30	30	0%	16/01/15	23/02/15	21/11/14	27/12/14	Construct pile cap P21 - 2 nos.																
Column Construction																									
WW8670	Construct column P21 - 2 nos. (in-situ section)	12	12	0%	24/02/15	09/03/15	06/01/15	19/01/15	Construct column P21 - 2 nos. (in-situ section)																

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									December				January				February				March								
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23				
Pier P22/L/R																													
Foundation - Bored Pile																													
WW5040	Pile testing P22	28	7	75%	21/06/14 A	03/01/15	19/06/14	16/07/14	Pile testing P22																				
Pile Cap Construction																													
WW5050	Construct pile cap P22 - 2 nos.	30	30	0%	18/02/15	28/03/15	09/01/15	12/02/15	Construct pile cap P22 - 2 nos.																				
Pier P23/L/R																													
Foundation - Bored Pile																													
WW5120	Pile testing P23	28	0	100%	26/11/14 A	05/12/14 A	25/10/14	21/11/14	Pile testing P23																				
Pile Cap Construction																													
WW5130	Construct pile cap P23 - 2 nos.	30	30	0%	24/02/15	30/03/15	29/12/14	02/02/15	Construct pile cap P23 - 2 nos.																				
Pier P24/L/R																													
Foundation - Bored Pile																													
WW5200	Pile testing P24	28	0	100%	13/11/14 A	05/12/14 A	17/09/14	14/10/14	Pile testing P24																				
Pile Cap Construction																													
WW5210	Construct pile cap P24 - 2 nos.	30	30	0%	31/01/15	11/03/15	19/12/14	26/01/15	Construct pile cap P24 - 2 nos.																				
Pier P25/L/R																													
Pile Cap Construction																													
WW5290	Construct pile cap P25 - 2 nos.	30	30	0%	03/02/15	12/03/15	09/12/14	15/01/15	Construct pile cap P25 - 2 nos.																				
Pier P26/L/R																													
Pile Cap Construction																													
WW5370	Construct pile cap P26 - 2 nos.	30	30	0%	14/01/15	18/02/15	02/12/14	08/01/15	Construct pile cap P26 - 2 nos.																				
Pier P27/L/R																													
Pile Cap Construction																													
WW5450	Construct pile cap P27 - 2 nos.	30	9	70%	14/11/14 A	08/01/15	08/10/14	13/11/14	Construct pile cap P27 - 2 nos.																				
Pier P28/L/R																													
Pile Cap Construction																													
WW5530	Construct pile cap P28 - 2 nos.	30	0	100%	14/11/14 A	20/12/14 A	15/09/14	27/10/14	Construct pile cap P28 - 2 nos.																				
ML05L/R 74.5mx8 - Stage 4 of Works																													
Pier P29/L/R (M.J.)																													
Pile Cap Construction																													
WW5610	Construct pile cap P29 - 2 nos.	30	0	100%	29/10/14 A	12/12/14 A	14/11/14	18/12/14	Construct pile cap P29 - 2 nos.																				
Pier P30/L/R																													

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014				2015												
									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
Pile Cap Construction																									
WW5690	Construct pile cap P30 - 2 nos.	30	18	40%	03/12/14 A	19/01/15	28/10/14	01/12/14	Construct pile cap P30 - 2 nos.																
Pier P31L/R																									
Pile Cap Construction																									
WW5770	Construct pile cap P31 - 2 nos.	30	30	0%	29/12/14	02/02/15	04/11/14	08/12/14	Construct pile cap P31 - 2 nos.																
Column Construction																									
WW5780	Construct column P31 - 2 nos. (in-situ section)	12	12	0%	24/03/15	09/04/15	03/02/15	16/02/15																	
Pier P32L/R																									
Pile Cap Construction																									
WW5850	Construct pile cap P32 - 2 nos.	30	9	70%	29/11/14 A	08/01/15	16/10/14	20/11/14	Construct pile cap P32 - 2 nos.																
Column Construction																									
WW5860	Construct column P32 - 2 nos. (in-situ section)	12	12	0%	10/03/15	23/03/15	20/01/15	02/02/15																	
Pier P33L/R																									
Column Construction																									
WW5940	Construct column P33 - 2 nos. (in-situ section)	12	0	100%	10/12/14 A	21/12/14 A	19/12/14	05/01/15	Construct column P33 - 2 nos. (in-situ section)																
Pier P34L/R																									
Column Construction																									
WW6020	Construct column P34 - 2 nos. (in-situ section)	12	0	100%	29/11/14 A	07/12/14 A	05/12/14	18/12/14	Construct column P34 - 2 nos. (in-situ section)																
Pier P36L/R																									
Column Construction																									
WW9540	Install base precast column segment at P36	1	1	0%	25/03/15	25/03/15	22/12/14	23/12/14																	
WW9542	Align & cast stitch for base column segment at P36	4	4	0%	26/03/15	30/03/15	23/12/14	30/12/14																	
ML06L/R 74.5mx8 - Stage 4 of Works																									
Pier P37L/R (M.J.)																									
Column Construction																									
WW9560	Install base precast column segment at P37	1	0	100%	23/12/14 A	23/12/14 A	19/12/14	22/12/14	Install base precast column segment at P37																
WW9562	Align & cast stitch for base column segment at P37	4	4	0%	25/03/15	28/03/15	22/12/14	29/12/14																	
Pier 38L/R																									
Column Construction																									
WW9580	Install base precast column segment at P38	1	0	100%	10/12/14 A	10/12/14 A	18/12/14	19/12/14	Install base precast column segment at P38																
WW9582	Align & cast stitch for base column segment at P38	4	4	0%	25/03/15	28/03/15	19/12/14	24/12/14																	
Pier 39L/R																									

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
Column Construction																									
WW9600	Install base precast column segment at P39	1	0	100%	28/11/14 A	28/11/14 A	10/11/14	11/11/14	Install base precast column segment at P39																
WW9602	Align & cast stitch for base column segment at P39	4	0	100%	11/12/14 A	16/12/14 A	11/11/14	15/11/14	Align & cast stitch for base column segment at P39																
WW9604	Install remain precast column & column head segment at P39	3	0	100%	17/12/14 A	20/12/14 A	09/12/14	12/12/14	Install remain precast column & column head segment at P39																
WW9610	Prestress works & infill concrete at P39	12	12	0%	19/03/15	01/04/15	12/12/14	29/12/14																	
Pier 40L/R																									
Column Construction																									
WW9624	Install remain precast column & column head segment at P40	3	0	100%	03/12/14 A	11/12/14 A	04/12/14	09/12/14	Install remain precast column & column head segment at P40																
WW9630	Prestress works & infill concrete at P40	12	12	0%	19/03/15	01/04/15	09/12/14	23/12/14																	
Pier 41L/R																									
Column Construction																									
WW9650	Prestress works & infill concrete at P41	12	12	0%	19/03/15	01/04/15	04/12/14	18/12/14																	
Pier 42L/R																									
Column Construction																									
WW9660	Install base precast column segment at P42 (Learning)	2	2	0%	09/01/15	12/01/15	17/09/14	19/09/14	Install base precast column segment at P42 (Learning)																
WW9662	Align & cast stitch for base column segment at P42	4	4	0%	13/01/15	16/01/15	19/09/14	25/09/14	Align & cast stitch for base column segment at P42																
WW9664	Install remain precast column & column head segment at P42 (Learning)	5	5	0%	19/01/15	23/01/15	29/09/14	03/10/14	Install remain precast column & column head segment at P42 (Learning)																
WW9670	Prestress works & infill concrete at P42	12	12	0%	24/01/15	06/02/15	06/10/14	21/10/14	Prestress works & infill concrete at P42																
Pier Segment Construction																									
WW6668	Prepare works for precast SOP P42 - 4 nos.	2	2	0%	07/03/15	09/03/15	14/11/14	17/11/14	Prepare works for precast SOP P42 - 4 nos.																
WW6670	Install precast SOP P42 - 4 nos.	3	3	0%	10/03/15	12/03/15	17/11/14	20/11/14	Install precast SOP P42 - 4 nos.																
WW6672	Insitu works for SOP P42 - 4 nos.	9	9	0%	13/03/15	23/03/15	20/11/14	01/12/14	Insitu works for SOP P42 - 4 nos.																
Pier 43L/R																									
Column Construction																									
WW9690	Prestress works & infill concrete at P43	12	12	0%	05/01/15	17/01/15	11/09/14	29/09/14	Prestress works & infill concrete at P43																
Pier Segment Construction																									
WW6748	Prepare works for precast SOP P43 - 4 nos.	2	2	0%	16/02/15	17/02/15	31/10/14	03/11/14	Prepare works for precast SOP P43 - 4 nos.																
WW6750	Install precast SOP P43 - 4 nos.	3	3	0%	18/02/15	03/03/15	03/11/14	06/11/14	Install precast SOP P43 - 4 nos.																
WW6752	Insitu works for SOP P43 - 4 nos.	9	9	0%	04/03/15	13/03/15	06/11/14	17/11/14	Insitu works for SOP P43 - 4 nos.																
Pier 44L/R																									
Column Construction																									
WW9710	Prestress works & infill concrete at P44	12	12	0%	05/01/15	17/01/15	04/09/14	23/09/14	Prestress works & infill concrete at P44																

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
WW8692	In situ works for SOP P49 - 4 nos.	9	9	0%	18/02/15	03/03/15	03/11/14	13/11/14	In situ works for SOP P49 - 4 nos.																
Pier P50L/R																									
Column Construction																									
WW10087	Construct column P50 - 2 nos. (insitu)	24	0	100%	29/11/14 A	06/12/14 A	26/09/14	30/10/14	Construct column P50 - 2 nos. (insitu)																
WW10097	Construct column head P50 - 2 nos. (insitu)	21	21	0%	29/12/14	22/01/15	31/10/14	24/11/14	Construct column head P50 - 2 nos. (insitu)																
Pier Segment Construction																									
WW8698	Prepare works for precast SOP P50 - 4 nos.	2	2	0%	06/02/15	07/02/15	03/12/14	04/12/14	Prepare works for precast SOP P50 - 4 nos.																
WW8700	Install precast SOP P50 - 4 nos.	4	4	0%	09/02/15	12/02/15	05/12/14	10/12/14	Install precast SOP P50 - 4 nos.																
WW8702	In situ works for SOP P50 - 4 nos.	9	9	0%	13/02/15	26/02/15	11/12/14	20/12/14	In situ works for SOP P50 - 4 nos.																
Pier P51L/R																									
Column Construction																									
WW10117	Construct column head P51 - 2 nos. (insitu)	21	21	0%	29/12/14	22/01/15	21/10/14	13/11/14	Construct column head P51 - 2 nos. (insitu)																
Pier Segment Construction																									
WW8708	Prepare works for precast SOP P51 - 4 nos.	2	2	0%	31/01/15	02/02/15	22/11/14	24/11/14	Prepare works for precast SOP P51 - 4 nos.																
WW8710	Install precast SOP P51 - 4 nos.	4	4	0%	03/02/15	06/02/15	25/11/14	03/12/14	Install precast SOP P51 - 4 nos.																
WW8712	In situ works for SOP P51 - 4 nos.	9	9	0%	07/02/15	17/02/15	04/12/14	13/12/14	In situ works for SOP P51 - 4 nos.																
Pier P52L/R																									
Column Construction																									
WW9872	Bearing Installation - P52	5	5	0%	29/12/14	03/01/15	01/11/14	06/11/14	Bearing Installation - P52																
In-situ Portal/SOP Construction																									
WW7230	Construct in-situ portal P52	80	80	0%	05/01/15	14/04/15	07/11/14	11/02/15	Construct in-situ portal P52																
ML08L/R 70mx6 - Stage 4 of Works																									
Pier P53L/R (M.J.)																									
Pile Cap Construction																									
WW7500	Construct pile cap P53 - 2 nos.	45	45	0%	29/12/14	23/02/15	21/10/14	11/12/14	Construct pile cap P53 - 2 nos.																
Column Construction																									
WW10147	Construct column P53 - 2 nos. (insitu)	24	24	0%	24/02/15	23/03/15	12/12/14	12/01/15	Construct column P53 - 2 nos. (insitu)																
WW10157	Construct column head P53 - 2 nos. (insitu)	21	21	0%	24/03/15	21/04/15	13/01/15	05/02/15	Construct column head P53 - 2 nos. (insitu)																
Pier P54L/R																									
Pile Cap Construction																									
WW7580	Construct pile cap P54 - 2 nos.	45	45	0%	26/01/15	21/03/15	17/11/14	10/01/15	Construct pile cap P54 - 2 nos.																
Column Construction																									

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
WW10167	Construct column P54 - 2 nos. (insitu)	12	12	0%	23/03/15	04/04/15	12/01/15	24/01/15	[Gantt bar: Dec 29 - Jan 05]																
Pier P55/L/R																									
Foundation - Bored Pile																									
WW7650	Pile testing P55	28	0	99%	30/04/14 A	28/12/14	19/06/14	16/07/14	[Gantt bar: Dec 29 - Jan 05] Pile testing P55																
Pile Cap Construction																									
WW7660	Construct pile cap P55 - 2 nos.	45	45	0%	02/03/15	29/04/15	13/12/14	06/02/15	[Gantt bar: Dec 29 - Jan 05]																
Pier P56/L/R																									
Foundation - Bored Pile																									
WW7730	Pile testing P56	28	3	90%	12/03/14 A	30/12/14	19/06/14	16/07/14	[Gantt bar: Dec 29 - Jan 05] Pile testing P56																
Pier P57/L/R																									
Foundation - Bored Pile																									
WW7810	Pile testing P57	26	8	70%	28/02/14 A	04/01/15	19/06/14	14/07/14	[Gantt bar: Dec 29 - Jan 05] Pile testing P57																
Pile Cap Construction																									
WW7820	Construct pile cap P57 - 2 nos.	45	45	0%	21/03/15	22/05/15	03/01/15	27/02/15	[Gantt bar: Dec 29 - Jan 05]																
Pier P58/L/R																									
Pile Cap Construction																									
WW7900	Construct pile cap P58 - 2 nos.	45	45	0%	04/02/15	01/04/15	04/12/14	28/01/15	[Gantt bar: Dec 29 - Jan 05]																
ML09L/R 73.396Mx8 - Stage 4 of Works																									
Pier P59/L/R (M.J.)																									
Pile Cap Construction																									
WW7980	Construct pile cap P59 - 2 nos.	45	27	40%	02/12/14 A	29/01/15	07/11/14	31/12/14	[Gantt bar: Dec 29 - Jan 05] Construct pile cap P59 - 2 nos.																
Column Construction																									
WW10267	Construct column P59 - 2 nos. (insitu)	12	12	0%	04/03/15	18/03/15	02/01/15	15/01/15	[Gantt bar: Dec 29 - Jan 05] Construct column P59 - 2 nos. (insitu)																
WW10277	Construct column head P59 - 2 nos. (insitu)	21	21	0%	18/03/15	15/04/15	16/01/15	09/02/15	[Gantt bar: Dec 29 - Jan 05] Construct column head P59 - 2 nos. (insitu)																
Pier P60/L/R																									
Column Construction																									
WW10297	Construct column head P60 - 2 nos. (insitu)	21	0	100%	29/11/14 A	20/12/14 A	28/10/14	20/11/14	[Gantt bar: Dec 29 - Jan 05] Construct column head P60 - 2 nos. (insitu)																
WW9997	Bearing Installation - P60	5	5	0%	29/12/14	03/01/15	21/11/14	26/11/14	[Gantt bar: Dec 29 - Jan 05] Bearing Installation - P60																
In-situ Portal/SOP Construction																									
WW8070	Construct in-situ portal P60	80	80	0%	05/01/15	14/04/15	27/11/14	06/03/15	[Gantt bar: Dec 29 - Jan 05]																
Pier P61/L/R																									
Column Construction																									

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									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
WW10307	Construct column P61 - 2 nos. (insitu)	12	12	0%	21/01/15	04/02/15	31/10/14	13/11/14	Construct column P61 - 2 nos. (insitu)																
WW10317	Construct column head P61 - 2 nos. (insitu)	21	21	0%	04/02/15	04/03/15	14/11/14	08/12/14	Construct column head P61 - 2 nos. (insitu)																
Pier Segment Construction																									
WW8228	Prepare works for precast SOP P61 - 4 nos.	2	2	0%	13/03/15	14/03/15	17/12/14	18/12/14	Prepare works for precast SOP P61 - 4 nos.																
WW8230	Install precast SOP P61 - 4 nos.	4	4	0%	16/03/15	19/03/15	19/12/14	24/12/14	Install precast SOP P61 - 4 nos.																
WW8232	Insitu works for SOP P61 - 4 nos.	9	9	0%	20/03/15	30/03/15	27/12/14	07/01/15	Insitu works for SOP P61 - 4 nos.																
Pier P62L/R																									
Column Construction																									
WW10327	Construct column P62 - 2 nos. (insitu)	12	12	0%	23/01/15	05/02/15	14/11/14	27/11/14	Construct column P62 - 2 nos. (insitu)																
WW10337	Construct column head P62 - 2 nos. (insitu)	21	21	0%	06/02/15	05/03/15	28/11/14	22/12/14	Construct column head P62 - 2 nos. (insitu)																
Pier Segment Construction																									
WW8238	Prepare works for precast SOP P62 - 4 nos.	2	2	0%	25/03/15	26/03/15	03/01/15	05/01/15	Prepare works for precast SOP P62 - 4 nos.																
WW8240	Install precast SOP P62 - 4 nos.	4	4	0%	27/03/15	01/04/15	06/01/15	09/01/15	Install precast SOP P62 - 4 nos.																
Pier P63L/R																									
Pile Cap Construction																									
WW8300	Construct pile cap P63 - 2 nos.	30	0	100%	31/10/14 A	28/11/14 A	26/09/14	06/11/14	Construct pile cap P63 - 2 nos.																
Column Construction																									
WW10347	Construct column P63 - 2 nos. (insitu)	12	12	0%	29/12/14	12/01/15	07/11/14	20/11/14	Construct column P63 - 2 nos. (insitu)																
WW10357	Construct column head P63 - 2 nos. (insitu)	21	21	0%	13/01/15	05/02/15	21/11/14	15/12/14	Construct column head P63 - 2 nos. (insitu)																
Pier P64L/R																									
Column Construction																									
WW10367	Construct column P64 - 2 nos. (insitu)	12	11	10%	25/11/14 A	10/01/15	08/10/14	23/10/14	Construct column P64 - 2 nos. (insitu)																
WW10377	Construct column head P64 - 2 nos. (insitu)	21	21	0%	10/01/15	04/02/15	24/10/14	17/11/14	Construct column head P64 - 2 nos. (insitu)																
Pier Segment Construction																									
WW8398	Prepare works for precast SOP P64 - 4 nos.	2	2	0%	17/03/15	18/03/15	10/12/14	12/12/14	Prepare works for precast SOP P64 - 4 nos.																
WW8400	Install precast SOP P64 - 4 nos.	4	4	0%	19/03/15	24/03/15	12/12/14	18/12/14	Install precast SOP P64 - 4 nos.																
WW8402	Insitu works for SOP P64 - 4 nos.	9	9	0%	25/03/15	03/04/15	18/12/14	31/12/14	Insitu works for SOP P64 - 4 nos.																
Pier P65L/R																									
Column Construction																									
WW10397	Construct column head P65 - 2 nos. (insitu)	21	20	5%	19/12/14 A	21/01/15	03/10/14	30/10/14	Construct column head P65 - 2 nos. (insitu)																
Pier Segment Construction																									
WW8478	Prepare works for precast SOP P65 - 4 nos.	2	2	0%	11/03/15	12/03/15	18/11/14	20/11/14	Prepare works for precast SOP P65 - 4 nos.																

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
WW8480	Install precast SOP P65 - 4 nos.	4	4	0%	13/03/15	18/03/15	20/11/14	01/12/14	Install p...																
WW8482	Insitu works for SOP P65 - 4 nos.	9	9	0%	19/03/15	28/03/15	01/12/14	11/12/14	Insitu v...																
Pier P66L/R																									
Column Construction																									
WW10417	Construct column head P66 - 2 nos. (insitu)	21	0	100%	18/11/14 A	05/12/14 A	10/09/14	10/10/14	Construct column head P66 - 2 nos. (insitu)																
WW8555	Bearing Installation - P66	5	5	0%	12/02/15	17/02/15	25/10/14	31/10/14	Bearing Installation - P66																
Pier Segment Construction																									
WW8558	Prepare works for precast SOP P66 - 4 nos.	2	2	0%	02/03/15	03/03/15	08/11/14	11/11/14	Prepare works for precast SOP P66 - 4 nos.																
WW8560	Install precast SOP P66 - 4 nos.	4	4	0%	04/03/15	09/03/15	11/11/14	17/11/14	Install precast SOP P66 - 4 nos.																
WW8562	Insitu works for SOP P66 - 4 nos.	9	9	0%	10/03/15	19/03/15	17/11/14	27/11/14	Insitu v...																
ML10L/R 115m+180m+115m - Stage 4 of Works																									
Pier P67L/R (M.J.)																									
Pile Cap Construction																									
AC1040	Construct pile cap P67 - 2 nos.	30	9	70%	30/10/14 A	08/01/15	21/10/14	24/11/14	Construct pile cap P67 - 2 nos.																
Column Construction																									
AC1052	Construct column P67 - 2 nos. (insitu)	24	24	0%	04/02/15	07/03/15	25/11/14	22/12/14	Construct column P67 - 2 nos. (insitu)																
AC1054	Construct column head P67 - 2 nos. (insitu)	21	21	0%	07/03/15	01/04/15	23/12/14	19/01/15	Construct column head P67 - 2 nos. (insitu)																
Pier P68L/R																									
Temporary Works																									
AC1010	Install temporary jetty and rockfill for pier P68	44	0	100%	05/02/14 A	29/12/14	20/06/14	20/08/14	Install temporary jetty and rockfill for pier P68																
AC1014	Re-mobilization to construct rockfill platform at P68	18	18	0%	29/12/14	19/01/15			Re-mobilization to construct rockfill platform at P68																
AC1016	Reconstruct rockfill platform for pier P68	70	70	0%	20/01/15	18/04/15			Reconstruct rockfill platform for pier P68																
Pier P69L/R																									
Temporary Works																									
AC1135	Install cofferdem for pile cap construction - P69 - 2 nos.	75	75	0%	14/02/15	25/05/15	01/09/14	09/12/14	Install cofferdem for pile cap construction - P69 - 2 nos.																
Foundation - Bored Pile																									
AC2480	Construct bored piles P69 - 12 nos.	64	16	75%	16/04/14 A	16/01/15	11/07/14	13/10/14	Construct bored piles P69 - 12 nos.																
AC2490	Pile testing P69	28	28	0%	17/01/15	13/02/15	05/08/14	01/09/14	Pile testing P69																
ML11L/R 109m+165mx2+109m - Stage 4 of Works																									
Pier P70L/R (M.J.)																									
Temporary Works																									
AC1170	Install cofferdem for pile cap construction - P70 - 2 nos.	90	0	100%	07/06/14 A	15/12/14 A	23/06/14	29/10/14	Install cofferdem for pile cap construction - P70 - 2 nos.																

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
Pier P70 Construction																									
AC1210	Construct pile cap P70 - 2 nos.	35	13	64.29%	12/12/14 A	13/01/15	30/10/14	09/12/14	Construct pile cap P70 - 2 nos.																
Column Construction																									
AC1204	Construct column P70 - 2 nos. (insitu)	36	36	0%	23/01/15	09/03/15	10/12/14	23/01/15	Construct column																
AC1206	Construct column head P70 - 2 nos. (insitu)	21	21	0%	10/03/15	02/04/15	24/01/15	17/02/15																	
Pier P71L/R																									
Pile Cap Construction																									
AC1290	Construct pile cap P71 - 2 nos.	40	0	100%	13/09/14 A	19/12/14 A	08/08/14	07/10/14	Construct pile cap P71 - 2 nos.																
Column Construction																									
AC1300	Construct column P71 - 4 nos.	50	40	20%	30/10/14 A	13/02/15	08/10/14	06/12/14	Construct column P71 - 4 nos.																
Pier Segment Construction																									
AC1308	Prepare works for precast SOP P71 - 6 nos.	5	5	0%	14/03/15	19/03/15	19/12/14	24/12/14	Prepare																
AC1310	Install precast SOP P71 - 6 nos.	5	5	0%	20/03/15	26/03/15	25/12/14	31/12/14																	
AC1312	Insitu works for SOP P71 - 6 nos.	25	25	0%	27/03/15	30/04/15	02/01/15	30/01/15																	
Pier P72L/R																									
Temporary Works																									
AC1320	Install cofferdem for pile cap construction - P72 - 2 nos.	60	1	98.33%	12/05/14 A	29/12/14	26/05/14	15/08/14	Install cofferdem for pile cap construction - P72 - 2 nos.																
Pile Cap Construction																									
AC1380	Construct pile cap P72 - 2 nos.	45	45	0%	30/12/14	24/02/15	15/09/14	13/11/14	Construct pile cap P72 - 2 nos.																
Column Construction																									
AC1390	Construct column P72 - 4 nos.	62	62	0%	25/02/15	15/05/15	14/11/14	28/01/15																	
Pier P73L/R																									
Temporary Works																									
AC1410	Install cofferdem for pile cap construction - P73 - 2 nos.	104	0	100%	28/02/14 A	15/12/14 A	20/06/14	12/11/14	Install cofferdem for pile cap construction - P73 - 2 nos.																
Pile Cap Construction																									
AC1470	Construct pile cap P73 - 2 nos.	45	4	90.28%	13/11/14 A	03/01/15	13/11/14	07/01/15	Construct pile cap P73 - 2 nos.																
Column Construction																									
AC1480	Construct column P73 - 4 nos.	50	50	0%	03/01/15	06/03/15	08/01/15	10/03/15	Construct column																
ML12L/R 109m+165mx2+109m - Stage 4 of Works																									
Pier P74L/R (M.J.)																									
Temporary Works																									
AC1500	Install cofferdem for pile cap construction - P74 - 2 nos.	110	1	99.09%	28/01/14 A	29/12/14	20/06/14	19/11/14	Install cofferdem for pile cap construction - P74 - 2 nos.																

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									December				January				February				March				
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16	23
Pile Cap Construction																									
AC1560	Construct pile cap P74 - 2 nos.	35	35	0%	16/02/15	01/04/15	06/12/14	19/01/15	[Gantt bar: 16/02/15 to 01/04/15]																
Pier P75L/R																									
Temporary Works																									
AC1590	Install cofferdem for pile cap construction - P75 - 1 nos.	120	120	0%	29/12/14*	01/06/15	15/07/14	20/12/14	[Gantt bar: 29/12/14 to 01/06/15]																
Pier P76L/R																									
Temporary Works																									
AC1680	Install cofferdem for pile cap construction - P76 - 2 nos.	110	1	99.09%	16/08/14 A	29/12/14	17/07/14	11/12/14	[Gantt bar: 16/08/14 to 29/12/14]																
Pile Cap Construction																									
AC1740	Construct pile cap P76 - 2 nos.	45	45	0%	30/12/14	24/02/15	12/12/14	05/02/15	[Gantt bar: 30/12/14 to 24/02/15]																
Column Construction																									
AC1750	Construct column P76 - 4 nos.	50	50	0%	25/02/15	29/04/15	06/02/15	11/04/15	[Gantt bar: 25/02/15 to 29/04/15]																
Pier P77L/R																									
Temporary Works																									
AC1770	Install cofferdem for pile cap construction - P77 - 2 nos.	80	1	98.75%	18/08/14 A	29/12/14	14/07/14	04/11/14	[Gantt bar: 18/08/14 to 29/12/14]																
Pile Cap Construction																									
AC1820	Construct pile cap P77 - 2 nos.	45	45	0%	30/12/14	24/02/15	04/11/14	29/12/14	[Gantt bar: 30/12/14 to 24/02/15]																
Column Construction																									
AC1830	Construct column P77 - 4 nos.	62	62	0%	25/02/15	15/05/15	29/12/14	16/03/15	[Gantt bar: 25/02/15 to 15/05/15]																
ML13L/R 115m+180m+115m - Stage 4 of Works																									
Pier P78L/R (M.J.)																									
Temporary Works																									
AC1850	Install cofferdem for pile cap construction - P78 - 2 nos.	100	1	99%	04/08/14 A	29/12/14	20/06/14	07/11/14	[Gantt bar: 04/08/14 to 29/12/14]																
Pile Cap Construction																									
AC1910	Construct pile cap P78 - 2 nos.	35	35	0%	30/12/14	09/02/15	08/11/14	18/12/14	[Gantt bar: 30/12/14 to 09/02/15]																
Column Construction																									
AC2696	Construct column P78 - 2 nos. (insitu)	48	48	0%	10/02/15	13/04/15	19/12/14	16/02/15	[Gantt bar: 10/02/15 to 13/04/15]																
Pier P79L/R																									
Pile Cap Construction																									
AC1990	Construct pile cap P79 - 2 nos.	60	60	0%	12/01/15	26/03/15	18/11/14	29/01/15	[Gantt bar: 12/01/15 to 26/03/15]																
Column Construction																									
AC2000	Construct column P79 - 4 nos.	50	50	0%	26/03/15	03/06/15	30/01/15	01/04/15	[Gantt bar: 26/03/15 to 03/06/15]																

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014				2015											
									December				January				February				March			
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16
Segment Erection - Launching Girder																								
Launching Girder No.2 (P44 to P22)																								
DC1070	Assemble LG2 at P46 & P47	60	60	0%	12/03/15	01/06/15	20/11/14	31/01/15	[Gantt bar: 12/03/15 to 31/01/15]															
Segment Erection - Lifting Frame																								
Lifting Frame 2 (LF2)																								
DC0930	Segment erection P48	18	18	0%	12/03/15	07/04/15	20/11/14	18/12/14	[Gantt bar: 12/03/15 to 18/12/14]															
DC1075	Segment erection P47	18	18	0%	26/01/15	16/02/15	07/10/14	29/10/14	[Gantt bar: 26/01/15 to 29/10/14]															
DC1100	Segment erection P46	18	18	0%	16/02/15	12/03/15	30/10/14	19/11/14	[Gantt bar: 16/02/15 to 19/11/14]															
DC5007	Segment erection P109L by LF2	30	21	31%	26/09/14 A	26/01/15	18/08/14	06/10/14	[Gantt bar: 26/09/14 to 06/10/14]															
Viaduct between Landing Point on Airport Island and Scenic Hill																								
ML15L/R 43m+65mx6+37m - Stage 5 of Works																								
Pier P84L/R (M.J.)																								
Pile Cap Construction																								
AI1050	Construct pile cap P84 - 2 nos.	60	1	98.33%	25/11/14 A	29/12/14	22/08/14	13/11/14	[Gantt bar: 25/11/14 to 13/11/14]															
Column Construction																								
AI1060	Construct column P84 - 2 nos.	84	80	5%	16/12/14 A	16/04/15	10/03/15	02/07/15	[Gantt bar: 16/12/14 to 02/07/15]															
Pier P85L/R																								
Column Construction																								
AI1140	Construct column P85 - 2 nos.	72	72	0%	06/01/15	03/04/15	18/02/15	26/05/15	[Gantt bar: 06/01/15 to 26/05/15]															
Pier P86L/R																								
Temporary Works																								
AI3310	Remove temporary platform P86	10	10	0%	26/02/15	10/03/15	20/04/15	04/05/15	[Gantt bar: 26/02/15 to 04/05/15]															
Column Construction																								
AI1210	Construct column P86 - 2 nos.	50	48	5%	15/12/14 A	26/02/15	12/02/15	20/04/15	[Gantt bar: 15/12/14 to 20/04/15]															
In-situ Portal/T-pier Construction																								
AI1220	In-situ portal P86 - 1 nos.	60	60	0%	10/03/15	29/05/15	04/05/15	25/07/15	[Gantt bar: 10/03/15 to 25/07/15]															
Pier P87L/R																								
Temporary Works																								
AI3320	Remove temporary platform P87	10	10	0%	24/01/15	04/02/15	21/03/15	01/04/15	[Gantt bar: 24/01/15 to 01/04/15]															
Column Construction																								
AI1280	Construct column P87 - 2 nos.	44	22	50%	11/11/14 A	23/01/15	26/01/15	20/03/15	[Gantt bar: 11/11/14 to 20/03/15]															
Pier P88L/R																								

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014				2015											
									December				January				February				March			
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16
Temporary Works																								
AI330	Remove temporary platform P88	10	10	0%	06/01/15	17/01/15	10/03/15	21/03/15																
Column Construction																								
AI1350	Construct column P88 - 2 nos.	44	7	85%	03/11/14 A	06/01/15	14/01/15	10/03/15																
In-situ Portal/T-pier Construction																								
AI1360	In-situ portal P88 - 1 nos.	60	60	0%	13/03/15	01/06/15	04/04/15	27/06/15																
Pier P89/L/R																								
Temporary Works																								
AI340	Remove temporary platform P89	10	10	0%	06/01/15	17/01/15	18/02/15	05/03/15																
Column Construction																								
AI1420	Construct column P89 - 2 nos.	44	7	85%	29/10/14 A	06/01/15	27/12/14	18/02/15																
In-situ Portal/T-pier Construction																								
AI1430	In-situ portal P89 - 1 nos.	60	60	0%	16/03/15	03/06/15	26/03/15	15/06/15																
Pier P90/L/R																								
Temporary Works																								
AI350	Remove temporary platform P90	10	0	100%	08/12/14 A	15/12/14 A	27/12/14	09/01/15																
Column Construction																								
AI1490	Construct column P90 - 2 nos.	38	0	100%	15/10/14 A	02/12/14 A	11/11/14	27/12/14																
In-situ Portal/T-pier Construction																								
AI1500	In-situ portal P90 - 1 nos.	60	60	0%	21/03/15	09/06/15	11/03/15	30/05/15																
Pier P91/L/R																								
Temporary Works																								
AI360	Remove temporary platform P91	10	2	85%	29/11/14 A	30/12/14	12/02/15	27/02/15																
Column Construction																								
AI1565	Bearing Installation - P91	10	10	0%	29/12/14	09/01/15	12/02/15	27/02/15																
In-situ Portal/T-pier Construction																								
AI1570	In-situ portal P91 - 1 nos.	60	60	0%	10/01/15	24/03/15	04/04/15	27/06/15																
MI16/L/R 37m+65mx5+43m - Stage 5 of Works																								
Pier P92/L/R (M.J.)																								
Column Construction																								
AI1635	Bearing Installation - P92	10	10	0%	29/12/14	09/01/15	26/01/15	05/02/15																
In-situ Portal/T-pier Construction																								

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Activity ID	Activity Name	Original Duration	Remaining Duration	Activity % Complete	Start	Finish	DWP01d OP1 Start	DWP01d OP1 Finish	2014															
									December				January				February				March			
									01	08	15	22	29	05	12	19	26	02	09	16	23	02	09	16
AI2270	In-situ portal P101 - 1 nos.	60	0	100%	08/10/14 A	09/12/14 A	08/11/14	20/01/15	In-situ portal P101 - 1 nos.															
Pier P102L/R																								
In-situ Portal/T-pier Construction																								
AI2340	In-situ portal P102 - 1 nos.	60	0	100%	18/09/14 A	29/11/14 A	14/10/14	24/12/14	In-situ portal P102 - 1 nos.															
ML18L/R 47m+55mx5+35m - Stage 5 of Works																								
Pier P104L/R (M.J.)																								
Column Construction																								
AI2475	Bearing Installation - P104	10	10	0%	29/12/14	09/01/15	20/06/14	03/07/14	Bearing Installation - P104															
Pier P105L/R																								
Column Construction																								
AI2545	Bearing Installation - P105	10	10	0%	29/12/14	09/01/15	20/06/14	03/07/14	Bearing Installation - P105															
Land Viaduct P108 to P114																								
ML19L/C/R 40m+65mx2 Stage 5 of Works																								
Pier P111L/C/R																								
Column Construction																								
AI2925	Bearing Installation - P111	10	10	0%	29/12/14	09/01/15	20/06/14	03/07/14	Bearing Installation - P111															
Pier P114 L/C/R																								
Column Construction																								
AI3085	Bearing Installation - P114	10	10	0%	29/12/14	09/01/15	20/06/14	03/07/14	Bearing Installation - P114															
Deck Construction between Landing Point on Airport Island and Scenic Hill																								
Segment Erection - Launching Girder																								
DC5000	Assemble LG1 at P110 & P112	35	1	97.14%	01/04/14 A	29/12/14	26/05/14	11/07/14	Assemble LG1 at P110 & P112															
DC5009	Segment erection P110 (Learning)	20	17	14%	18/10/14 A	22/01/15	18/08/14	17/09/14	Segment erection P110 (Learning)															
DC5010	Segment erection P111 (Learning)	7	7	0%	13/02/15	24/02/15	20/10/14	27/10/14	Segment erection P111 (Learning)															
DC5020	Segment erection P112 (Learning)	20	19	6%	20/12/14 A	12/02/15	18/09/14	17/10/14	Segment erection P112 (Learning)															
DC5030	Segment erection P113	20	20	0%	25/02/15	19/03/15	28/10/14	19/11/14	Segment erection P113															
DC5035	Segment erection P114	20	20	0%	20/03/15	15/04/15	20/11/14	12/12/14	Segment erection P114															
E&M Works																								
Re-provisioning Radar at P20																								
EM1000	Re-provisioning Radar at Pier P20	90	90	0%	07/02/15	05/06/15	07/02/15	05/06/15	Re-provisioning Radar at Pier P20															
Ground Level Road Works																								
RD1090	Modification work for Sha Lo Wan wind profiler station (Wall extension)	120	120	0%	29/12/14	01/06/15	27/08/14	29/01/15	Modification work for Sha Lo Wan wind profiler station (Wall extension)															

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APPENDIX B
ACTION AND LIMIT LEVELS

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

Parameter (unit)	Water Depth	Action Level	Limit Level
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.

**APPENDIX C
COPIES OF CALIBRATION
CERTIFICATES**

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA12014/67/0012

Project No. AMS I - Sha Lo Wan Operator: WK
 Date: 21-Nov-14 Next Due Date: 20-Jan-15
 Equipment No.: A-01-67 Serial No. 3218

Ambient Condition			
Temperature, Ta (K)	295.7	Pressure, Pa (mmHg)	766.5

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0582	Intercept, bc	-0.0249
Last Calibration Date:	27-Sep-14	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	26-Sep-15	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis
1	11.7	3.45	59.68	6.8	2.63
2	9.8	3.16	54.66	5.4	2.34
3	7.6	2.78	48.18	4.3	2.09
4	5.1	2.28	39.55	2.9	1.72
5	3.3	1.83	31.90	1.8	1.35

By Linear Regression of Y on X

Slope, mw = 0.0449 Intercept, bw = -0.0729

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 x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 3.39

Remarks: _____

Conducted by: Wk Tang Signature: _____
 Checked by: Ar Signature: _____

Date: 21/11/14
 Date: 21 November 2014

High-Volume TSP Sampler 5-POINT CALIBRATION DATA SHEET

CINOTECH

File No. MA12014/74/0012

Project No. AMS 4 - San Tau Operator: WK
 Date: 21-Nov-14 Next Due Date: 20-Jan-15
 Equipment No.: A-01-74 Serial No. 2202

Ambient Condition			
Temperature, Ta (K)	297.5	Pressure, Pa (mmHg)	764

Orifice Transfer Standard Information					
Equipment No.:	A-04-04	Slope, mc	0.0582	Intercept, bc	-0.0249
Last Calibration Date:	27-Sep-14	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	26-Sep-15	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler					
Calibration Point	Orifice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)] ^{1/2}	Qstd (CFM) X - axis	ΔW (HVS), in. of oil	[ΔW x (Pa/760) x (298/Ta)] ^{1/2} Y-axis
1	11.4	3.39	58.64	8.3	2.89
2	9.8	3.14	54.40	6.8	2.62
3	7.6	2.77	47.96	5.4	2.33
4	4.7	2.18	37.81	3.3	1.82
5	3.2	1.80	31.27	2.2	1.49

By Linear Regression of Y on X

Slope, mw = 0.0503 Intercept, bw : -0.0837
 Correlation coefficient* = 0.9993

*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 x Qstd + bw)² x (760 / Pa) x (Ta / 298) = 4.29

Remarks: _____

Conducted by: Wk Tang
 Checked by: AW

Signature: _____
 Signature: _____

Date: 21/11/14
 Date: 21 November 2014

TEST REPORT

Description Calibration Orifice
Serial No. 0993
Model No. TE-5025A
Date 27 September 2014

Manufacturer TISCH
Temperature, Ta (K) 299
Pressure, Pa (mmHg) 761.8
Equipment No.: A-04-04

Plate	Diff.Vol (m ³)	Diff.Time (min)	Diff.Hg (mm)	Diff.H ₂ O (in.)
1	1.00	1.4230	3.3	2.00
2	1.00	1.0050	6.5	4.00
3	1.00	0.8950	8.2	5.00
4	1.00	0.8570	9.0	5.50
5	1.00	0.7080	13.0	8.00

DATA TABULATION

Vstd	(X axis) Qstd	(Y axis)
0.9947	0.6990	1.4135
0.9905	0.9856	1.9990
0.9883	1.1042	2.2350
0.9872	1.1519	2.3441
0.9820	1.3870	2.8270

Y axis= $\text{SQRT}[\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta})]$

Qstd Slope (m) = 2.05398

Intercept (b) = -0.02487

Coefficient (r) = 0.99996

Va	(X axis) Qa	(Y axis)
0.9957	0.6997	0.8860
0.9915	0.9865	1.2530
0.9892	1.1053	1.4009
0.9882	1.1531	1.4693
0.9829	1.3883	1.7720

Y axis= $\text{SQRT}[\text{H}_2\text{O}(\text{Ta}/\text{Pa})]$

Qa Slope (m) = 1.28617

Intercept (b) = -0.01559

Coefficient (r) = 0.99996

CALCULATIONS

$V_{std} = \text{Diff. Vol}[(\text{Pa} - \text{Diff.Hg})/760](298/\text{Ta})$

$Q_{std} = V_{std}/\text{Time}$

$V_a = \text{Diff.Vol}[(\text{Pa} - \text{Diff.Hg})/\text{Pa}]$

$Q_a = V_a/\text{Time}$

For subsequent flow rate calculations:

$Q_{std} = 1/m\{[\text{SQRT}(\text{H}_2\text{O}(\text{Pa}/760)(298/\text{Ta}))]-b\}$

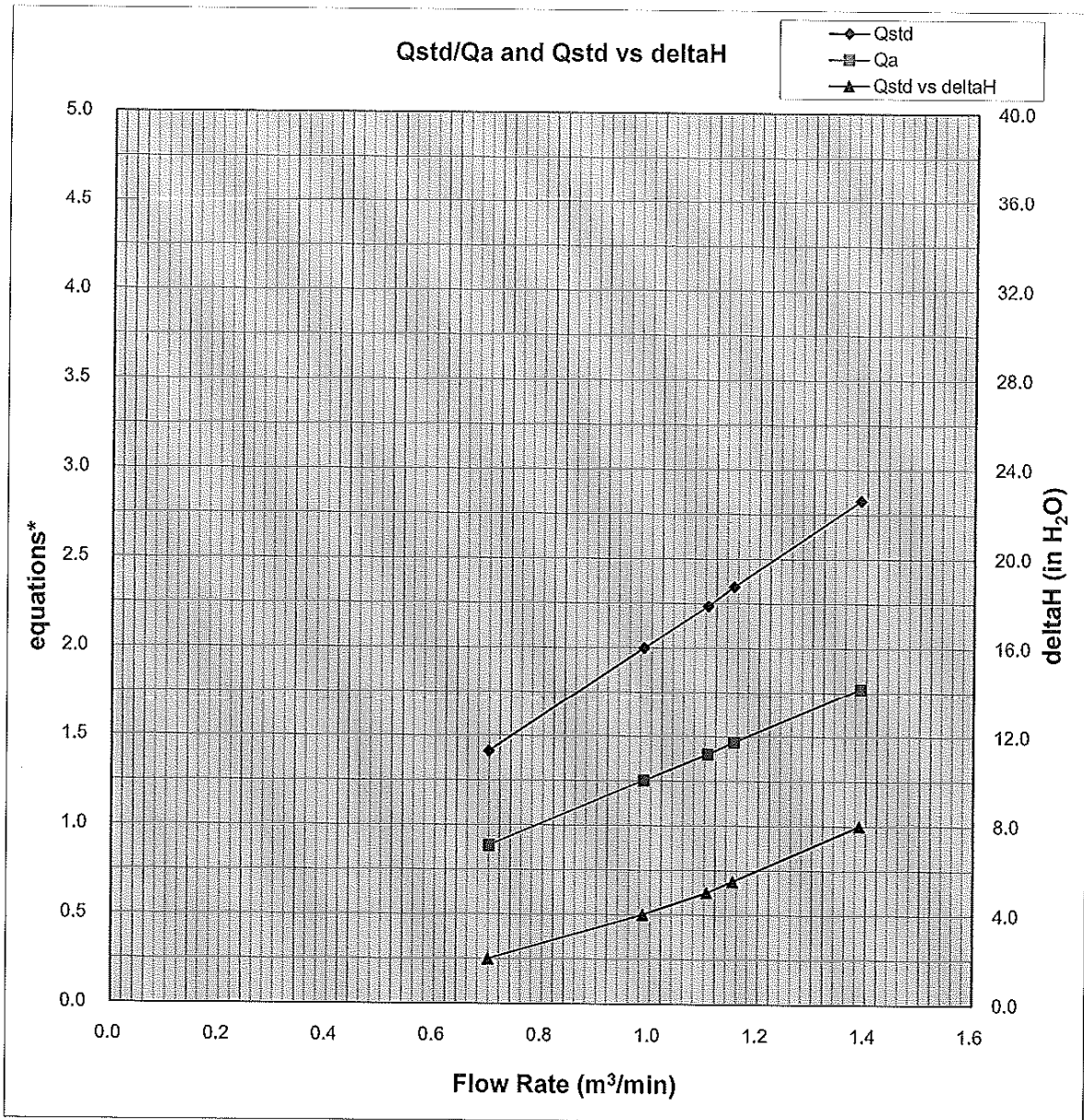
$Q_a = 1/m\{[\text{SQRT}(\text{H}_2\text{O}(\text{Ta}/\text{Pa}))]-b\}$

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
Laboratory Manager

TEST REPORT



Y-axis equations:

Qstd series: $\text{SQRT}[\Delta H(\text{Pa}/\text{Pstd})(\text{Tstd}/\text{Ta})]$

Qa series: $\text{SQRT}[\Delta H(\text{Ta}/\text{Pa})]$



Calibration Certificate

Certificate No. **405744**

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Customer : Dragages - China Harbour - VSL Joint Venture

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

Order No. : Q42599

Date of receipt : 14-Jul-14

Item Tested

Description : Vantage Pro2 Weather Stations

Manufacturer : Davis

Model : 6152 CUK

Serial No. : AK130520006

Test Conditions

Date of Test : 1-Sep-14

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).

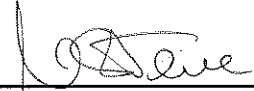
Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S155	Std. Anemometer	NSC201431181	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).
The test results apply to the above Unit-Under-Test only

Calibrated by : 
Dorothy Cheuk

Approved by : 
Steve Kwan

Date: 1-Sep-14



Calibration Certificate

Certificate No. 405744

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Results :

1. Wind Speed

Applied Value (m/s)	UUT Reading (m/s)
2.7	2.7
4.8	5.4
7.5	7.2
9.8	9.4
15.0	14.8
18.5	18.3

Uncertainty : $\pm (2\% + 0.2 \text{ m/s})$

2. Wind Direction

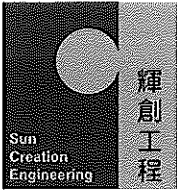
Reference Value	UUT Indication
N (0°)	N (0°)
NE (45°)	NE (45°)
E (90°)	E (90°)
SE (135°)	SE (135°)
S (180°)	S (180°)
SW (225°)	SW (225°)
W (270°)	W (270°)
NW (315°)	NW (315°)

Remark : 1. UUT: Unit-Under-Test

2. Atmospheric Pressure : 997 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.

----- END -----



Certificate of Calibration 校正證書

Certificate No. : C140308
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0070) Date of Receipt / 收件日期 : 10 January 2014

Description / 儀器名稱 : Sound & Vibration Analyser
Manufacturer / 製造商 : Svantek
Model No. / 型號 : SVAN957
Serial No. / 編號 : 21455
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 : 15 January 2014

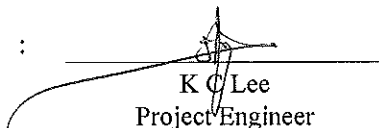
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

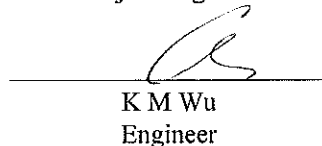
The test equipment used for calibration are traceable to National Standards via :

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

Tested By
測試


K C Lee
Project Engineer

Certified By
核證

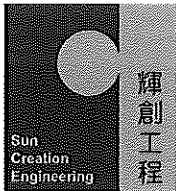

K M Wu
Engineer

Date of Issue
簽發日期

17 January 2014

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. : C140308
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 Svantek Acoustic Calibrator SV30A, S/N : 24780 was performed before the test.
- 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	C140016
CL281	Multifunction Acoustic Calibrator	DC130171

5. Test procedure : MA101N.

6. Results :

6.1 Sound Pressure Level

6.1.1 Reference Sound Pressure Level

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	114.00	1	113.9	± 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	114.00	1	113.9 (Ref.)
				104.00		103.8
				94.00		93.8

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

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	114.00	1	113.9	Ref.
			Slow			113.9	± 0.3

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. : C140308

證書編號

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	114.00	63 Hz	87.7	-26.2 ± 1.5
					125 Hz	97.7	-16.1 ± 1.5
					250 Hz	105.2	-8.6 ± 1.4
					500 Hz	110.7	-3.2 ± 1.4
					1 kHz	113.9	Ref.
					2 kHz	115.1	+1.2 ± 1.6
					4 kHz	115.0	+1.0 ± 1.6
					8 kHz	112.9	-1.1 (+2.1 ; -3.1)
					12.5 kHz	109.7	-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	114.00	63 Hz	113.1	-0.8 ± 1.5
					125 Hz	113.8	-0.2 ± 1.5
					250 Hz	113.9	0.0 ± 1.4
					500 Hz	113.9	0.0 ± 1.4
					1 kHz	113.9	Ref.
					2 kHz	113.8	-0.2 ± 1.6
					4 kHz	113.2	-0.8 ± 1.6
					8 kHz	111.0	-3.0 (+2.1 ; -3.1)
					12.5 kHz	107.7	-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.

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。

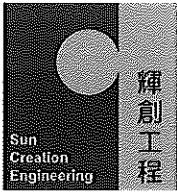
Sun Creation Engineering Limited – Calibration & Testing Laboratory

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. : C140308
證書編號

Remarks : - UUT Microphone Model No. : ACO 7502H & S/N : 43730

- Mfr's Spec. : IEC 61672 Class 1

- Uncertainties of Applied Value :

114 dB : 63 Hz - 125 Hz	: ± 0.45 dB
250 Hz - 500 Hz	: ± 0.40 dB
1 kHz	: ± 0.30 dB
2 kHz - 4 kHz	: ± 0.45 dB
8 kHz	: ± 0.55 dB
12.5 kHz	: ± 0.80 dB
104 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
94 dB : 1 kHz	: ± 0.20 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.

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。

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. : C140307
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC14-0070) Date of Receipt / 收件日期 : 10 January 2014
Description / 儀器名稱 : Acoustic Calibrator
Manufacturer / 製造商 : Svantek
Model No. / 型號 : SV30A
Serial No. / 編號 : 24780
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 : 15 January 2014

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
All results are within manufacturer's specification.
The results are detailed in the subsequent page(s).

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

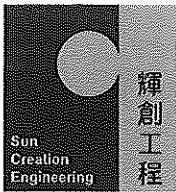
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA
- Agilent Technologies, USA

Tested By : 
測試 : K C Lee
Project Engineer

Certified By : 
核證 : K M Wu
Engineer

Date of Issue : 17 January 2014
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書面批准。



Certificate of Calibration

校正證書

Certificate No. : C140307
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	C133632
CL281	Multifunction Acoustic Calibrator	DC130171
TST150A	Measuring Amplifier	C120886

- 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	94.2	± 0.3	± 0.2
114 dB, 1 kHz	114.2		

5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	0.999 99	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.

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所書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

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c/o 香港新界屯門與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

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

Date of issue: 25-11-2014

Page 1A of 1 pages

Castco LRN: EN 0141104-1

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 Result

Instrument Name: Sonde Environmental Monitoring System

Manufacturer : YSI

Model No. : YSI 6820

Serial No. : 12B100804

Instrument No. : W.03.13

Date of Calibration : 04-11-2014

Date of Next Calibration : 04-02-2015

pH Value Check (pH Probe : Model: 6589, L/N: 12C)

Expected Reading (pH Unit)	Sonde Reading (pH Unit)	Tolerance (pH Unit)	Tolerance Limit (pH Unit)	Method Reference
4.00	4.05	+0.05	± 0.2	APHA 21e, 4500-H ⁺ B
7.02	7.02	0.00		
10.06	10.05	-0.01		

Turbidity Check (Turbidity Sensor : Model: 6136, S/N: 12B100645)

Expected Reading (NTU)	Sonde Reading (NTU)	Tolerance (%)	Tolerance Limit (%)	Method Reference
4.00	4.2	+5	± 10	APHA 21e, 2130B
10.00	10.1	+1		
20.00	21.0	+5		
50.00	50.7	+1.4		
100.00	100.4	+0.4		

Conductivity Performance Check (Conductivity Sensor : Model: 6560, L/N: 12B100055)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
1412 at 25 °C	1394 at 25 °C	-1.3	± 10	APHA 21e, 2510B

Salinity Performance Check (Salinity Sensor : Model: 6560, L/N: 12B100055)

Expected Reading (ppt)	Sonde Reading (ppt)	Tolerance (%)	Tolerance Limit (%)	Method Reference
33	32.33	-2	± 10	APHA 19e, 2520B

Dissolved Oxygen Check (Dissolved Oxygen Sensor : Model: 6562, L/N: 12A100930)

DO from Winkler Titration (mg/L)	Sonde Reading (mg/L)	Tolerance (mg/L)	Tolerance Limit (mg/L)	Method Reference
8.72	8.85	+0.13	± 0.20	APHA 21e, 4500-O C&G
4.88	4.84	-0.04		

Water Level Meter Check


Expected Reading (m)	Sonde Reading (m)	Tolerance (m)	Tolerance Limit (m)	Method Reference
1.00	0.98	-0.02	± 0.05	YSI Sondes Procedure Manual

Temperature Check

Expected Reading (°C)	Sonde Reading (°C)	Tolerance (°C)	Tolerance Limit (°C)	Method Reference
25.0	24.31	-0.69	± 2.0	Telarc Technical Guide No.3 1986

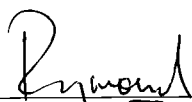
Remark: 1. This test report supersedes previous test report of Castco LRN: EN0141104-1 issued on 05-11-2014.

Checked by:


CHUNG YEUK LUI
Senior Chemist

Certified by:

End of Report


CHENG CHI FAI
Senior Manager

TEST REPORT
Chemical Analysis of Water

Accuracy check of YSI Sondes Environmental Monitoring System

Date of issue: 25-11-2014

Page 1A of 1 pages

Castco LRN: EN 0141104-2

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 Result

Instrument Name: Sonde Environmental Monitoring System

Manufacturer : YSI

Instrument No. : W.03.02

Model No. : YSI 6820

Date of Calibration : 04-11-2014

Serial No. : 02D0293AA

Date of Next Calibration : 04-02-2015

pH Value Check (pH Probe : Model: 6589, L/N: 12C)

Expected Reading (pH Unit)	Sonde Reading (pH Unit)	Tolerance (pH Unit)	Tolerance Limit (pH Unit)	Method Reference
4.00	4.05	+0.05	± 0.2	APHA 21e, 4500-H ⁺ B
7.02	6.97	-0.05		
10.06	10.10	+0.04		

Turbidity Check (Turbidity Sensor : Model: 6136, S/N: 11J100475)

Expected Reading (NTU)	Sonde Reading (NTU)	Tolerance (%)	Tolerance Limit (%)	Method Reference
4.00	4.2	+5	± 10	APHA 21e, 2130B
10.00	10.2	+2		
20.00	20.3	+1.5		
50.00	49.3	-1.4		
100.00	97.3	-2.7		

Conductivity Performance Check (Conductivity Sensor : Model: 6560, L/N: 12B100106)

Expected Reading (µS/cm)	Sonde Reading (µS/cm)	Tolerance (%)	Tolerance Limit (%)	Method Reference
1412 at 25 °C	1283 at 25 °C	-9.1	± 10	APHA 21e, 2510B

Salinity Performance Check (Salinity Sensor : Model: 6560, L/N: 12B100106)

Expected Reading (ppt)	Sonde Reading (ppt)	Tolerance (%)	Tolerance Limit (%)	Method Reference
33	31.18	-5.5	± 10	APHA 19e, 2520B

Dissolved Oxygen Check (Dissolved Oxygen Sensor : Model: 6562, L/N: 08C100810)

DO from Winkler Titration (mg/L)	Sonde Reading (mg/L)	Tolerance (mg/L)	Tolerance Limit (mg/L)	Method Reference
8.63	8.52	-0.11	± 0.20	APHA 21e, 4500-O C&G
5.12	5.27	+0.15		

Water Level Meter Check

Expected Reading (m)	Sonde Reading (m)	Tolerance (m)	Tolerance Limit (m)	Method Reference
1.00	0.96	-0.04	± 0.05	YSI Sondes Procedure Manual

Temperature Check

Expected Reading (°C)	Sonde Reading (°C)	Tolerance (°C)	Tolerance Limit (°C)	Method Reference
25.0	24.52	-0.48	± 2.0	Telarc Technical Guide No.3 1986

Remark: 1. This test report supersedes previous test report of Castco LRN: EN0141104-2 issued on 05-11-2014.

Checked by:


CHUNG YEUK LUI
Senior Chemist

Certified by:

End of Report


CHENG CHI FAI
Senior Manager

**APPENDIX D
ENVIRONMENTAL MONITORING
SCHEDULES**

**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 December 2014**

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

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 January 2015**

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

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 December 2014**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Dec-14	2-Dec	3-Dec	4-Dec	5-Dec	6-Dec
	<u>Water Quality Monitoring</u> Mid-Ebb 7:45 Mid-Flood 14:55		<u>Water Quality Monitoring</u> Mid-Ebb 10:12 Mid-Flood 16:21		<u>Water Quality Monitoring</u> Mid-Ebb 11:58 Mid-Flood 17:34	
7-Dec	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec
	<u>Water Quality Monitoring</u> Mid-Flood 8:27 Mid-Ebb 13:58		<u>Water Quality Monitoring</u> Mid-Flood 9:44 Mid-Ebb 15:07		<u>Water Quality Monitoring</u> Mid-Flood 11:05 Mid-Ebb 16:31	
14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec
	<u>Water Quality Monitoring</u> Mid-Flood 13:36 Mid-Ebb 20:03		<u>Water Quality Monitoring</u> Mid-Ebb 8:40 Mid-Flood 15:03			<u>Water Quality Monitoring</u> Mid-Ebb 11:36 Mid-Flood 17:03
21-Dec	22-Dec	23-Dec	24-Dec	25-Dec	26-Dec	27-Dec
	<u>Water Quality Monitoring</u> Mid-Ebb 13:07 Mid-Flood 18:25		<u>Water Quality Monitoring</u> Mid-Flood 9:01 Mid-Ebb 14:41			<u>Water Quality Monitoring</u> Mid-Flood 11:24 Mid-Ebb 17:24
28-Dec	29-Dec	30-Dec	31-Dec			
	<u>Water Quality Monitoring</u> Mid-Flood 13:14 Mid-Ebb 19:44		<u>Water Quality Monitoring</u> Mid-Ebb 8:37 Mid-Flood 14:58			

**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 January 2015**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Jan	2-Jan	3-Jan
					<u>Water Quality Monitoring</u> Mid-Ebb 10:58 Mid-Flood 16:29	
4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan	10-Jan
	<u>Water Quality Monitoring</u> Mid-Ebb 13:06 Mid-Flood 18:29		<u>Water Quality Monitoring</u> Mid-Flood 8:41 Mid-Ebb 14:10		<u>Water Quality Monitoring</u> Mid-Flood 9:42 Mid-Ebb 15:15	
11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
	<u>Water Quality Monitoring</u> Mid-Flood 11:26 Mid-Ebb 17:28		<u>Water Quality Monitoring</u> Mid-Flood 13:01 Mid-Ebb 19:56		<u>Water Quality Monitoring</u> Mid-Ebb 9:06 Mid-Flood 14:47	
18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan	24-Jan
	<u>Water Quality Monitoring</u> Mid-Ebb 12:07 Mid-Flood 17:26		<u>Water Quality Monitoring</u> Mid-Ebb 13:40 Mid-Flood 19:07		<u>Water Quality Monitoring</u> Mid-Flood 9:18 Mid-Ebb 15:10	
25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan	31-Jan
	<u>Water Quality Monitoring</u> Mid-Flood 11:25 Mid-Ebb 17:45		<u>Water Quality Monitoring</u> Mid-Flood 13:11 Mid-Ebb 20:17		<u>Water Quality Monitoring</u> Mid-Ebb 9:45 Mid-Flood 15:07	

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 December 2014**

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

**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 January 2015**

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

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
Additional Land-based Dolphin Behaviour and Movement Monitoring in December 2014**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1-Dec	2-Dec	3-Dec	4-Dec	5-Dec	6-Dec
					Additional Land-based Dolphin Behaviour and Movement Monitoring	
7-Dec	8-Dec	9-Dec	10-Dec	11-Dec	12-Dec	13-Dec
14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	19-Dec	20-Dec
				Additional Land-based Dolphin Behaviour and Movement Monitoring		
21-Dec	22-Dec	23-Dec	24-Dec	25-Dec	26-Dec	27-Dec
28-Dec	29-Dec	30-Dec	31-Dec			

**Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill
Tentative Additional Land-based Dolphin Behaviour and Movement Monitoring in January 2015**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1-Jan	2-Jan	3-Jan
					Additional Land-based Dolphin Behaviour and Movement Monitoring	
4-Jan	5-Jan	6-Jan	7-Jan	8-Jan	9-Jan	10-Jan
11-Jan	12-Jan	13-Jan	14-Jan	15-Jan	16-Jan	17-Jan
18-Jan	19-Jan	20-Jan	21-Jan	22-Jan	23-Jan	24-Jan
					Additional Land-based Dolphin Behaviour and Movement Monitoring	
25-Jan	26-Jan	27-Jan	28-Jan	29-Jan	30-Jan	31-Jan

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

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

Appendix E - 1-hour TSP Monitoring Results

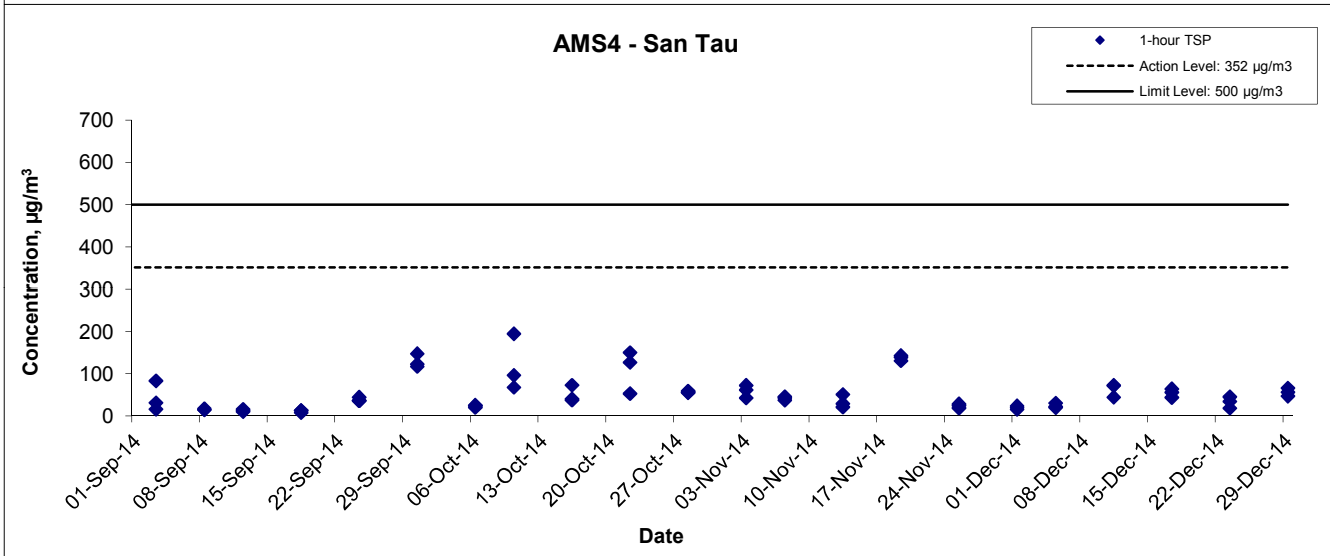
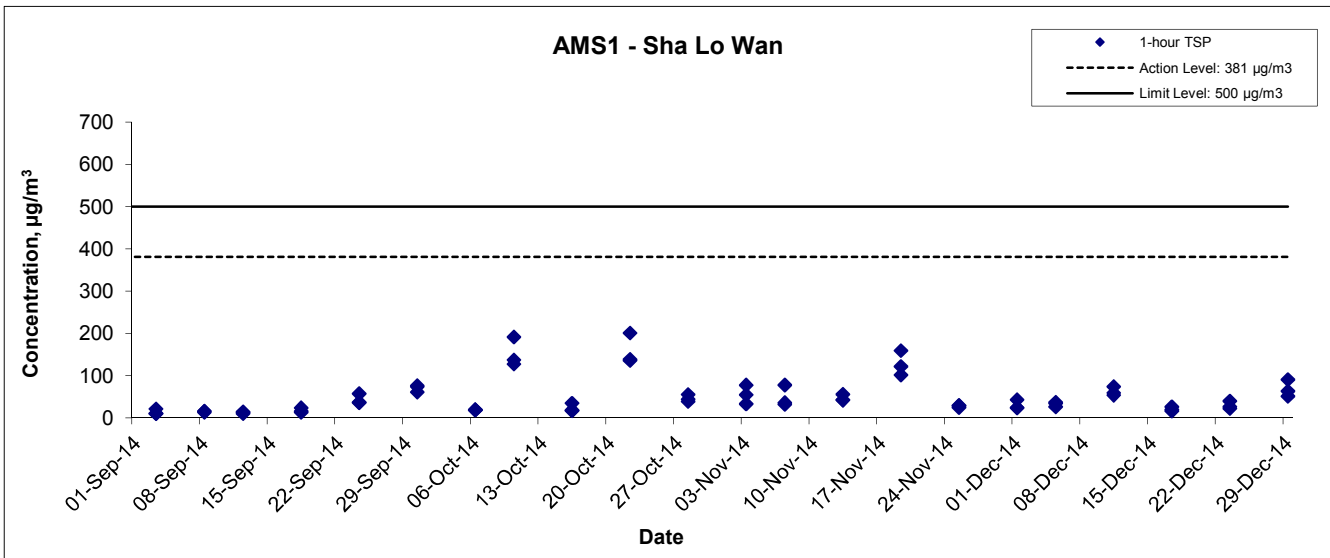
Location AMS1 - Sha Lo Wan

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
1-Dec-14	08:45	Cloudy	291.0	765.7	2.8317	2.8349	0.0032	4550.2	4551.2	1.0	1.23	1.23	1.23	73.6	43
1-Dec-14	09:50	Cloudy	291.2	765.5	2.8258	2.8276	0.0018	4551.2	4552.2	1.0	1.23	1.23	1.23	73.6	24
1-Dec-14	10:53	Cloudy	291.4	765.3	2.8227	2.8245	0.0018	4552.2	4553.2	1.0	1.23	1.23	1.23	73.5	24
5-Dec-14	08:41	Cloudy	285.7	771.2	2.8137	2.8165	0.0028	4577.2	4578.2	1.0	1.24	1.24	1.24	74.5	38
5-Dec-14	09:43	Cloudy	285.7	771.0	2.8075	2.8101	0.0026	4578.2	4579.2	1.0	1.24	1.24	1.24	74.5	35
5-Dec-14	10:45	Cloudy	285.9	770.8	2.8038	2.8058	0.0020	4579.2	4580.2	1.0	1.24	1.24	1.24	74.5	27
11-Dec-14	08:50	Cloudy	290.4	768.5	2.7815	2.7855	0.0040	4604.2	4605.2	1.0	1.23	1.23	1.23	73.8	54
11-Dec-14	09:53	Cloudy	290.6	768.3	2.8308	2.8352	0.0044	4605.2	4606.2	1.0	1.23	1.23	1.23	73.8	60
11-Dec-14	10:55	Cloudy	290.8	768.1	2.8185	2.8240	0.0055	4606.2	4607.2	1.0	1.23	1.23	1.23	73.7	75
17-Dec-14	08:50	Cloudy	285.1	775.4	2.8004	2.8024	0.0020	4631.2	4632.2	1.0	1.25	1.25	1.25	74.8	27
17-Dec-14	09:55	Cloudy	285.3	775.2	2.7869	2.7882	0.0013	4632.1	4633.2	1.0	1.25	1.25	1.25	77.0	17
17-Dec-14	10:58	Cloudy	285.5	775.1	2.7906	2.7921	0.0015	4633.2	4634.2	1.0	1.25	1.25	1.25	74.7	20
23-Dec-14	08:55	Cloudy	286.9	770.1	2.7990	2.8020	0.0030	4658.2	4659.2	1.0	1.24	1.24	1.24	74.3	40
23-Dec-14	09:57	Cloudy	287.1	769.9	2.8054	2.8074	0.0020	4659.2	4660.2	1.0	1.24	1.24	1.24	74.3	27
23-Dec-14	11:00	Cloudy	287.3	769.7	2.7886	2.7903	0.0017	4660.2	4661.2	1.0	1.24	1.24	1.24	74.2	23
29-Dec-14	13:20	Cloudy	290.5	763.4	2.7732	2.7799	0.0067	4685.2	4686.2	1.0	1.23	1.23	1.23	73.5	91
29-Dec-14	14:22	Cloudy	290.7	763.2	2.7943	2.7981	0.0038	4686.2	4687.2	1.0	1.23	1.22	1.23	73.5	52
29-Dec-14	15:24	Cloudy	290.9	762.9	2.7931	2.7978	0.0047	4687.2	4688.2	1.0	1.22	1.22	1.22	73.5	64
														Min	17
														Max	91
														Average	41

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
1-Dec-14	14:25	Cloudy	288.9	764.8	2.8203	2.8215	0.0012	4095.6	4096.6	1.0	1.24	1.24	1.24	74.1	16
1-Dec-14	15:27	Cloudy	289.1	764.6	2.8241	2.8256	0.0015	4096.6	4097.6	1.0	1.24	1.23	1.24	74.1	20
1-Dec-14	16:28	Cloudy	289.3	764.5	2.8246	2.8264	0.0018	4097.6	4098.6	1.0	1.23	1.23	1.23	74.1	24
5-Dec-14	13:26	Cloudy	288.9	768.8	2.7974	2.7997	0.0023	4122.6	4123.6	1.0	1.24	1.24	1.24	74.3	31
5-Dec-14	14:28	Cloudy	289.1	768.7	2.8045	2.8062	0.0017	4123.6	4124.6	1.0	1.24	1.24	1.24	74.3	23
5-Dec-14	15:30	Cloudy	289.3	768.5	2.8131	2.8146	0.0015	4124.6	4125.6	1.0	1.24	1.24	1.24	74.3	20
11-Dec-14	13:00	Cloudy	292.9	766.7	2.8234	2.8288	0.0054	4149.6	4150.6	1.0	1.23	1.23	1.23	73.7	73
11-Dec-14	14:03	Cloudy	292.9	766.7	2.8197	2.8250	0.0053	4150.6	4151.6	1.0	1.23	1.23	1.23	73.7	72
11-Dec-14	15:05	Cloudy	292.9	766.7	2.8012	2.8045	0.0033	4151.6	4152.6	1.0	1.23	1.23	1.23	73.7	45
17-Dec-14	13:00	Cloudy	288.7	772.1	2.8216	2.8249	0.0033	4176.6	4177.6	1.0	1.24	1.24	1.24	74.5	44
17-Dec-14	14:03	Cloudy	288.9	771.9	2.7818	2.7860	0.0042	4177.6	4178.6	1.0	1.24	1.24	1.24	74.5	56
17-Dec-14	15:07	Cloudy	289.1	771.7	2.7756	2.7804	0.0048	4178.6	4179.6	1.0	1.24	1.24	1.24	74.4	64
23-Dec-14	13:47	Cloudy	288.2	767.9	2.7838	2.7852	0.0014	4203.6	4204.6	1.0	1.24	1.24	1.24	74.4	19
23-Dec-14	14:49	Cloudy	288.4	767.7	2.7889	2.7915	0.0026	4204.6	4205.6	1.0	1.24	1.24	1.24	74.3	35
23-Dec-14	15:52	Cloudy	288.6	767.5	2.7822	2.7856	0.0034	4205.6	4206.6	1.0	1.24	1.24	1.24	74.3	46
29-Dec-14	13:01	Cloudy	290.9	763.7	2.7812	2.7861	0.0049	4230.6	4231.6	1.0	1.23	1.23	1.23	73.8	66
29-Dec-14	14:02	Cloudy	291.1	763.5	2.7889	2.7924	0.0035	4231.6	4232.6	1.0	1.23	1.23	1.23	73.8	47
29-Dec-14	15:04	Cloudy	291.3	763.3	2.7978	2.8020	0.0042	4232.6	4233.6	1.0	1.23	1.23	1.23	73.8	57
														Min	16
														Max	73
														Average	42

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	Project No.	CINOTECH
	N.T.S	MA12014	
	Date	Appendix	
	Dec 14	E	

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

Appendix F - 24-hour TSP Monitoring Results

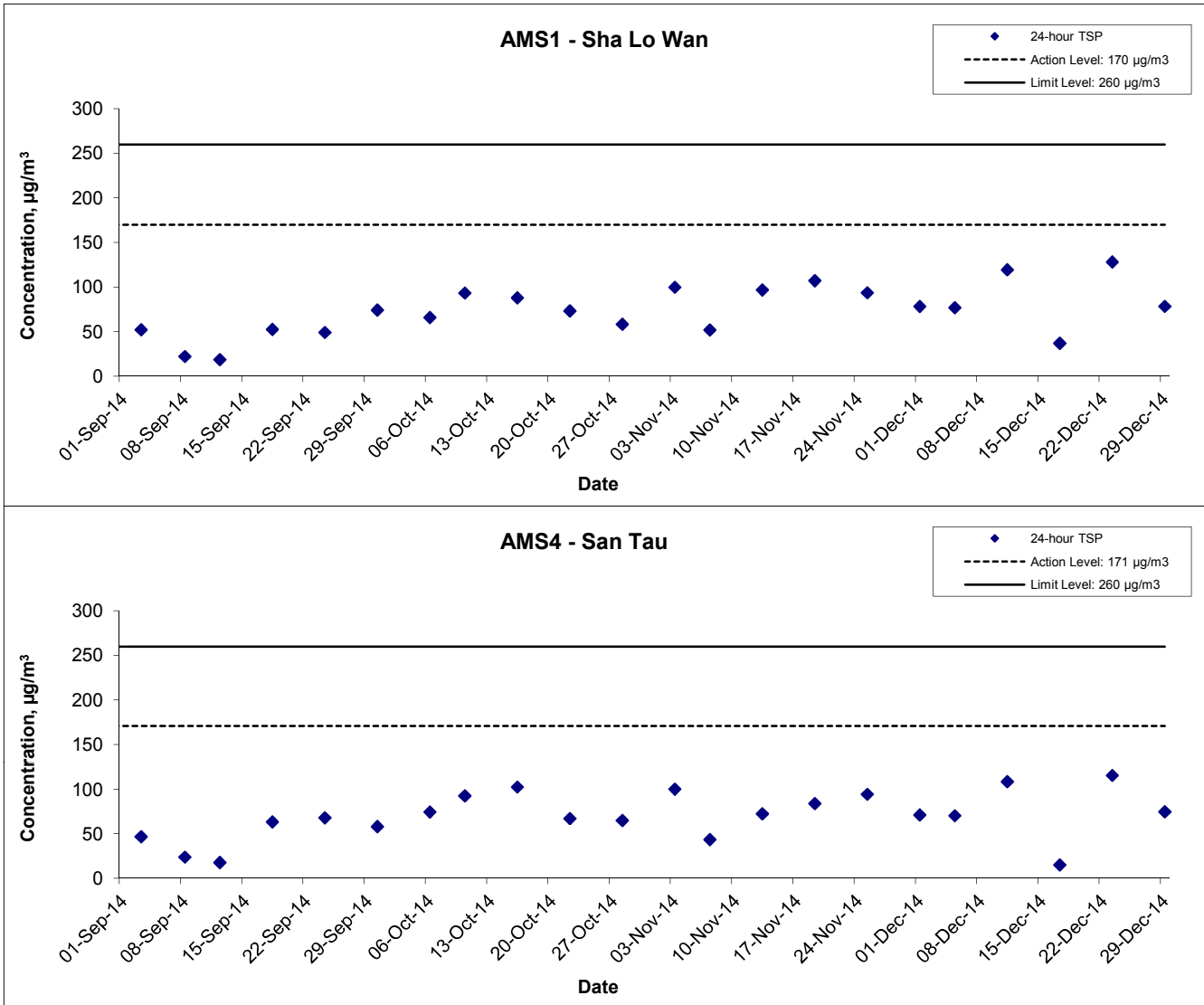
Location AMS1 - Sha Lo Wan

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
1-Dec-14	11:55	Cloudy	291.6	765.1	2.8520	2.9904	0.1384	4553.2	4577.2	24.0	1.23	1.22	1.22	1763.7	78
5-Dec-14	11:47	Cloudy	286.1	770.6	2.7991	2.9367	0.1376	4580.2	4604.2	24.0	1.24	1.24	1.24	1786.0	77
11-Dec-14	11:58	Cloudy	291.0	767.9	2.8183	3.0297	0.2114	4607.2	4631.2	24.0	1.23	1.23	1.23	1768.5	120
17-Dec-14	12:05	Cloudy	285.7	774.9	2.7995	2.8661	0.0666	4634.2	4658.2	24.0	1.24	1.24	1.24	1792.0	37
23-Dec-14	13:20	Cloudy	287.5	769.5	2.7952	3.0236	0.2284	4661.2	4685.2	24.0	1.24	1.24	1.24	1780.6	128
29-Dec-14	16:26	Cloudy	291.1	762.7	2.7880	2.9264	0.1384	4688.2	4712.2	24.0	1.22	1.22	1.22	1762.5	79
														Min	37
														Max	128
														Average	87

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Conc. (µg/m ³)
					Initial	Final		Initial	Final		Initial	Final			
1-Dec-14	17:30	Cloudy	289.5	764.3	2.8168	2.9434	0.1266	4098.6	4122.6	24.0	1.23	1.23	1.23	1777.1	71
5-Dec-14	16:34	Cloudy	289.5	768.3	2.7944	2.9198	0.1254	4125.6	4149.6	24.0	1.24	1.24	1.24	1781.6	70
11-Dec-14	16:07	Cloudy	293.1	766.5	2.8103	3.0024	0.1921	4152.6	4176.6	24.0	1.23	1.23	1.23	1769.2	109
17-Dec-14	16:10	Cloudy	289.3	771.5	2.8293	2.8564	0.0271	4179.6	4203.6	24.0	1.24	1.24	1.24	1785.8	15
23-Dec-14	16:54	Cloudy	288.8	767.3	2.7796	2.9856	0.2060	4206.6	4230.6	24.0	1.24	1.24	1.24	1782.6	116
29-Dec-14	16:06	Cloudy	291.5	763.1	2.8080	2.9404	0.1324	4233.6	4257.6	24.0	1.23	1.23	1.23	1769.9	75
														Min	15
														Max	116
														Average	76

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	
	Date Dec 14	Appendix F	

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

Appendix G - Noise Monitoring Results

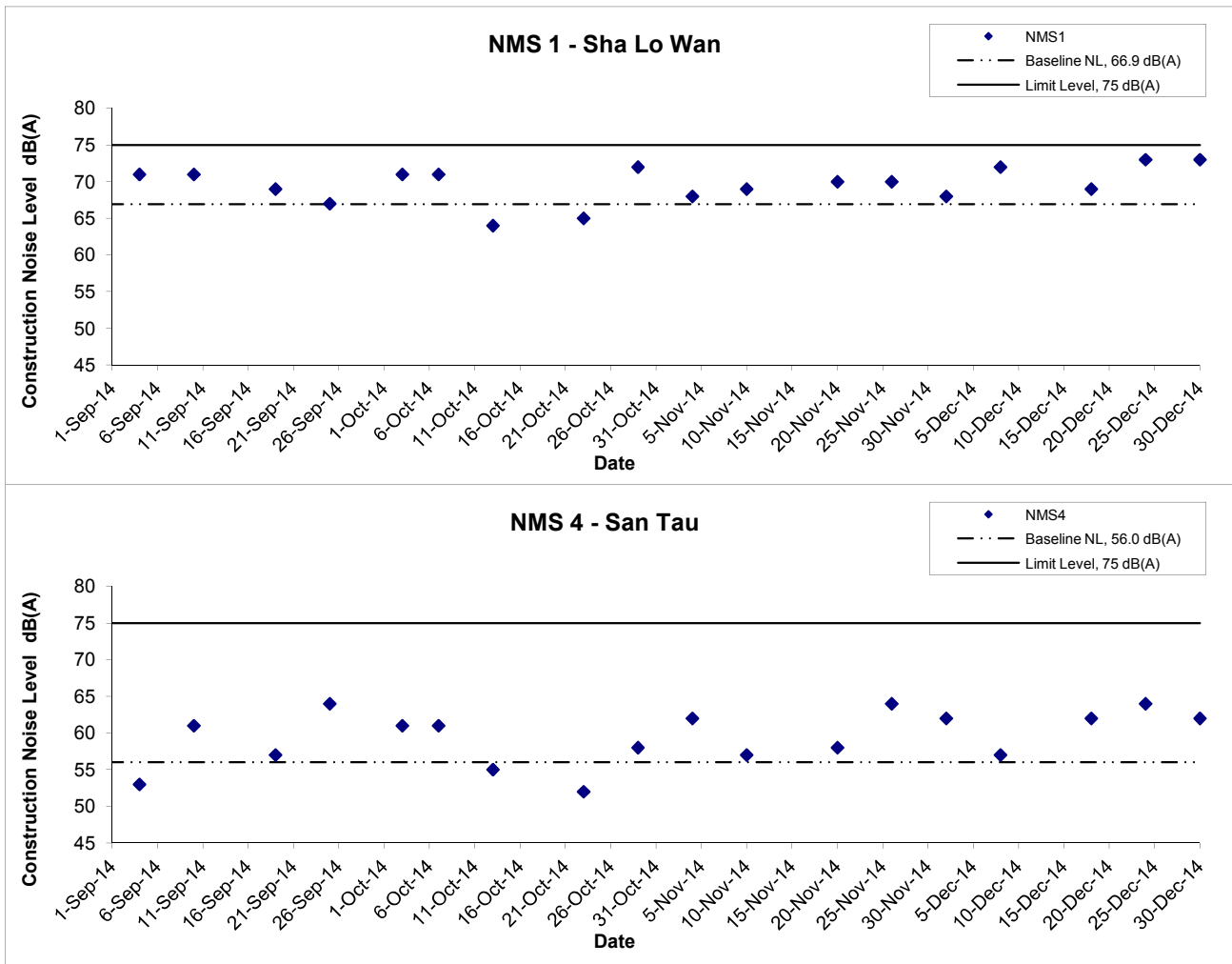
Location NMS 1 - Sha Lo Wan								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}	L _{eq}
2-Dec-14	Cloudy	16:10	66.1	69.4	64.2	68	66.9	68 Measured ≤ Limit Level
		16:15	68.5	71.3	67.1			
		16:20	69.1	72.4	68.2			
		16:25	67.1	70.2	66.5			
		16:30	68.6	71.8	67.5			
8-Dec-14	Cloudy	16:35	69.9	72.4	68.3	72	66.9	72 Measured ≤ Limit Level
		11:27	74.3	79.2	61.9			
		11:32	70.1	74.8	60.7			
		11:37	69.4	73.7	61.8			
		11:42	71.5	75.3	63.0			
18-Dec-14	Cloudy	11:47	72.0	76.8	60.7	69	66.9	69 Measured ≤ Limit Level
		11:52	73.3	76.9	61.4			
		16:00	65.7	68.3	62.5			
		16:05	71.8	74.1	69.2			
		16:10	66.5	67.7	65.1			
24-Dec-14	Cloudy	16:15	69.8	71.3	67.1	73	66.9	73 Measured ≤ Limit Level
		16:20	63.7	64.7	62.8			
		16:25	70.6	71.8	68.3			
		13:02	71.4	73.5	70.2			
		13:07	72.6	74.8	71.1			
30-Dec-14	Sunny	13:12	74.7	77.5	72.6	73	66.9	73 Measured ≤ Limit Level
		13:17	71.0	74.7	70.1			
		13:22	72.6	76.5	71.6			
		13:27	72.1	75.6	71.0			
		16:14	72.2	75.8	70.1			
		16:19	71.3	74.2	70.0	73	66.9	73 Measured ≤ Limit Level
		16:24	72.4	75.5	70.7			
		16:29	74.5	77.6	72.3			
		16:34	73.4	76.5	71.7			
		16:39	72.6	75.8	70.8			

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

Location NMS 4 - San Tau								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L _{eq}	L ₁₀	L ₉₀	L _{eq}	L _{eq}	L _{eq}
2-Dec-14	Cloudy	15:00	62.4	65.1	60.5	62	56.0	62 Measured ≤ Limit Level
		15:05	61.6	64.4	60.1			
		15:10	60.5	63.7	59.6			
		15:15	62.3	65.8	62.1			
		15:20	61.7	64.6	60.5			
8-Dec-14	Cloudy	15:25	60.5	63.8	59.7	57	56.0	57 Measured ≤ Limit Level
		13:42	59.2	62.0	49.6			
		13:47	54.9	58.5	48.9			
		13:52	55.2	58.3	50.0			
		13:57	55.2	58.3	49.3			
18-Dec-14	Cloudy	14:02	56.4	58.7	50.5	62	56.0	62 Measured ≤ Limit Level
		14:07	57.6	61.0	51.0			
		15:18	60.1	62.4	57.1			
		15:23	62.1	64.0	57.2			
		15:28	59.7	61.5	57.0			
24-Dec-14	Cloudy	15:33	62.6	64.3	58.8	64	56.0	64 Measured ≤ Limit Level
		15:38	61.0	63.5	58.0			
		15:43	65.2	67.2	63.0			
		09:31	61.4	64.5	59.7			
		09:36	65.2	68.7	62.1			
30-Dec-14	Sunny	09:41	62.1	65.2	60.1	62	56.0	62 Measured ≤ Limit Level
		09:46	62.4	65.7	60.4			
		09:51	65.6	68.7	61.7			
		09:56	63.4	66.7	62.0			
		15:31	61.4	63.8	59.3			
		15:36	62.7	65.3	60.0	62	56.0	62 Measured ≤ Limit Level
		15:41	61.5	63.6	59.5			
		15:46	62.4	65.0	61.1			
		15:51	62.2	65.1	61.0			
		15:56	61.3	64.7	60.7			

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 Dec 14	Appendix G	

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

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*
1-Dec-14	Cloudy	Calm	07:56	Surface	1	23.7 23.7	23.7	8.0 8.0	8.0	28.4 28.4	28.4	92.0 92.3	92.2	6.6 6.6	6.6	6.6	2.3 2.2	2.3	3.8	5.0 3.3	4.2	3.8
				Middle	6	23.7 23.7	23.7	8.0 8.0	8.0	29.0 29.0	29.0	91.3 91.6	91.5	6.6 6.6	6.6		2.3 2.4	2.4		2.9 3.4	3.2	
				Bottom	11	23.6 23.6	23.6	8.0 8.0	8.0	29.7 29.8	29.8	90.8 90.7	90.8	6.5 6.5	6.5		6.4 6.9	6.7		4.5 3.5	4.0	
3-Dec-14	Cloudy	Calm	10:43	Surface	1	22.1 22.1	22.1	7.8 7.8	7.8	32.6 32.7	32.7	84.7 84.9	84.8	6.1 6.1	6.1	6.1	7.5 7.5	7.5	8.6	4.1 4.1	4.1	5.7
				Middle	7	22.1 22.1	22.1	7.8 7.8	7.8	32.6 32.7	32.7	83.9 84.8	84.4	6.1 6.1	6.1		7.0 8.0	7.5		3.8 6.4	5.1	
				Bottom	13	22.1 22.1	22.1	7.8 7.7	7.8	32.7 32.7	32.7	80.6 80.2	80.4	5.8 5.8	5.8		11.5 10.0	10.8		10.0 5.9	8.0	
5-Dec-14	Cloudy	Moderate	12:15	Surface	1	21.4 21.4	21.4	8.0 8.0	8.0	31.5 31.2	31.4	87.3 88.0	87.7	6.4 6.5	6.5	6.2	5.6 5.4	5.5	5.0	6.2 5.1	5.7	6.5
				Middle	6	20.7 21.5	21.1	7.9 8.0	8.0	31.7 31.3	31.5	77.8 79.1	78.5	5.8 5.8	5.8		5.8 5.8	5.8		5.9 7.7	6.8	
				Bottom	11	20.2 21.4	20.8	7.9 8.0	8.0	31.2 32.0	31.6	93.4 97.5	95.5	7.0 7.2	7.1		3.8 3.8	3.8		7.0 6.8	6.9	
8-Dec-14	Cloudy	Moderate	13:51	Surface	1	21.0 21.0	21.0	8.1 8.1	8.1	31.7 31.7	31.7	83.3 83.0	83.2	6.2 6.2	6.2	6.2	6.3 7.0	6.7	6.7	4.3 6.4	5.4	6.0
				Middle	6	20.9 21.0	21.0	8.1 8.1	8.1	31.7 31.7	31.7	82.7 82.2	82.5	6.1 6.1	6.1		7.1 6.8	7.0		5.9 6.2	6.1	
				Bottom	11	20.9 20.9	20.9	8.1 8.1	8.1	31.7 31.7	31.7	81.7 81.2	81.5	6.1 6.0	6.1		6.1 6.7	6.4		8.0 5.1	6.6	
10-Dec-14	Fine	Moderate	14:09	Surface	1	20.4 20.4	20.4	8.1 8.1	8.1	31.5 31.7	31.6	101.3 99.5	100.4	7.6 7.5	7.6	7.6	5.1 5.1	5.1	5.3	8.9 5.6	7.3	12.4
				Middle	6.5	20.5 20.5	20.5	8.2 8.2	8.2	32.1 32.2	32.2	100.6 98.9	99.8	7.5 7.4	7.5		5.1 4.7	4.9		16.9 7.8	12.4	
				Bottom	12	20.5 20.5	20.5	8.2 8.2	8.2	32.2 32.3	32.3	99.2 97.1	98.2	7.4 7.2	7.3		5.6 6.2	5.9		10.6 24.4	17.5	
12-Dec-14	Fine	Moderate	16:35	Surface	1	20.2 20.1	20.2	7.6 7.6	7.6	32.4 32.4	32.4	105.7 103.7	104.7	7.9 7.8	7.9	7.9	4.2 4.0	4.1	4.2	9.1 8.1	8.6	10.5
				Middle	6	20.1 20.1	20.1	7.6 7.6	7.6	32.4 32.4	32.4	105.4 104.4	104.9	7.9 7.8	7.9		3.9 4.0	4.0		10.7 10.4	10.6	
				Bottom	11	20.1 20.1	20.1	7.7 7.6	7.7	32.5 32.5	32.5	91.6 92.4	92.0	6.9 6.9	6.9		4.5 4.5	4.5		12.2 12.6	12.4	
15-Dec-14	Cloudy	Moderate	18:47	Surface	1	19.4 19.4	19.4	8.0 8.0	8.0	32.2 32.2	32.2	74.8 73.7	74.3	5.7 5.6	5.7	5.7	4.1 4.0	4.1	3.6	9.8 9.5	9.7	9.7
				Middle	6	19.4 19.4	19.4	8.0 8.0	8.0	32.2 32.2	32.2	73.9 73.0	73.5	5.6 5.6	5.6		2.5 3.1	2.8		10.2 7.4	8.8	
				Bottom	11	19.4 19.4	19.4	8.0 8.0	8.0	32.2 32.2	32.2	72.5 72.8	72.7	5.5 5.5	5.5		4.3 3.5	3.9		9.8 11.3	10.6	
17-Dec-14	Cloudy	Moderate	09:07	Surface	1	18.6 18.6	18.6	7.8 7.8	7.8	33.4 33.4	33.4	89.1 89.3	89.2	6.8 6.8	6.8	6.8	7.4 7.3	7.4	8.9	14.2 23.0	18.6	17.3
				Middle	7	18.6 18.6	18.6	7.8 7.8	7.8	33.4 33.4	33.4	88.3 89.1	88.7	6.8 6.8	6.8		7.3 8.4	7.9		22.8 13.4	18.1	
				Bottom	13	18.6 18.6	18.6	7.8 7.7	7.8	33.4 33.1	33.3	84.8 84.3	84.6	6.5 6.5	6.5		12.5 10.5	11.5		16.0 14.3	15.2	

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-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*
20-Dec-14	Fine	Moderate	11:09	Surface	1	17.6 17.6	17.6	7.8 7.8	7.8	31.7 31.7	31.7	75.4 74.5	75.0	6.0 5.9	6.0	5.9	4.2 4.1	4.2	4.2	3.6 4.8	4.2	8.7
				Middle	5.5	17.5 17.5	17.5	7.8 7.8	7.8	31.7 31.7	31.7	71.2 71.5	71.4	5.6 5.7	5.7		4.3 4.3	4.3		10.7 8.6	9.7	
				Bottom	10	17.4 17.4	17.4	7.8 7.8	7.8	31.7 31.7	31.7	69.4 68.9	69.2	5.5 5.5	5.5		4.0 4.2	4.1		12.0 12.5	12.3	
22-Dec-14	Fine	Moderate	13:07	Surface	1	18.1 18.1	18.1	8.2 8.1	8.2	32.0 32.0	32.0	81.1 81.6	81.4	6.3 6.4	6.4	6.2	6.9 7.0	7.0	8.3	6.9 9.3	8.1	7.5
				Middle	6	17.9 17.9	17.9	7.8 7.8	7.8	29.6 32.0	30.8	75.2 73.0	74.1	6.0 5.7	5.9		5.1 5.5	5.3		9.7 3.1	6.4	
				Bottom	11	17.7 17.7	17.7	7.8 7.8	7.8	29.2 32.0	30.6	79.4 79.4	79.4	6.4 6.3	6.4		11.6 13.3	12.5		8.0 7.8	7.9	
24-Dec-14	Sunny	Moderate	15:06	Surface	1	18.1 18.1	18.1	6.6 6.6	6.6	31.2 29.1	30.2	74.4 74.9	74.7	5.8 5.9	5.9	5.8	7.1 7.4	7.3	8.7	7.6 7.4	7.5	5.6
				Middle	6.5	17.8 17.8	17.8	6.6 6.6	6.6	31.2 31.1	31.2	71.6 71.5	71.6	5.7 5.6	5.7		8.2 9.1	8.7		1.8 2.8	2.3	
				Bottom	12	17.7 17.7	17.7	6.8 6.7	6.8	31.1 31.1	31.1	72.3 71.8	72.1	5.7 5.7	5.7		10.5 9.6	10.1		8.9 4.8	6.9	
27-Dec-14	Cloudy	Moderate	16:34	Surface	1	17.9 17.9	17.9	7.9 7.5	7.7	31.2 31.2	31.2	71.9 70.0	71.0	5.7 5.5	5.6	6.3	9.7 9.3	9.5	9.9	6.5 9.0	7.8	7.7
				Middle	5.5	17.9 17.9	17.9	7.9 7.6	7.8	31.1 31.0	31.1	86.2 91.8	89.0	6.8 7.2	7.0		8.3 8.5	8.4		6.1 6.5	6.3	
				Bottom	10	17.9 17.9	17.9	7.5 7.6	7.6	31.0 31.0	31.0	91.3 89.9	90.6	7.2 7.1	7.2		12.5 10.8	11.7		6.8 11.0	8.9	
29-Dec-14	Fine	Moderate	18:50	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.8 31.8	31.8	75.5 75.3	75.4	6.0 6.0	6.0	6.0	6.2 6.5	6.4	10.9	11.1 10.2	10.7	10.8
				Middle	6	17.4 17.4	17.4	7.7 7.7	7.7	31.9 31.9	31.9	72.7 75.4	74.1	5.8 6.0	5.9		8.4 8.5	8.5		9.4 10.9	10.2	
				Bottom	11	17.3 17.3	17.3	7.7 7.7	7.7	31.9 31.8	31.9	72.9 74.2	73.6	5.8 5.9	5.9		17.3 18.1	17.7		12.8 10.1	11.5	
31-Dec-14	Fine	Moderate	09:27	Surface	1	17.3 17.3	17.3	8.0 8.0	8.0	31.3 31.3	31.3	84.2 85.1	84.7	6.7 6.8	6.8	6.8	3.5 4.2	3.9	4.9	7.7 4.4	6.1	5.4
				Middle	6	17.3 17.3	17.3	8.0 8.0	8.0	31.3 31.3	31.3	84.1 84.8	84.5	6.7 6.8	6.8		3.7 3.7	3.7		3.4 5.7	4.6	
				Bottom	11	17.3 17.3	17.3	8.0 8.0	8.0	31.3 31.4	31.4	84.2 84.3	84.3	6.7 6.7	6.7		6.7 7.5	7.1		5.1 5.8	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 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*
1-Dec-14	Cloudy	Calm	14:38	Surface	1	23.7	23.7	7.7	7.7	28.3	28.3	79.8	79.4	5.7	5.7	5.7	2.3	2.3	3.5	2.1	2.7	3.2
						23.7	23.7	7.7	7.7	28.3	28.3	78.9	79.4	5.7	5.7		2.3	2.3		3.3	2.7	
				Middle	6	23.7	23.7	7.7	7.7	29.1	29.1	80.8	79.8	5.8	5.7		1.9	2.0		5.1	4.4	
				23.7	23.7	7.7	7.7	29.1	29.1	78.7	79.8	5.6	5.7			2.1	2.0			3.7	4.4	
				Bottom	11	23.6	23.6	7.7	7.7	29.7	29.8	78.5	79.4	5.6	5.7	5.7	6.1	6.1			2.5	2.5
						23.6	23.6	7.7	7.7	29.8	29.8	80.2	79.4	5.7	5.7		6.1	6.1			2.4	2.5
3-Dec-14	Cloudy	Calm	16:07	Surface	1	22.2	22.3	7.9	7.9	31.4	31.4	84.2	82.0	6.0	5.9	5.9	5.6	5.3	6.0	5.7	7.0	6.0
						22.3	22.3	7.9	7.9	31.4	31.4	81.9	81.3	5.8	5.8		4.9	6.0		6.3	6.4	
				Middle	6.5	22.3	22.3	7.8	7.9	31.4	31.4	80.7	81.3	5.8	5.8		5.7	6.0		6.3	6.4	
						22.3	22.3	7.8	7.8	31.4	31.4	79.1	78.8	5.6	5.6	5.6	6.2	6.6			4.3	4.6
				Bottom	12	22.3	22.3	7.8	7.8	31.4	31.4	78.4	78.8	5.6	5.6	5.6	7.0	6.6			4.9	4.6
						22.3	22.3	7.8	7.8	31.4	31.4	78.4	78.8	5.6	5.6		7.0	6.6			4.9	4.6
5-Dec-14	Cloudy	Moderate	17:16	Surface	1	21.2	21.2	8.0	8.0	31.6	31.9	74.0	74.3	5.5	5.5	5.5	4.7	4.6	4.2	6.8	4.1	5.3
						21.2	21.2	8.0	8.0	32.1	31.9	74.5	74.3	5.5	5.5		4.4	4.6		1.4	4.1	
				Middle	6	21.2	21.2	8.0	8.0	29.8	30.9	71.2	71.9	5.3	5.4		3.6	4.0		6.7	5.7	
						21.2	21.2	8.0	8.0	31.9	30.9	72.6	71.9	5.4	5.4		4.3	4.0			4.7	5.7
				Bottom	11	21.2	21.2	8.0	8.0	32.3	31.1	70.8	70.3	5.2	5.2	5.2	3.8	4.0			5.5	6.1
						21.2	21.2	8.0	8.0	29.8	31.1	69.7	70.3	5.2	5.2	5.2	4.1	4.0			6.6	6.1
8-Dec-14	Cloudy	Moderate	08:30	Surface	1	20.9	20.9	8.1	8.1	31.5	31.5	87.1	86.8	6.5	6.5	6.4	10.5	10.5	10.7	9.5	10.7	10.4
						20.9	20.9	8.1	8.1	31.5	31.5	86.4	86.8	6.4	6.5		10.4	10.5		11.8	10.7	
				Middle	6	20.9	20.9	8.1	8.1	31.5	31.5	85.2	85.0	6.3	6.3		9.5	9.6		9.5	9.4	
						20.9	20.9	8.1	8.1	31.5	31.5	84.7	85.0	6.3	6.3		9.6	9.6			9.3	9.4
				Bottom	11	20.9	20.9	8.1	8.1	31.5	31.5	83.9	83.8	6.2	6.2	6.2	11.2	12.1			10.3	11.0
						20.9	20.9	8.1	8.1	31.5	31.5	83.6	83.8	6.2	6.2		12.9	12.1			11.6	11.0
10-Dec-14	Fine	Moderate	10:13	Surface	1	20.2	20.2	8.3	8.3	32.4	32.4	100.5	99.1	7.5	7.4	7.4	5.7	5.7	6.7	7.2	11.3	10.1
						20.2	20.2	8.3	8.3	32.4	32.4	97.7	99.1	7.3	7.4		5.6	5.7		15.3	11.3	
				Middle	6.5	20.3	20.3	8.3	8.3	32.9	32.8	100.0	98.7	7.5	7.4		6.8	6.8		9.5	12.8	
						20.3	20.3	8.3	8.3	32.7	32.8	97.3	98.7	7.3	7.4		6.7	6.8			16.1	12.8
				Bottom	12	20.3	20.3	8.3	8.3	32.8	32.8	98.4	97.7	7.3	7.3	7.3	7.5	7.5			3.5	6.2
						20.3	20.3	8.3	8.3	32.8	32.8	97.0	97.7	7.2	7.3		7.4	7.5			8.9	6.2
12-Dec-14	Fine	Moderate	12:00	Surface	1	19.9	19.9	7.8	7.8	32.0	32.0	91.1	90.9	6.9	6.9	6.6	7.2	6.8	9.9	21.6	21.3	17.6
						19.9	19.9	7.8	7.8	32.0	32.0	90.7	90.9	6.8	6.9		6.4	6.8		21.0	21.3	
				Middle	6	19.9	19.9	7.8	7.8	29.9	31.0	81.5	83.2	6.2	6.3		9.1	9.3		14.9	17.0	
						19.9	19.9	7.8	7.8	32.0	31.0	84.9	83.2	6.4	6.3		9.4	9.3			19.0	17.0
				Bottom	11	19.9	19.9	7.8	7.8	32.0	32.0	79.1	79.0	6.0	6.0	6.0	13.9	13.6			13.7	14.5
						19.9	19.9	7.8	7.8	32.0	32.0	78.9	79.0	6.0	6.0		13.3	13.6			15.2	14.5
15-Dec-14	Cloudy	Moderate	13:51	Surface	1	19.8	19.8	7.9	7.9	32.2	32.2	73.1	73.1	5.5	5.5	5.6	5.4	5.4	7.0	6.4	6.8	7.6
						19.8	19.8	7.9	7.9	32.2	32.2	73.0	73.1	5.5	5.5		5.3	5.4		7.1	6.8	
				Middle	5.5	19.8	19.8	7.9	7.9	32.2	32.2	73.5	73.5	5.6	5.6		7.9	7.7		6.4	7.4	
						19.8	19.8	7.9	7.9	32.2	32.2	73.4	73.5	5.5	5.6		7.4	7.7			8.4	7.4
				Bottom	10	19.8	19.8	7.9	7.9	32.2	32.2	73.6	73.9	5.6	5.6	5.6	8.3	8.0			7.2	8.5
						19.8	19.8	7.9	7.9	32.2	32.2	74.1	73.9	5.6	5.6		7.6	8.0			9.7	8.5
17-Dec-14	Cloudy	Moderate	14:31	Surface	1	18.6	18.6	7.9	7.9	33.3	33.3	87.3	85.1	6.7	6.6	6.6	5.4	5.5	6.5	11.3	12.0	11.7
						18.6	18.6	7.8	7.9	33.3	33.3	82.9	85.1	6.4	6.6		5.5	5.5		12.6	12.0	
				Middle	6.5	18.6	18.6	7.9	7.9	33.3	33.3	85.0	84.4	6.5	6.5		6.4	6.4		10.6	11.4	
						18.6	18.6	7.8	7.8	33.3	33.3	83.8	84.4	6.4	6.5		6.3	6.4			12.1	11.4
				Bottom	12	18.6	18.6	7.8	7.8	33.3	33.4	82.1	81.8	6.3	6.3	6.3	7.0	7.5			5.8	11.7
						18.6	18.6	7.8	7.8	33.4	33.4	81.5	81.8	6.3	6.3		7.9	7.5			17.5	11.7

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	15:50	Surface	1	17.6 17.6	17.6	7.8 7.8	7.8	31.8 31.8	31.8	76.3 76.8	76.6	6.0 6.1	6.1	6.1	3.9 3.6	3.8	7.2	8.5 7.3	7.9	11.5
				Middle	5	17.6 17.6	17.6	7.8 7.8	7.8	31.8 31.8	31.8	76.2 76.8	76.5	6.0 6.1	6.1		3.1 3.3	3.2		6.6 22.4	14.5	
				Bottom	9	17.6 17.6	17.6	7.8 7.8	7.8	31.8 31.8	31.8	75.0 74.9	75.0	5.9 5.9	5.9		16.0 13.4	14.7		11.9 12.5	12.2	
22-Dec-14	Fine	Moderate	17:28	Surface	1	18.1 18.1	18.1	7.8 7.8	7.8	32.0 29.7	30.9	73.7 73.9	73.8	5.8 5.9	5.9	5.8	7.2 7.9	7.6	7.7	9.0 8.3	8.7	10.9
				Middle	6	17.9 17.9	17.9	7.8 7.8	7.8	32.0 32.0	32.0	70.4 71.2	70.8	5.5 5.6	5.6		5.8 5.1	5.5		10.2 20.2	15.2	
				Bottom	11	17.7 17.7	17.7	7.8 7.8	7.8	29.9 32.0	31.0	73.4 71.7	72.6	5.9 5.6	5.8		9.5 10.6	10.1		8.7 8.7	8.7	
24-Dec-14	Sunny	Moderate	08:52	Surface	1	17.7 17.7	17.7	7.8 7.8	7.8	31.2 31.2	31.2	69.5 68.6	69.1	5.5 5.4	5.5	5.5	3.7 3.0	3.4	6.0	17.7 15.2	16.5	15.3
				Middle	6	17.7 17.7	17.7	7.8 7.8	7.8	31.2 31.2	31.2	68.1 68.2	68.2	5.4 5.4	5.4		6.0 5.2	5.6		14.2 15.5	14.9	
				Bottom	11	17.7 17.7	17.7	7.8 7.8	7.8	31.2 29.7	30.5	67.6 67.1	67.4	5.3 5.4	5.4		8.9 9.2	9.1		16.0 12.7	14.4	
27-Dec-14	Cloudy	Moderate	12:21	Surface	1	17.8 17.8	17.8	7.8 7.6	7.7	31.6 31.5	31.6	80.3 84.8	82.6	6.3 6.7	6.5	6.5	10.8 11.1	11.0	15.3	10.6 11.8	11.2	11.2
				Middle	5.5	17.9 17.9	17.9	7.8 7.9	7.9	31.7 31.6	31.7	81.6 83.1	82.4	6.4 6.5	6.5		20.3 20.3	20.3		9.7 10.2	10.0	
				Bottom	10	17.9 17.9	17.9	7.6 7.9	7.8	31.6 31.6	31.6	78.4 79.0	78.7	6.2 6.2	6.2		15.1 14.1	14.6		12.2 12.7	12.5	
29-Dec-14	Fine	Moderate	12:41	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.7 31.8	31.8	73.2 77.1	75.2	5.8 6.1	6.0	5.6	6.4 6.4	6.4	10.8	9.1 14.2	11.7	10.5
				Middle	6	17.4 17.4	17.4	7.7 7.7	7.7	31.8 31.8	31.8	65.2 65.5	65.4	5.2 5.2	5.2		8.8 9.9	9.4		10.3 7.9	9.1	
				Bottom	11	17.3 17.3	17.3	7.7 7.7	7.7	31.7 31.8	31.8	68.1 67.2	67.7	5.4 5.3	5.4		16.8 16.2	16.5		10.7 10.6	10.7	
31-Dec-14	Fine	Moderate	14:26	Surface	1	17.5 17.5	17.5	7.9 7.9	7.9	30.6 30.6	30.6	88.2 87.5	87.9	7.0 7.0	7.0	7.1	3.1 2.9	3.0	5.7	4.9 4.1	4.5	4.5
				Middle	6	17.3 17.3	17.3	7.9 7.9	7.9	30.6 30.6	30.6	90.2 90.3	90.3	7.2 7.2	7.2		4.4 4.1	4.3		4.7 4.4	4.6	
				Bottom	11	17.3 17.3	17.3	7.9 7.9	7.9	30.6 30.6	30.6	89.7 90.2	90.0	7.2 7.2	7.2		10.0 9.8	9.9		5.0 3.8	4.4	

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-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*
1-Dec-14	Cloudy	Calm	06:51	Surface	1	23.5	23.5	8.1	8.1	28.7	28.4	85.6	85.3	6.2	6.2	6.1	3.5	3.6	2.8	6.2	6.9	4.2
						23.5	23.5	8.0	8.2	28.1	29.9	85.0	84.0	6.2	6.0		3.6	2.4		7.6	2.4	
				Middle	3.5	23.5	23.5	8.2	8.2	29.5	30.2	83.7	84.2	6.0	6.0		2.4	2.3		3.0	1.7	
				Bottom	6	23.1	23.1	8.1	8.1	30.8	30.9	82.2	82.2	5.9	5.9	5.9	2.1	2.3	3.5	3.3		
						23.1	23.1	8.1	8.1	30.9	30.9	82.2	82.2	5.9	5.9	5.9	2.5	2.3	3.1	3.3		
3-Dec-14	Cloudy	Calm	10:06	Surface	1	22.6	22.6	8.0	7.9	30.9	31.1	78.5	78.3	5.7	5.7	5.6	5.0	5.0	6.6	7.0	7.6	8.3
						22.6	22.6	7.7	7.8	31.2	31.2	78.1	74.9	5.7	5.5		4.9	6.3		8.2	8.9	
				Middle	4	22.6	22.6	7.8	7.8	31.1	31.2	75.6	74.2	5.5	5.4		6.3	6.2		9.8	8.0	
				Bottom	7	22.6	22.6	7.8	7.8	31.1	31.2	73.9	74.5	5.4	5.4	5.4	8.5	8.5	7.9	8.3		
						22.6	22.6	7.7	7.8	31.2	31.2	75.0	74.5	5.4	5.4	5.4	8.4	8.5	8.7	8.3		
5-Dec-14	Cloudy	Moderate	12:13	Surface	1	21.1	21.1	8.2	8.2	31.1	31.1	82.9	84.0	6.2	6.3	6.3	3.0	3.0	3.4	4.6	5.4	5.9
						21.1	21.1	8.2	8.2	31.1	31.1	85.1	84.0	6.3	6.3		2.9	3.0		6.1	5.4	
				Middle	4	21.1	21.2	8.1	8.1	31.2	31.2	82.6	83.7	6.1	6.2		3.0	3.2		6.1	7.4	
				Bottom	7	21.2	21.2	8.0	8.0	31.3	31.3	80.3	80.6	5.9	6.0	6.0	4.1	4.0	4.8	5.0		
						21.2	21.2	8.0	8.0	31.3	31.3	80.9	80.6	6.0	6.0	6.0	3.8	4.0	5.1	5.0		
8-Dec-14	Cloudy	Moderate	13:56	Surface	1	20.6	20.6	8.0	8.1	31.1	31.2	90.8	90.8	6.8	6.8	6.7	9.0	8.9	8.7	11.0	9.9	9.7
						20.6	20.6	8.1	8.1	31.2	31.2	90.7	90.8	6.8	6.8		8.8	8.9		8.7	9.9	
				Middle	4	20.6	20.6	8.1	8.1	31.2	31.2	88.3	88.5	6.6	6.6		8.3	8.3		13.0	10.9	
				Bottom	7	20.6	20.6	8.2	8.2	31.3	31.3	84.3	84.5	6.3	6.3	6.3	9.0	8.9	9.3	8.4		
						20.6	20.6	8.2	8.2	31.3	31.3	84.7	84.5	6.3	6.3	6.3	8.8	8.9	7.4	8.4		
10-Dec-14	Fine	Moderate	14:50	Surface	1	20.7	20.7	8.2	8.2	31.9	31.9	82.7	82.5	6.2	6.2	6.2	4.1	4.1	6.4	8.6	8.3	8.0
						20.7	20.7	8.2	8.2	31.8	31.9	82.2	82.5	6.1	6.2		4.1	4.1		8.0	8.3	
				Middle	3.5	20.7	20.7	7.9	7.9	32.2	32.2	82.8	82.7	6.2	6.2		7.6	7.6		11.2	9.4	
				Bottom	6	20.8	20.8	7.8	7.9	32.7	32.7	82.4	82.8	6.1	6.2	6.2	7.5	7.6	6.1	6.4		
						20.8	20.8	7.9	7.9	32.7	32.7	83.2	82.8	6.2	6.2	6.2	7.6	7.6	6.7	6.4		
12-Dec-14	Fine	Moderate	15:07	Surface	1	19.8	19.8	7.7	7.7	31.8	31.8	104.9	104.9	7.9	7.9	7.9	5.8	5.8	5.4	8.8	7.6	8.6
						19.8	19.8	7.7	7.7	31.8	31.8	104.9	104.9	7.9	7.9		5.8	5.8		6.3	7.6	
				Middle	3.5	19.8	19.8	7.7	7.7	31.9	31.9	104.8	104.8	7.9	7.9		4.8	5.2		8.0	10.7	
				Bottom	6	19.8	19.8	7.7	7.7	32.0	32.0	104.6	104.5	7.9	7.9	7.9	5.1	5.1	5.5	13.4		
						19.8	19.8	7.7	7.7	32.0	32.0	104.3	104.5	7.9	7.9	7.9	5.0	5.1	8.0	7.5		
						19.8	19.8	7.7	7.7	32.0	32.0	104.3	104.5	7.9	7.9	7.9	5.0	5.1	7.0	7.5		
15-Dec-14	Cloudy	Moderate	18:34	Surface	1	19.5	19.5	7.9	7.9	31.7	31.7	90.1	90.3	6.9	6.9	6.9	3.9	3.8	5.3	9.0	9.0	9.9
						19.5	19.5	7.9	7.9	31.7	31.7	90.4	90.3	6.9	6.9		3.7	3.8		8.9	9.0	
				Middle	4	19.4	19.4	8.0	8.0	31.7	31.7	90.6	90.3	6.9	6.9		4.2	4.6		10.2	11.0	
				Bottom	7	19.4	19.4	8.0	8.0	31.7	31.8	89.9	86.4	6.9	6.6	6.6	5.0	7.4	8.8	9.8		
						19.4	19.4	8.0	8.0	31.8	31.8	86.4	86.3	6.6	6.6	6.6	6.9	7.4	10.7	9.8		
						19.4	19.4	8.0	8.0	31.8	31.8	86.2	86.3	6.6	6.6	6.6	7.8	7.4	10.7	9.8		
17-Dec-14	Cloudy	Moderate	08:30	Surface	1	18.7	18.7	7.9	7.9	32.8	32.9	86.9	89.6	6.7	6.9	7.1	2.8	2.8	4.8	24.2	16.5	15.5
						18.7	18.7	7.8	7.9	32.9	32.9	92.3	89.6	7.1	6.9		2.8	2.8		8.7	16.5	
				Middle	3.5	18.7	18.7	7.7	7.7	33.0	33.0	93.8	94.0	7.2	7.2		2.5	2.7		9.0	17.5	
				Bottom	6	18.7	18.7	7.7	7.7	33.0	33.0	94.1	94.0	7.2	7.2	7.2	2.9	2.7	26.0	12.4		
						18.7	18.7	7.7	7.7	33.0	33.1	93.7	93.9	7.2	7.2	7.2	9.5	8.9	11.7	12.4		
						18.7	18.7	7.7	7.7	33.1	33.1	94.0	93.9	7.2	7.2	7.2	8.2	8.9	13.1	12.4		

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-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*
20-Dec-14	Fine	Moderate	11:04	Surface	1	17.8 17.8	17.8	7.1 7.1	7.1	31.1 31.2	31.2	74.5 75.5	75.0	5.9 6.0	6.0	6.0	4.6 4.5	4.6	7.4	9.7 6.0	7.9	7.9
				Middle	3	17.8 17.7	17.8	7.1 7.1	7.1	31.2 31.2	31.2	74.0 74.3	74.2	5.8 5.9	5.9		4.3 4.2	4.3		10.2 9.1	9.7	
				Bottom	5	17.6 17.7	17.7	7.1 7.1	7.1	31.2 31.2	31.2	72.2 73.1	72.7	5.7 5.8	5.8		13.3 13.4	13.4		6.7 5.4	6.1	
22-Dec-14	Fine	Moderate	13:06	Surface	1	17.8 17.7	17.8	8.1 8.1	8.1	32.0 32.1	32.1	90.6 91.3	91.0	7.1 7.2	7.2	7.2	4.2 4.3	4.3	7.2	7.6 7.7	7.7	8.8
				Middle	3.5	17.6 17.6	17.6	8.1 8.1	8.1	32.1 32.1	32.1	90.7 90.3	90.5	7.1 7.1	7.1		4.4 4.3	4.4		8.2 9.4	8.8	
				Bottom	6	17.4 17.4	17.4	8.1 8.1	8.1	32.1 32.2	32.2	90.8 89.5	90.2	7.2 7.1	7.2		12.3 13.2	12.8		8.8 11.2	10.0	
24-Dec-14	Sunny	Moderate	13:34	Surface	1	17.4 17.4	17.4	7.3 7.3	7.3	31.5 31.5	31.5	82.5 82.5	82.5	6.5 6.5	6.5	6.6	10.0 10.1	10.1	9.2	13.6 9.4	11.5	10.2
				Middle	3.5	17.3 17.3	17.3	7.3 7.3	7.3	31.6 30.7	31.2	82.3 82.5	82.4	6.5 6.6	6.6		8.9 8.7	8.8		12.0 11.9	12.0	
				Bottom	6	17.2 17.2	17.2	7.4 7.4	7.4	31.7 31.7	31.7	75.1 75.1	75.1	6.0 6.0	6.0		8.6 8.6	8.6		5.9 8.2	7.1	
27-Dec-14	Cloudy	Moderate	15:58	Surface	1	17.8 17.8	17.8	7.7 7.7	7.7	31.0 31.0	31.0	85.1 85.7	85.4	6.7 6.8	6.8	6.8	17.5 17.5	17.5	16.2	9.5 10.9	10.2	10.4
				Middle	4	17.8 17.8	17.8	7.7 7.7	7.7	31.0 31.0	31.0	85.6 85.6	85.6	6.8 6.8	6.8		15.6 15.6	15.6		12.3 7.8	10.1	
				Bottom	7	17.8 17.8	17.8	7.7 7.7	7.7	31.1 31.1	31.1	85.2 85.1	85.2	6.7 6.7	6.7		15.5 15.3	15.4		11.0 10.6	10.8	
29-Dec-14	Fine	Moderate	18:16	Surface	1	17.3 17.3	17.3	7.7 7.7	7.7	30.9 30.9	30.9	83.5 83.5	83.5	6.7 6.7	6.7	6.7	4.8 5.1	5.0	8.3	6.6 6.1	6.4	8.0
				Middle	4	17.2 17.2	17.2	7.7 7.7	7.7	30.9 30.9	30.9	83.3 83.4	83.4	6.7 6.7	6.7		7.9 7.5	7.7		7.1 6.9	7.0	
				Bottom	7	17.2 17.2	17.2	7.8 7.8	7.8	30.9 30.9	30.9	82.7 82.6	82.7	6.6 6.6	6.6		11.4 12.8	12.1		10.1 10.9	10.5	
31-Dec-14	Fine	Moderate	08:30	Surface	1	17.1 17.1	17.1	7.9 7.8	7.9	30.9 30.9	30.9	91.8 91.0	91.4	7.4 7.3	7.4	7.2	5.3 5.1	5.2	6.9	5.7 7.3	6.5	5.0
				Middle	3.5	17.1 17.1	17.1	7.8 7.8	7.8	31.0 31.0	31.0	86.1 87.5	86.8	6.9 7.0	7.0		6.4 7.1	6.8		3.9 3.7	3.8	
				Bottom	6	17.1 17.1	17.1	7.8 7.8	7.8	30.9 31.0	31.0	80.8 81.5	81.2	6.5 6.5	6.5		8.2 9.0	8.6		4.8 4.6	4.7	

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

Water Quality Monitoring Results at 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*			
1-Dec-14	Cloudy	Calm	13:25	Surface	1	23.5	23.5	7.5	7.5	28.7	28.7	123.2	123.2	8.9	8.9	8.9	2.8	2.9	3.2	3.1	3.2	3.6			
						23.5	23.5	7.5	7.5	28.7	28.7	123.2	123.2	8.9	8.9										
				Middle	3	23.5	23.5	7.5	7.5	28.8	28.9	122.8	122.8	8.8	8.8										
				Bottom	5	23.5	23.5	7.6	7.6	29.6	29.6	122.4	122.4	8.8	8.8										
						23.5	23.5	7.6	7.6	29.6	29.6	122.4	122.4	8.8	8.8										
3-Dec-14	Cloudy	Calm	16:03	Surface	1	22.5	22.5	7.8	7.8	28.2	29.3	82.6	80.0	6.0	5.8	5.8	2.0	2.1	2.4	3.9	4.8	4.9			
						22.5	22.5	7.8	7.8	30.3	30.4	77.4	78.6	5.6	5.7										
				Middle	4	22.5	22.5	7.8	7.8	30.4	30.4	78.4	78.5	5.7	5.7										
				Bottom	7	22.5	22.5	7.8	7.8	30.7	30.7	77.9	83.1	5.6	6.0										
						22.5	22.5	7.8	7.8	30.7	30.7	78.3	83.1	6.4	6.0										
5-Dec-14	Cloudy	Moderate	16:18	Surface	1	21.1	21.1	8.1	8.1	31.3	31.3	82.3	82.6	6.1	6.2	6.1	4.2	4.0	5.7	5.8	7.5	6.5			
						21.0	21.0	8.0	8.1	31.3	31.3	82.8	80.6	6.2	6.0										
				Middle	3.5	21.0	21.0	8.0	8.1	31.3	31.3	80.1	80.6	5.9	6.0										
				Bottom	6	21.0	21.0	8.2	8.1	31.3	31.3	80.2	79.4	6.0	5.9										
						21.0	21.0	8.0	8.1	31.3	31.3	78.5	79.4	5.8	5.9										
8-Dec-14	Cloudy	Moderate	08:09	Surface	1	20.6	20.6	7.9	8.0	31.1	31.1	98.9	98.4	7.4	7.4	7.3	7.5	7.5	14.8	16.3	17.1	18.4			
						20.6	20.6	8.0	8.0	31.1	31.1	97.8	94.7	7.3	7.1										
				Middle	4	20.6	20.6	8.0	8.0	31.2	31.2	95.3	94.7	7.1	7.1										
				Bottom	7	20.6	20.6	8.0	8.0	31.2	31.2	93.4	93.4	7.0	7.0										
						20.6	20.6	8.0	8.0	31.2	31.2	93.3	93.4	7.0	7.0										
10-Dec-14	Fine	Moderate	10:01	Surface	1	20.7	20.7	8.3	8.4	32.7	32.7	95.0	95.0	7.0	7.0	6.9	7.9	7.9	13.8	14.9	16.4	13.6			
						20.7	20.7	8.4	8.4	32.7	32.7	95.0	95.0	7.0	7.0										
				Middle	3.5	20.6	20.6	8.0	8.0	32.7	32.7	91.6	91.4	6.8	6.8										
				Bottom	6	20.6	20.6	7.9	7.9	32.7	32.7	91.2	91.4	6.8	6.8										
						20.6	20.6	7.9	7.9	32.8	32.8	90.3	90.5	6.7	6.7										
						20.6	20.6	7.9	7.9	32.8	32.8	90.6	90.5	6.7	6.7										
12-Dec-14	Fine	Moderate	10:46	Surface	1	19.4	19.4	7.7	7.7	30.6	30.6	100.2	100.1	7.7	7.7	7.7	7.6	7.7	8.6	9.8	10.9	11.0			
						19.3	19.4	7.6	7.7	30.6	30.6	100.0	100.1	7.7	7.7										
				Middle	3.5	19.4	19.4	7.7	7.7	30.7	30.7	99.2	99.3	7.6	7.6										
				Bottom	6	19.4	19.4	7.6	7.7	30.7	30.8	99.4	99.2	7.6	7.6										
						19.4	19.4	7.6	7.7	30.8	30.8	99.2	99.2	7.6	7.6										
						19.4	19.4	7.8	7.7	30.7	30.8	99.1	99.2	7.6	7.6										
15-Dec-14	Cloudy	Moderate	13:04	Surface	1	19.1	19.1	7.9	7.9	31.7	31.8	90.0	90.1	6.9	6.9	6.9	3.7	3.4	5.9	12.3	13.0	10.4			
						19.1	19.1	7.9	7.9	31.8	31.8	90.2	90.1	6.9	6.9										
				Middle	4	19.1	19.1	8.1	8.1	32.0	32.0	90.3	90.2	6.9	6.9										
				Bottom	7	19.1	19.1	8.0	8.0	32.0	32.1	90.1	88.7	6.9	6.8										
						19.1	19.1	8.0	8.0	32.1	32.1	88.7	88.6	6.8	6.8										
						19.1	19.1	8.0	8.0	32.1	32.1	88.5	88.6	6.8	6.8										
17-Dec-14	Cloudy	Moderate	14:20	Surface	1	18.4	18.5	8.1	8.1	33.3	33.3	87.5	86.7	6.7	6.7	6.5	8.3	8.0	9.2	19.4	14.6	12.5			
						18.6	18.7	8.1	8.1	33.2	33.1	85.8	81.4	6.6	6.2										
				Middle	4	18.7	18.7	7.9	7.9	33.1	33.1	81.4	81.3	6.2	6.2										
				Bottom	7	18.7	18.7	7.9	7.8	33.1	33.1	81.2	83.2	6.2	6.4										
						18.7	18.7	7.8	7.8	33.1	33.1	83.2	83.4	6.4	6.4										
						18.7	18.7	7.8	7.8	33.1	33.1	83.6	83.4	6.4	6.4										

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*
20-Dec-14	Fine	Moderate	15:45	Surface	1	17.7 17.7	17.7	7.4 7.5	7.5	31.3 31.3	31.3	81.1 81.7	81.4	6.4 6.5	6.5	6.6	3.8 3.1	3.5	6.5	5.8 14.5	10.2	8.8
				Middle	3	17.7 17.7	17.7	7.5 7.5	7.5	31.3 31.3	31.3	82.6 83.0	82.8	6.5 6.6	6.6		3.1 3.6	3.4		6.0 8.3	7.2	
				Bottom	5	17.6 17.6	17.6	7.6 7.6	7.6	31.3 31.3	31.3	82.2 82.2	82.2	6.5 6.5	6.5		13.1 12.0	12.6		12.0 5.7	8.9	
22-Dec-14	Fine	Moderate	16:55	Surface	1	17.7 17.7	17.7	8.1 8.1	8.1	32.5 32.5	32.5	88.7 87.8	88.3	7.0 6.9	7.0	6.9	9.0 8.9	9.0	9.4	8.9 7.1	8.0	8.3
				Middle	4	17.4 17.4	17.4	8.1 8.2	8.2	32.5 32.6	32.6	86.8 85.6	86.2	6.8 6.8	6.8		7.3 7.6	7.5		8.8 10.1	9.5	
				Bottom	7	17.2 17.2	17.2	8.2 8.2	8.2	32.6 32.6	32.6	85.0 84.5	84.8	6.7 6.7	6.7		12.3 11.0	11.7		7.4 7.3	7.4	
24-Dec-14	Sunny	Moderate	08:24	Surface	1	17.2 17.2	17.2	7.6 7.6	7.6	31.6 31.6	31.6	81.0 81.0	81.0	6.5 6.5	6.5	6.3	6.7 6.5	6.6	12.8	19.1 20.3	19.7	17.4
				Middle	3	17.2 17.2	17.2	7.6 7.6	7.6	31.6 31.6	31.6	75.8 77.5	76.7	6.0 6.2	6.1		13.7 14.9	14.3		18.1 18.7	18.4	
				Bottom	5	17.2 17.2	17.2	7.7 7.7	7.7	31.6 31.6	31.6	73.1 72.6	72.9	5.8 5.8	5.8		17.1 17.7	17.4		17.7 10.4	14.1	
27-Dec-14	Cloudy	Moderate	11:01	Surface	1	17.7 17.7	17.7	7.8 7.8	7.8	30.9 30.9	30.9	81.0 82.1	81.6	6.4 6.5	6.5	6.6	12.6 13.4	13.0	14.5	13.6 13.6	13.6	12.9
				Middle	4	17.7 17.7	17.7	7.8 7.8	7.8	30.9 28.4	29.7	82.6 82.2	82.4	6.5 6.6	6.6		13.8 15.3	14.6		15.6 11.1	13.4	
				Bottom	7	17.7 17.7	17.7	7.8 7.8	7.8	30.9 30.9	30.9	81.9 81.6	81.8	6.5 6.5	6.5		15.3 16.2	15.8		10.0 13.1	11.6	
29-Dec-14	Fine	Moderate	13:01	Surface	1	17.1 17.1	17.1	7.7 7.7	7.7	30.7 30.7	30.7	86.6 86.8	86.7	6.9 7.0	7.0	7.0	2.2 2.1	2.2	5.0	10.2 10.2	10.2	8.9
				Middle	4	17.1 17.1	17.1	7.7 7.7	7.7	30.7 30.7	30.7	86.8 86.9	86.9	7.0 7.0	7.0		4.5 4.5	4.5		7.9 6.9	7.4	
				Bottom	7	17.0 17.0	17.0	7.7 7.7	7.7	30.8 30.8	30.8	86.6 86.5	86.6	7.0 6.9	7.0		8.3 8.1	8.2		7.5 10.6	9.1	
31-Dec-14	Fine	Moderate	13:30	Surface	1	17.3 17.3	17.3	7.6 7.7	7.7	31.1 31.1	31.1	83.9 84.6	84.3	6.7 6.7	6.7	6.8	6.2 5.1	5.7	7.0	5.7 3.3	4.5	5.1
				Middle	3.5	17.3 17.3	17.3	7.8 7.7	7.8	31.1 31.1	31.1	85.8 85.6	85.7	6.8 6.8	6.8		7.6 6.2	6.9		5.1 5.3	5.2	
				Bottom	6	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.1	31.1	85.9 85.8	85.9	6.8 6.8	6.8		8.1 8.5	8.3		6.7 4.2	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*		
1-Dec-14	Cloudy	Calm	07:38	Surface	1	23.2	23.2	7.9	7.9	28.9	28.9	85.9	86.1	6.2	6.2	6.2	5.8	5.8	5.5	2.2	3.5	3.2		
						23.2		7.9		28.9		86.2		6.2			5.8			5.8			4.7	
				Middle	4.5	23.1	23.1	7.9	7.9	30.0	30.0	85.1	85.3	6.1	6.2		5.8	5.8		5.9	4.5			
				23.1		7.9		29.9		85.4		6.2		6.2		5.8		3.0	4.5					
				Bottom	8	22.7	22.7	7.8	7.8	31.4	31.1	83.1	83.0	6.0	6.0	6.0	4.6	5.0		1.2	1.7			
						22.7		7.8		30.7		82.8		6.0		6.0	5.4		2.2					
3-Dec-14	Cloudy	Calm	11:05	Surface	1	22.6	22.6	8.0	7.9	31.4	31.4	80.3	81.4	5.8	5.9	5.8	4.9	5.1	6.0	16.0	17.3	13.9		
						22.6		7.8		31.4		82.4		6.0			5.8			5.1			18.6	
				Middle	4.5	22.7	22.7	7.9	7.9	30.7	31.1	76.7	77.5	5.6	5.7		6.2	5.9		6.8	15.2			
				22.7		7.8		31.4		78.2		5.7		5.7		5.6		13.6	15.2					
				Bottom	8	22.7	22.7	7.9	7.9	31.4	31.4	78.9	79.6	5.7	5.8	5.8	7.6	6.9		9.2	9.1			
						22.7		7.8		31.4		80.3		5.8		5.8	6.2		8.9	9.1				
5-Dec-14	Cloudy	Moderate	12:59	Surface	1	21.4	21.4	8.1	8.2	31.5	31.6	72.1	71.5	5.3	5.3	5.3	3.9	4.3	9.1	11.9	9.6	10.3		
						21.4		8.2		31.6		70.9		5.2			5.3			4.3			7.3	9.6
				Middle	4.5	21.4	21.4	8.2	8.2	31.5	31.6	70.0	70.1	5.2	5.2		7.7	7.7		11.3	10.0			
				21.4		8.2		31.6		70.2		5.2		5.2		7.7		8.6	10.0					
				Bottom	8	21.4	21.4	8.2	8.2	31.5	31.5	70.5	70.3	5.2	5.2	5.2	14.5	15.3		9.9	11.3			
						21.4		8.2		31.5		70.0		5.2		5.2	16.0		12.7	11.3				
8-Dec-14	Cloudy	Moderate	14:58	Surface	1	20.8	20.8	8.1	8.1	31.4	31.4	88.3	87.9	6.6	6.6	6.6	6.3	6.3	6.8	7.8	8.1	7.8		
						20.8		8.1		31.4		87.5		6.5			6.6			6.3			8.3	8.1
				Middle	5	20.7	20.7	8.1	8.1	31.4	31.4	87.6	87.8	6.5	6.6		6.1	6.1		7.0	6.4			
				20.7		8.1		31.4		88.0		6.6		6.6		6.1		5.8	6.4					
				Bottom	9	20.6	20.6	8.1	8.1	31.4	31.4	84.9	85.3	6.3	6.4	6.4	8.1	8.1		9.2	8.8			
						20.6		8.1		31.4		85.7		6.4		6.4	8.0		8.3	8.8				
10-Dec-14	Fine	Moderate	15:19	Surface	1	20.8	20.8	8.0	8.1	32.4	32.4	85.9	83.1	6.4	6.2	6.3	4.1	4.2	4.8	8.4	8.0	8.2		
						20.8		8.1		32.3		80.3		6.0			6.2			4.2			7.5	8.0
				Middle	5.5	20.8	20.8	7.9	7.9	32.4	32.4	84.9	84.9	6.3	6.3		4.4	4.4		7.3	9.5			
				20.8		7.8		32.4		84.9		6.3		6.3		4.4		11.7	9.5					
				Bottom	10	20.8	20.8	7.8	7.8	31.6	32.2	83.9	84.3	6.2	6.3	6.3	5.9	5.8		6.9	7.0			
						20.8		7.8		32.7		84.7		6.3		6.3	5.7		7.0	7.0				
12-Dec-14	Fine	Moderate	15:57	Surface	1	19.8	19.8	7.6	7.6	32.3	32.3	97.3	97.3	7.3	7.3	7.3	4.2	4.2	4.7	18.0	17.0	11.7		
						19.8		7.6		32.3		97.3		7.3			7.3			4.2			15.9	17.0
				Middle	5	19.8	19.8	7.6	7.7	32.4	32.4	96.8	96.9	7.3	7.3		4.8	4.8		9.4	9.1			
				19.8		7.7		32.4		96.9		7.3		7.3		4.7		8.7	9.1					
				Bottom	9	19.8	19.8	7.6	7.7	32.5	32.5	95.9	95.8	7.2	7.2	7.2	5.3	5.2		9.3	9.0			
						19.8		7.7		32.5		95.7		7.2		7.2	5.1		8.7	9.0				
15-Dec-14	Cloudy	Moderate	19:42	Surface	1	19.6	19.6	8.0	8.0	32.2	32.2	81.3	81.2	6.2	6.2	6.2	7.5	7.5	6.7	10.6	9.8	10.8		
						19.6		8.0		32.2		81.0		6.1			6.2			7.5			9.0	9.8
				Middle	5	19.6	19.6	8.0	8.1	32.2	32.2	80.6	80.5	6.1	6.1		6.2	6.2		14.0	14.2			
				19.6		8.1		32.2		80.4		6.1		6.1		6.1		14.3	14.2					
				Bottom	9	19.6	19.6	8.1	8.1	32.2	32.2	80.0	79.9	6.1	6.1	6.1	6.2	6.3		8.7	8.5			
						19.6		8.0		32.2		79.7		6.0		6.1	6.4		8.3	8.5				
17-Dec-14	Cloudy	Moderate	09:20	Surface	1	18.4	18.5	8.1	8.1	33.3	33.3	80.2	80.6	6.2	6.2	6.2	4.8	4.5	11.6	17.4	13.3	13.7		
						18.5		8.1		33.3		81.0		6.2			6.2			4.5			9.2	13.3
				Middle	4.5	18.5	18.5	8.0	8.1	33.3	33.3	78.7	79.5	6.1	6.2		10.6	10.6		11.9	16.5			
				18.5		8.1		33.3		80.3		6.2		6.2		10.6		21.0	16.5					
				Bottom	8	18.5	18.5	8.0	8.1	33.2	33.2	83.0	83.3	6.4	6.4	6.4	18.4	19.7		11.0	11.3			
						18.5		8.1		33.2		83.5		6.4		6.4	21.0		11.5	11.3				

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	12:01	Surface	1	17.9 17.9	17.9	7.5 7.4	7.5	31.3 31.3	31.3	66.4 67.9	67.2	5.2 5.3	5.3	5.4	5.7 7.0	6.4	8.7	11.0 10.1	10.6	12.8
				Middle	4.5	17.8 17.8	17.8	7.4 7.4	7.4	31.2 31.3	31.3	68.6 67.9	68.3	5.4 5.4	5.4		5.5 5.0	5.3		9.9 26.1	18.0	
				Bottom	8	17.8 17.8	17.8	7.4 7.4	7.4	31.3 31.3	31.3	67.8 67.0	67.4	5.3 5.3	5.3		14.8 14.0	14.4		10.8 8.9	9.9	
22-Dec-14	Fine	Moderate	13:46	Surface	1	17.6 17.6	17.6	8.2 8.2	8.2	33.2 33.2	33.2	97.1 96.1	96.6	7.6 7.5	7.6	7.6	7.4 7.3	7.4	9.5	9.4 8.3	8.9	8.8
				Middle	4.5	17.5 17.5	17.5	7.1 8.1	7.6	33.2 33.2	33.2	96.5 96.6	96.6	7.6 7.6	7.6		6.7 7.5	7.1		7.9 10.3	9.1	
				Bottom	8	17.4 17.4	17.4	8.1 8.1	8.1	33.2 33.2	33.2	96.5 95.9	96.2	7.6 7.5	7.6		14.0 14.0	14.0		10.7 6.3	8.5	
24-Dec-14	Sunny	Moderate	14:28	Surface	1	17.4 17.4	17.4	7.6 7.6	7.6	31.9 31.9	31.9	77.1 77.1	77.1	6.1 6.1	6.1	6.3	6.6 6.6	6.6	7.1	7.7 5.2	6.5	7.1
				Middle	4.5	17.4 17.4	17.4	7.6 7.6	7.6	31.9 31.9	31.9	82.2 82.2	82.2	6.5 6.5	6.5		7.2 7.2	7.2		5.3 6.9	6.1	
				Bottom	8	17.4 17.4	17.4	7.6 7.6	7.6	31.9 31.9	31.9	85.5 82.8	84.2	6.8 6.6	6.7		7.5 7.6	7.6		10.7 6.6	8.7	
27-Dec-14	Cloudy	Moderate	16:58	Surface	1	17.8 17.8	17.8	7.8 7.8	7.8	31.1 31.1	31.1	75.6 76.4	76.0	6.0 6.0	6.0	6.1	16.0 17.0	16.5	20.6	8.3 7.8	8.1	8.0
				Middle	5	17.8 17.8	17.8	7.8 7.8	7.8	31.1 31.1	31.1	77.5 77.5	77.5	6.1 6.1	6.1		20.1 22.0	21.1		7.4 7.2	7.3	
				Bottom	9	17.8 17.8	17.8	7.8 7.8	7.8	31.1 31.1	31.1	78.0 78.0	78.0	6.2 6.2	6.2		24.3 23.8	24.1		9.6 7.8	8.7	
29-Dec-14	Fine	Moderate	18:58	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.1 31.1	31.1	90.2 90.6	90.4	7.2 7.2	7.2	7.2	3.5 3.5	3.5	6.7	11.8 11.2	11.5	11.6
				Middle	5	17.4 17.4	17.4	7.7 7.7	7.7	31.1 31.1	31.1	90.8 90.8	90.8	7.2 7.2	7.2		5.3 5.9	5.6		11.8 11.7	11.8	
				Bottom	9	17.4 17.4	17.4	7.7 7.7	7.7	31.1 31.1	31.1	90.6 90.5	90.6	7.2 7.2	7.2		10.4 11.4	10.9		10.7 12.1	11.4	
31-Dec-14	Fine	Moderate	09:30	Surface	1	17.1 17.1	17.1	8.0 7.9	8.0	31.1 31.1	31.1	83.7 86.1	84.9	6.7 6.9	6.8	7.0	6.1 7.0	6.6	7.8	5.3 5.2	5.3	4.9
				Middle	4.5	17.1 17.1	17.1	7.9 7.9	7.9	29.4 31.1	30.3	88.1 88.0	88.1	7.1 7.0	7.1		7.2 8.1	7.7		6.6 4.4	5.5	
				Bottom	8	17.1 17.1	17.1	7.9 7.9	7.9	31.1 31.1	31.1	87.5 88.1	87.8	7.0 7.1	7.1		8.9 9.5	9.2		4.6 3.3	4.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	14:17	Surface	1	23.4 23.4	23.4	7.6 7.6	7.6	29.8 29.8	29.8	107.4 106.6	107.0	7.7 7.7	7.7	7.6	2.6 2.6	2.6	6.4	6.0 4.2	5.1	4.4
				Middle	4	23.3 23.3	23.3	7.7 7.7	7.7	30.4 30.5	30.5	104.2 104.2	104.2	7.5 7.5	7.5		2.9 2.8	2.9		2.6 3.7	3.2	
				Bottom	7	23.3 23.3	23.3	7.7 7.6	7.7	31.5 31.5	31.5	102.2 102.3	102.3	7.3 7.3	7.3		13.6 13.6	13.6		3.4 6.2	4.8	
3-Dec-14	Cloudy	Calm	16:56	Surface	1	22.5 22.5	22.5	8.1 8.0	8.1	31.6 31.5	31.6	80.3 86.5	83.4	5.8 6.3	6.1	6.2	8.6 8.1	8.4	14.3	6.6 6.8	6.7	6.6
				Middle	5	22.5 22.5	22.5	8.0 7.9	8.0	31.5 31.5	31.5	83.3 87.5	85.4	6.0 6.3	6.2		13.8 14.2	14.0		6.4 4.7	5.6	
				Bottom	9	22.5 22.5	22.5	8.0 7.9	8.0	29.5 31.5	30.5	82.8 87.9	85.4	6.0 6.4	6.2		20.9 19.9	20.4		6.9 8.1	7.5	
5-Dec-14	Cloudy	Moderate	17:06	Surface	1	21.3 21.3	21.3	8.1 8.2	8.2	31.5 31.5	31.5	71.7 72.0	71.9	5.3 5.3	5.3	5.3	5.8 5.5	5.7	8.2	9.3 8.7	9.0	9.6
				Middle	4.5	21.3 21.3	21.3	8.1 8.2	8.2	31.5 31.5	31.5	69.8 69.9	69.9	5.2 5.2	5.2		7.6 8.2	7.9		10.7 6.9	8.8	
				Bottom	8	21.3 21.3	21.3	8.2 8.1	8.2	31.5 31.5	31.5	70.3 70.5	70.4	5.2 5.2	5.2		11.2 11.0	11.1		8.1 14.0	11.1	
8-Dec-14	Cloudy	Moderate	09:12	Surface	1	20.7 20.7	20.7	8.2 8.2	8.2	31.4 31.4	31.4	93.9 93.5	93.7	7.0 7.0	7.0	7.0	9.3 9.2	9.3	16.6	15.4 11.1	13.3	12.7
				Middle	5	20.7 20.7	20.7	8.2 8.1	8.2	31.4 31.4	31.4	92.7 92.4	92.6	6.9 6.9	6.9		10.6 11.1	10.9		11.4 12.4	11.9	
				Bottom	9	20.7 20.7	20.7	8.1 8.1	8.1	31.4 31.4	31.4	92.8 93.2	93.0	6.9 7.0	7.0		29.4 29.8	29.6		10.0 15.7	12.9	
10-Dec-14	Fine	Moderate	10:38	Surface	1	20.7 20.7	20.7	8.1 8.1	8.1	32.6 32.6	32.6	92.4 88.9	90.7	6.8 6.6	6.7	6.8	6.6 6.7	6.7	9.6	15.7 15.2	15.5	12.3
				Middle	5	20.8 20.8	20.8	8.0 8.0	8.0	32.8 32.8	32.8	92.2 93.1	92.7	6.8 6.9	6.9		7.5 7.4	7.5		13.6 9.6	11.6	
				Bottom	9	20.7 20.7	20.7	7.9 7.9	7.9	32.9 32.9	32.9	92.6 91.5	92.1	6.8 6.8	6.8		14.5 14.5	14.5		11.0 8.8	9.9	
12-Dec-14	Fine	Moderate	11:41	Surface	1	19.5 19.6	19.6	7.8 7.7	7.8	32.0 32.1	32.1	102.0 98.4	100.2	7.8 7.5	7.7	7.4	5.0 5.0	5.0	6.3	11.5 12.7	12.1	13.5
				Middle	5	19.6 19.6	19.6	7.8 7.7	7.8	32.1 32.1	32.1	92.4 93.6	93.0	7.0 7.1	7.1		6.9 6.7	6.8		15.6 10.0	12.8	
				Bottom	9	19.6 19.6	19.6	7.7 7.7	7.7	32.1 32.1	32.1	91.1 90.8	91.0	6.9 6.9	6.9		6.9 7.0	7.0		18.7 12.5	15.6	
15-Dec-14	Cloudy	Moderate	14:07	Surface	1	19.3 19.3	19.3	8.0 8.0	8.0	33.0 33.1	33.1	90.2 90.1	90.2	6.8 6.8	6.8	6.8	3.9 4.1	4.0	5.6	9.4 16.2	12.8	9.9
				Middle	5	19.3 19.3	19.3	8.1 8.1	8.1	33.1 33.1	33.1	89.5 89.2	89.4	6.8 6.8	6.8		5.4 5.4	5.4		7.6 9.2	8.4	
				Bottom	9	19.3 19.3	19.3	8.1 8.1	8.1	33.1 33.1	33.1	88.6 88.4	88.5	6.7 6.7	6.7		8.1 6.9	7.5		8.8 7.9	8.4	
17-Dec-14	Cloudy	Moderate	15:17	Surface	1	18.6 18.6	18.6	8.1 8.1	8.1	33.2 33.2	33.2	84.9 85.4	85.2	6.5 6.6	6.6	6.6	2.1 2.2	2.2	4.4	23.5 15.1	19.3	14.6
				Middle	5	18.5 18.6	18.6	8.1 8.1	8.1	33.2 33.2	33.2	85.9 85.9	85.9	6.6 6.6	6.6		3.3 2.9	3.1		11.2 17.5	14.4	
				Bottom	9	18.6 18.6	18.6	8.1 8.1	8.1	33.2 33.1	33.2	86.1 86.4	86.3	6.6 6.6	6.6		7.9 7.6	7.8		9.9 10.5	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 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*				
20-Dec-14	Fine	Moderate	16:31	Surface	1	18.0	18.0	7.9	7.9	31.3	31.3	74.5	74.7	5.9	5.9	5.9	6.4	6.2	8.6	7.4	13.6	11.1				
						18.0		7.9		31.3		74.8		5.9			6.0			6.2			19.7			
				Middle	4.5	17.9	17.9	7.9	7.9	31.3	31.3	74.0	74.3	5.8	5.9		5.3	5.3		5.2	5.3		11.2	9.5		
				17.8	17.8	7.9	7.9	31.3	31.3	75.3	75.1	5.9	5.9	5.9	14.7	14.4		11.5	10.1							
				17.8		7.9		31.3		74.8		5.9		5.9		14.0			8.7	10.1						
22-Dec-14	Fine	Moderate	17:36	Surface	1	17.5	17.5	8.1	8.1	33.1	33.1	86.7	87.2	6.8	6.9	6.9	5.4	5.7	8.4	8.6	7.9	8.6				
						17.5		8.1		33.1		87.6		6.9			5.9			5.7			7.1			
				Middle	4.5	17.4	17.4	8.1	8.1	33.1	33.2	87.8	87.7	6.9	6.9		7.4	7.8		8.1	7.8		8.0	8.5		
				17.4		8.1		33.2		87.6		6.9		6.9		11.7			7.5	9.4						
				17.3	17.3	8.1	8.1	33.1	33.2	87.9	87.6	6.9	6.9	6.9	11.7	11.7		11.2	9.4							
				17.3		8.1		33.2		87.2		6.9		6.9		11.6			11.2	9.4						
24-Dec-14	Sunny	Moderate	09:14	Surface	1	17.2	17.2	7.7	7.7	32.2	32.2	69.5	72.8	5.5	5.8	5.6	5.4	5.5	6.1	11.0	14.8	15.1				
						17.2		7.7		32.2		76.0		6.0			5.5			5.5			18.6			
				Middle	4	17.2	17.2	7.7	7.7	32.1	32.2	66.2	66.2	5.3	5.3		5.9	6.0		6.1	6.0		14.5	14.0		
				17.2		7.7		32.2		66.2		5.3		5.3		6.1			13.5	14.0						
				17.2	17.2	7.7	7.7	32.2	32.2	69.8	67.7	5.5	5.4	5.4	6.8	6.8		16.0	16.6							
				17.2		7.7		32.2		65.5		5.2		5.4		6.8			17.2	16.6						
27-Dec-14	Cloudy	Moderate	12:07	Surface	1	17.7	17.7	7.9	7.9	31.0	31.0	69.0	69.4	5.5	5.5	5.6	15.0	14.5	16.0	6.3	7.3	8.7				
						17.7		7.9		31.0		69.8		5.5			5.5			14.0			14.5		8.3	7.3
				Middle	5	17.8	17.8	7.9	7.9	31.1	31.1	70.4	70.5	5.6	5.6		14.9	14.6		14.2	14.6		10.1	9.7		
				17.8		7.9		31.1		70.5		5.6		5.6		14.2			9.3	9.7						
				17.8	17.8	7.9	7.9	31.1	31.1	70.4	70.3	5.6	5.6	5.6	18.9	18.8		10.2	9.2							
				17.8		7.9		31.1		70.2		5.5		5.6		18.7			8.1	9.2						
29-Dec-14	Fine	Moderate	13:42	Surface	1	17.3	17.3	7.7	7.7	31.1	31.1	92.4	93.3	7.4	7.5	7.6	3.1	3.0	6.6	8.9	9.1	8.9				
						17.3		7.7		31.1		94.2		7.5			7.5			3.0			6.6	9.2	9.1	
				Middle	4.5	17.2	17.2	7.6	7.6	31.1	31.1	96.3	96.5	7.7	7.7		2.8	2.8		2.8	2.8		6.7	8.0		
				17.2		7.6		31.1		96.7		7.7		7.7		2.7			9.3	8.0						
				17.2	17.2	7.6	7.6	31.1	31.1	97.0	97.0	7.7	7.7	7.7	12.7	14.1		9.1	9.6							
				17.2		7.6		31.1		97.0		7.7		7.7		15.5			10.1	9.6						
31-Dec-14	Fine	Moderate	14:25	Surface	1	17.2	17.3	8.1	8.1	31.1	31.1	87.1	86.6	7.0	6.9	7.0	4.2	4.4	7.2	3.4	3.7	4.4				
						17.4		8.1		31.1		86.0		6.8			6.9			4.4			7.2	3.9	3.7	
				Middle	4.5	17.2	17.2	7.9	8.0	29.0	30.1	86.9	86.9	7.0	7.0		8.1	7.7		7.2	7.7		5.5	5.2		
				17.2		8.0		31.1		86.9		6.9		7.0		7.2			4.8	5.2						
				17.4	17.3	8.1	8.1	31.1	31.1	84.4	85.8	6.7	6.9	6.9	9.5	9.5		4.5	4.3							
				17.2		8.0		31.1		87.1		7.0		6.9		9.5			4.1	4.3						

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

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	07:43	Surface	1	23.1 23.1	23.1	7.9 7.9	7.9	28.2 28.2	28.2	84.7 84.2	84.5	6.2 6.1	6.2	6.1	0.5 0.5	0.5	2.6	5.0 4.7	4.9	6.7
				Middle	3.5	23.2 23.1	23.2	8.0 7.9	8.0	31.5 30.9	31.2	83.4 83.6	83.5	6.0 6.0	6.0		2.4 2.4	2.4		6.2 6.6	6.4	
				Bottom	6	22.6 22.6	22.6	7.8 7.8	7.8	33.6 33.7	33.7	82.9 82.6	82.8	5.9 5.9	5.9		4.4 5.1	4.8		8.7 8.6	8.7	
3-Dec-14	Cloudy	Calm	11:22	Surface	1	22.6 22.6	22.6	8.1 7.9	8.0	31.3 30.3	30.8	81.0 83.3	82.2	5.9 6.0	6.0	5.9	4.1 5.0	4.6	5.4	3.8 2.7	3.3	4.2
				Middle	3	22.6 22.6	22.6	8.0 7.9	8.0	30.4 31.3	30.9	79.3 80.4	79.9	5.7 5.8	5.8		4.7 5.1	4.9		2.5 5.9	4.2	
				Bottom	5	22.6 22.6	22.6	7.9 7.9	7.9	31.4 30.3	30.9	77.0 77.9	77.5	5.6 5.6	5.6		7.3 6.2	6.8		2.4 7.8	5.1	
5-Dec-14	Cloudy	Moderate	13:09	Surface	1	21.3 21.3	21.3	8.0 8.1	8.1	31.6 31.6	31.6	70.7 69.2	70.0	5.2 5.1	5.2	5.2	2.6 2.9	2.8	5.3	10.5 19.2	14.9	11.0
				Middle	3.5	21.3 21.3	21.3	8.0 8.1	8.1	31.6 31.6	31.6	70.9 69.6	70.3	5.2 5.1	5.2		3.9 3.9	3.9		8.5 9.2	8.9	
				Bottom	6	21.3 21.3	21.3	8.1 8.1	8.1	31.6 31.6	31.6	70.0 67.9	69.0	5.2 5.0	5.1		9.3 8.9	9.1		9.5 9.0	9.3	
8-Dec-14	Cloudy	Moderate	15:07	Surface	1	20.8 20.8	20.8	8.0 8.1	8.1	30.7 31.5	31.1	88.6 88.6	88.6	6.6 6.6	6.6	6.6	8.7 8.5	8.6	9.2	13.1 14.7	13.9	11.7
				Middle	3	20.8 20.8	20.8	8.0 8.0	8.0	31.5 31.5	31.5	88.6 87.7	88.2	6.6 6.5	6.6		8.1 8.3	8.2		9.6 12.2	10.9	
				Bottom	5	20.7 20.8	20.8	8.0 8.0	8.0	31.5 31.5	31.5	88.5 89.0	88.8	6.6 6.6	6.6		10.8 10.5	10.7		10.5 10.3	10.4	
10-Dec-14	Fine	Moderate	15:29	Surface	1	20.8 20.8	20.8	8.0 8.0	8.0	30.9 32.2	31.6	83.9 83.2	83.6	6.3 6.2	6.3	6.4	4.1 4.0	4.1	6.1	5.6 5.6	5.6	9.3
				Middle	3.5	20.7 20.7	20.7	7.9 7.9	7.9	32.5 32.5	32.5	85.7 85.0	85.4	6.4 6.3	6.4		4.6 4.9	4.8		17.0 7.6	12.3	
				Bottom	6	20.8 20.8	20.8	7.9 7.9	7.9	32.8 32.8	32.8	85.4 84.4	84.9	6.3 6.2	6.3		9.7 9.3	9.5		13.6 6.2	9.9	
12-Dec-14	Fine	Moderate	16:04	Surface	1	19.6 19.6	19.6	7.6 7.6	7.6	32.3 32.3	32.3	103.7 102.3	103.0	7.9 7.8	7.9	7.8	6.1 6.2	6.2	6.7	17.0 14.2	15.6	13.1
				Middle	3.5	19.6 19.6	19.6	7.6 7.7	7.7	32.3 32.3	32.3	100.3 100.8	100.6	7.6 7.6	7.6		7.3 7.7	7.5		16.5 11.7	14.1	
				Bottom	6	19.6 19.7	19.7	7.6 7.6	7.6	32.3 32.3	32.3	99.4 99.2	99.3	7.5 7.5	7.5		6.4 6.5	6.5		10.2 8.7	9.5	
15-Dec-14	Cloudy	Moderate	19:56	Surface	1	19.1 19.1	19.1	8.0 8.0	8.0	32.7 32.7	32.7	79.3 79.5	79.4	6.1 6.1	6.1	6.1	3.3 3.0	3.2	3.7	7.9 7.5	7.7	8.5
				Middle	3	19.1 19.1	19.1	8.0 8.0	8.0	32.7 32.7	32.7	79.2 79.0	79.1	6.0 6.0	6.0		3.7 3.9	3.8		9.7 7.2	8.5	
				Bottom	5	19.2 19.2	19.2	8.0 8.0	8.0	32.8 32.8	32.8	78.2 77.8	78.0	6.0 5.9	6.0		3.8 4.6	4.2		9.8 8.9	9.4	
17-Dec-14	Cloudy	Moderate	09:32	Surface	1	17.9 17.9	17.9	8.0 8.1	8.1	33.2 33.2	33.2	83.9 83.1	83.5	6.5 6.5	6.5	6.4	1.4 1.7	1.6	5.8	14.3 11.8	13.1	14.7
				Middle	3	17.9 17.9	17.9	8.0 8.3	8.2	33.2 33.2	33.2	78.2 79.4	78.8	6.1 6.2	6.2		4.7 5.1	4.9		24.4 14.2	19.3	
				Bottom	5	17.9 17.9	17.9	8.1 8.1	8.1	33.2 33.2	33.2	80.5 80.9	80.7	6.3 6.3	6.3		11.3 10.7	11.0		8.7 14.5	11.6	

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*
20-Dec-14	Fine	Moderate	12:09	Surface	1	17.8 17.8	17.8	8.1 8.0	8.1	31.3 30.0	30.7	65.5 69.0	67.3	5.2 5.5	5.4	5.6	4.8 4.6	4.7	7.1	5.7 17.5	11.6	10.6
				Middle	3.5	17.7 17.7	17.7	7.6 7.6	7.6	31.3 31.3	31.3	71.5 72.0	71.8	5.6 5.7	5.7		4.0 3.9	4.0		12.5 8.5	10.5	
				Bottom	6	17.7 17.7	17.7	7.8 7.8	7.8	30.1 31.3	30.7	71.0 71.2	71.1	5.7 5.6	5.7		13.6 11.5	12.6		9.0 10.3	9.7	
22-Dec-14	Fine	Moderate	13:55	Surface	1	17.6 17.6	17.6	8.0 8.0	8.0	33.3 33.3	33.3	92.7 93.4	93.1	7.2 7.3	7.3	7.3	7.0 6.7	6.9	7.5	8.7 14.2	11.5	9.6
				Middle	3	17.6 17.6	17.6	8.0 8.1	8.1	33.3 33.3	33.3	92.7 93.3	93.0	7.2 7.3	7.3		7.0 6.7	6.9		6.9 12.2	9.6	
				Bottom	5	17.6 17.6	17.6	8.0 8.0	8.0	33.3 33.3	33.3	93.0 92.4	92.7	7.3 7.2	7.3		8.7 8.7	8.7		6.5 8.6	7.6	
24-Dec-14	Sunny	Moderate	14:38	Surface	1	17.5 17.5	17.5	7.5 7.5	7.5	32.0 32.0	32.0	63.4 63.4	63.4	5.0 5.0	5.0	5.3	3.7 3.7	3.7	8.5	5.1 4.1	4.6	5.8
				Middle	3.5	17.5 17.5	17.5	7.6 7.6	7.6	31.9 31.9	31.9	70.8 70.8	70.8	5.6 5.6	5.6		5.5 5.4	5.5		7.7 3.3	5.5	
				Bottom	6	17.3 17.3	17.3	7.6 7.6	7.6	31.1 32.0	31.6	74.9 75.0	75.0	6.0 5.9	6.0		17.8 14.9	16.4		8.7 5.6	7.2	
27-Dec-14	Cloudy	Moderate	17:08	Surface	1	17.8 17.8	17.8	7.7 7.7	7.7	31.1 31.1	31.1	73.9 74.8	74.4	5.8 5.9	5.9	6.0	17.4 17.4	17.4	20.1	8.9 7.9	8.4	8.4
				Middle	3	17.8 17.8	17.8	7.7 7.7	7.7	31.1 31.1	31.1	75.8 76.3	76.1	6.0 6.0	6.0		19.3 19.8	19.6		9.1 7.8	8.5	
				Bottom	5	17.8 17.8	17.8	7.7 7.7	7.7	31.1 31.1	31.1	76.3 76.7	76.5	6.0 6.1	6.1		23.4 23.1	23.3		9.0 7.7	8.4	
29-Dec-14	Fine	Moderate	19:06	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.1 31.1	31.1	84.7 84.8	84.8	6.7 6.8	6.8	6.8	2.8 2.9	2.9	6.0	8.3 9.3	8.8	8.3
				Middle	3.5	17.3 17.3	17.3	7.7 7.7	7.7	31.1 31.1	31.1	84.9 85.0	85.0	6.8 6.8	6.8		5.0 5.1	5.1		5.9 9.9	7.9	
				Bottom	6	17.4 17.4	17.4	7.8 7.8	7.8	31.1 31.1	31.1	94.4 84.9	89.7	7.5 6.8	7.2		9.9 10.3	10.1		8.5 7.6	8.1	
31-Dec-14	Fine	Moderate	09:40	Surface	1	17.1 17.1	17.1	7.9 7.9	7.9	31.1 31.1	31.1	85.0 86.8	85.9	6.8 6.9	6.9	7.0	4.6 4.5	4.6	6.4	4.9 5.7	5.3	5.0
				Middle	3	17.1 17.1	17.1	7.7 7.7	7.7	31.1 29.3	30.2	88.3 87.2	87.8	7.1 7.1	7.1		5.7 5.8	5.8		5.5 5.1	5.3	
				Bottom	5	17.1 17.1	17.1	7.7 7.7	7.7	31.1 31.1	31.1	87.9 88.0	88.0	7.0 7.0	7.0		8.6 9.2	8.9		4.4 4.6	4.5	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	14:24	Surface	1	23.4 23.4	23.4	7.7 7.7	7.7	30.2 30.2	30.2	100.6 100.6	100.6	7.2 7.2	7.2	7.1	4.3 4.4	4.4	4.7	10.1 7.0	8.6	5.6
				Middle	3	23.4 23.4	23.4	7.6 7.6	7.6	30.3 30.4	30.4	98.3 98.4	98.4	7.0 7.0	7.0		4.8 4.8	4.8		4.0 4.3	4.2	
				Bottom	5	23.4 23.4	23.4	7.6 7.6	7.6	31.7 31.7	31.7	96.8 96.8	96.8	6.9 6.9	6.9		6.9	4.8 4.8		4.8	4.1 4.1	
3-Dec-14	Cloudy	Calm	17:07	Surface	1	22.5 22.5	22.5	8.2 8.1	8.2	31.5 31.5	31.5	81.8 85.0	83.4	5.9 6.2	6.1	6.2	7.7 7.7	7.7	10.4	7.7 8.3	8.0	7.3
				Middle	3.5	22.5 22.5	22.5	8.1 8.1	8.1	31.5 31.5	31.5	85.0 84.9	85.0	6.2 6.1	6.2		8.6 8.5	8.6		7.1 6.4	6.8	
				Bottom	6	22.5 22.5	22.5	8.1 8.1	8.1	29.2 31.5	30.4	82.8 82.1	82.5	6.0 5.9	6.0		6.0	14.4 15.2		14.8	6.9 7.3	
5-Dec-14	Cloudy	Moderate	17:15	Surface	1	21.2 21.2	21.2	8.1 8.0	8.1	31.5 31.5	31.5	70.7 71.2	71.0	5.2 5.3	5.3	5.3	4.6 4.6	4.6	5.1	8.7 8.6	8.7	7.7
				Middle	3	21.2 21.2	21.2	8.2 8.1	8.2	31.5 31.5	31.5	69.2 70.3	69.8	5.1 5.2	5.2		4.4 4.7	4.6		6.8 6.6	6.7	
				Bottom	5	21.2 21.2	21.2	8.2 8.1	8.2	31.5 31.5	31.5	70.1 70.0	70.1	5.2 5.2	5.2		5.2	6.2 6.1		6.2	7.3 8.2	
8-Dec-14	Cloudy	Moderate	09:20	Surface	1	20.6 20.6	20.6	8.2 8.2	8.2	31.4 31.4	31.4	91.2 90.9	91.1	6.8 6.8	6.8	6.8	8.8 9.1	9.0	11.6	10.5 14.7	12.6	12.9
				Middle	3.5	20.6 20.6	20.6	8.1 8.1	8.1	31.4 31.4	31.4	90.5 90.1	90.3	6.8 6.7	6.8		9.3 9.6	9.5		11.2 16.1	13.7	
				Bottom	6	20.6 20.6	20.6	8.1 8.1	8.1	31.4 31.4	31.4	89.9 90.1	90.0	6.7 6.7	6.7		6.7	15.6 17.2		16.4	11.4 13.2	
10-Dec-14	Fine	Moderate	10:45	Surface	1	20.7 20.7	20.7	8.1 8.2	8.2	32.8 32.8	32.8	86.5 83.7	85.1	6.4 6.2	6.3	6.4	6.9 7.0	7.0	11.1	13.8 11.6	12.7	13.3
				Middle	3	20.7 20.7	20.7	8.0 8.0	8.0	32.9 32.9	32.9	89.7 86.9	88.3	6.6 6.4	6.5		9.9 9.9	9.9		14.4 16.5	15.5	
				Bottom	5	20.7 20.7	20.7	8.1 8.1	8.1	32.9 32.9	32.9	86.0 88.2	87.1	6.4 6.5	6.5		6.5	16.4 16.2		16.3	9.5 13.6	
12-Dec-14	Fine	Moderate	11:50	Surface	1	19.3 19.3	19.3	7.8 7.7	7.8	32.3 32.3	32.3	94.8 93.8	94.3	7.2 7.1	7.2	7.1	11.2 10.8	11.0	11.5	16.6 16.1	16.4	17.2
				Middle	3	19.3 19.3	19.3	7.7 7.7	7.7	32.3 32.3	32.3	89.6 90.3	90.0	6.8 6.9	6.9		10.5 10.1	10.3		15.4 17.8	16.6	
				Bottom	5	19.3 19.3	19.3	7.7 7.7	7.7	32.3 32.3	32.3	87.5 87.1	87.3	6.7 6.6	6.7		6.7	12.4 13.7		13.1	20.5 16.7	
15-Dec-14	Cloudy	Moderate	14:20	Surface	1	19.2 19.2	19.2	8.0 8.0	8.0	33.2 33.2	33.2	86.9 86.9	86.9	6.6 6.6	6.6	6.6	4.6 3.8	4.2	4.7	7.6 8.1	7.9	9.7
				Middle	3.5	19.2 19.2	19.2	8.0 8.0	8.0	33.2 33.2	33.2	86.8 86.6	86.7	6.6 6.6	6.6		4.2 5.2	4.7		9.1 13.4	11.3	
				Bottom	6	19.2 19.2	19.2	8.1 8.1	8.1	33.2 33.2	33.2	86.0 85.8	85.9	6.5 6.5	6.5		6.5	5.0 5.1		5.1	8.1 11.8	
17-Dec-14	Cloudy	Moderate	15:30	Surface	1	17.9 17.9	17.9	8.1 8.1	8.1	33.2 33.2	33.2	80.6 81.9	81.3	6.3 6.4	6.4	6.4	5.0 4.8	4.9	6.8	11.0 12.5	11.8	12.5
				Middle	3	17.9 17.9	17.9	8.1 8.1	8.1	33.2 33.1	33.2	81.3 81.6	81.5	6.3 6.3	6.3		5.5 5.3	5.4		23.2 7.7	15.5	
				Bottom	5	17.9 18.0	18.0	8.1 8.1	8.1	33.1 33.1	33.1	82.2 82.5	82.4	6.4 6.4	6.4		6.4	10.5 9.9		10.2	10.9 9.4	

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*		
20-Dec-14	Fine	Moderate	16:38	Surface	1	17.9	17.9	8.3	8.3	31.4	31.4	67.1	69.3	5.3	5.5	5.8	5.8	5.7	8.1	7.1	9.2	9.5		
						17.9		8.2		31.4		71.5		5.6			5.5			4.0			7.6	
				Middle	3.5	17.8	17.8	7.9	7.9	31.4	31.4	76.3	76.5	6.0	6.0		6.0	6.0		4.4	4.7		10.1	8.9
				17.8		8.0		31.4		75.6		6.0		6.0		14.1		7.4		10.4				
				17.8	6	17.8	17.8	8.0	8.0	31.4	31.4	75.9	75.8	6.0	6.0	6.0	14.0	14.1	13.4	10.4				
22-Dec-14	Fine	Moderate	17:44	Surface	1	17.5	17.5	8.1	8.1	33.4	33.4	93.3	93.1	7.3	7.3	7.4	6.9	7.0	12.6	15.2	12.7	14.3		
						17.5		8.1		33.4		94.0		7.4			7.1			10.0			15.1	
				Middle	3	17.5	17.5	8.1	8.1	33.4	33.4	92.9	93.5	7.3	7.4		11.8	10.9		11.8	16.7		15.9	
				17.5		8.1		33.4		92.3		7.2		7.3		18.7		14.2		14.2				
				17.5	5	17.5	17.5	8.1	8.1	33.4	33.4	92.7	92.5	7.3	7.3	7.3	21.3	20.0	14.2	14.2				
24-Dec-14	Sunny	Moderate	09:28	Surface	1	17.1	17.1	7.7	7.7	32.6	32.6	84.8	84.8	6.7	6.7	6.3	3.1	3.1	9.0	19.0	18.4	21.3		
						17.1		7.7		32.6		84.8		6.7			3.1			17.7			17.7	
				Middle	3	17.2	17.2	7.7	7.7	32.5	32.5	75.3	73.4	6.0	5.9		8.4	8.6		8.4	22.3		22.1	
				17.2		7.7		32.5		71.4		5.7		5.9		8.8		21.8		22.1				
				17.2		7.7		32.6		76.4		6.1		6.1		15.0		19.5		23.5				
				17.2	5	17.2	17.2	7.7	7.7	32.6	32.6	76.4	76.4	6.1	6.1	6.1	15.7	15.4	27.4	23.5				
27-Dec-14	Cloudy	Moderate	12:16	Surface	1	17.8	17.8	8.0	8.0	31.1	31.1	66.7	67.1	5.3	5.3	5.4	14.5	14.4	15.4	15.5	13.3	11.3		
						17.8		7.9		31.1		67.4		5.3			5.4			14.2			11.0	
				Middle	3.5	17.8	17.8	7.9	7.9	31.1	31.1	68.2	68.4	5.4	5.4		14.0	14.1		14.0	7.5		7.1	
				17.8		7.9		31.1		68.5		5.4		5.4		14.2		6.7		7.1				
				17.8		7.9		31.1		69.0		5.4		5.4		17.7		12.0		13.4				
				17.8	6	17.8	17.8	7.9	7.9	31.1	31.1	69.0	69.0	5.4	5.4	5.4	17.5	17.6	14.7	13.4				
29-Dec-14	Fine	Moderate	13:51	Surface	1	17.2	17.2	7.9	7.9	31.1	31.1	78.3	78.9	6.3	6.3	6.4	5.0	5.2	7.5	11.9	10.6	9.2		
						17.2		7.9		31.1		79.4		6.3			6.3			5.3			9.2	
				Middle	3	17.2	17.2	7.9	7.9	31.1	31.1	81.7	81.8	6.5	6.5		6.8	7.2		6.8	7.1		8.1	
				17.2		7.9		31.1		81.9		6.5		6.5		7.5		9.0		8.1				
				17.2		7.9		31.1		82.5		6.6		6.6		9.5		11.1		9.0				
				17.2	5	17.2	17.2	7.9	7.9	31.1	31.1	82.5	82.5	6.6	6.6	6.6	10.8	10.2	6.8	9.0				
31-Dec-14	Fine	Moderate	14:32	Surface	1	17.4	17.4	7.8	7.8	31.2	31.2	82.8	83.1	6.6	6.6	6.6	6.2	5.7	8.1	4.7	5.0	4.7		
						17.4		7.8		31.1		83.3		6.6			6.6			5.1			5.2	
				Middle	3.5	17.3	17.3	7.8	7.8	31.2	31.2	83.0	82.9	6.6	6.6		8.1	8.8		8.1	5.3		4.9	
				17.3		7.8		31.1		82.8		6.6		6.6		9.4		4.5		4.9				
				17.3		7.8		31.1		82.8		6.6		6.6		9.5		4.2		4.1				
				17.3	6	17.3	17.3	7.8	7.8	31.1	31.1	82.9	82.9	6.6	6.6	6.6	10.3	9.9	3.9	4.1				

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*			
1-Dec-14	Cloudy	Calm	07:40	Surface	1	23.7 23.8	23.8	8.2 8.1	8.2	28.7 28.7	28.7	90.4 88.4	89.4	6.5 6.3	6.4	6.4	3.9 4.3	4.1	9.0	5.2 7.7	6.5	6.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.1	23.7 23.7	23.7	7.9 7.9	7.9	29.0 29.0	29.0	85.1 85.0	85.1	6.1 6.1	6.1		6.1	14.6 13.2		13.9	5.8 4.9		5.4		
3-Dec-14	Cloudy	Calm	10:09	Surface	1	22.3 22.3	22.3	7.8 7.9	7.9	33.1 33.1	33.1	79.5 78.2	78.9	5.7 5.6	5.7	5.7	4.2 5.0	4.6	4.4	5.6 6.4	6.0	6.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.1	22.3 22.3	22.3	7.8 7.9	7.9	33.1 33.1	33.1	77.8 73.1	75.5	5.6 5.2	5.4		5.4	4.3 4.1		4.2	6.3 6.8		6.6		
5-Dec-14	Cloudy	Moderate	12:08	Surface	1	19.7 20.8	20.3	7.9 7.9	7.9	31.1 31.8	31.5	101.2 103.7	102.5	7.7 7.7	7.7	7.7	6.8 6.8	6.8	10.2	11.4 10.6	11.0	9.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4	21.3 20.4	20.9	8.0 7.9	8.0	31.5 32.0	31.8	85.2 84.2	84.7	6.3 6.3	6.3		6.3	13.8 13.1		13.5	6.6 7.1		6.9		
8-Dec-14	Cloudy	Moderate	14:01	Surface	1	20.6 20.6	20.6	8.1 8.1	8.1	31.8 31.8	31.8	91.6 89.3	90.5	6.8 6.7	6.8	6.8	10.3 10.3	10.3	11.3	11.0 12.6	11.8	12.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.6	20.6 20.6	20.6	8.1 8.1	8.1	31.8 31.8	31.8	87.0 85.9	86.5	6.5 6.4	6.5		6.5	11.8 12.6		12.2	12.7 14.6		13.7		
10-Dec-14	Fine	Moderate	14:29	Surface	1	20.4 20.4	20.4	8.2 8.2	8.2	32.6 32.7	32.7	88.0 85.2	86.6	6.6 6.3	6.5	6.5	5.6 5.4	5.5	7.5	17.0 13.1	15.1	11.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	20.4 20.4	20.4	8.2 8.2	8.2	32.7 32.8	32.8	85.7 84.0	84.9	6.4 6.3	6.4		6.4	9.4 9.5		9.5	8.2 7.1		7.7		
12-Dec-14	Fine	Moderate	16:45	Surface	1	19.7 19.7	19.7	7.5 7.5	7.5	32.0 32.0	32.0	87.8 88.3	88.1	6.7 6.7	6.7	6.7	8.6 8.6	8.6	11.0	8.8 9.3	9.1	10.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	19.7 19.7	19.7	7.6 7.7	7.7	31.9 32.0	32.0	83.5 83.3	83.4	6.3 6.3	6.3		6.3	13.5 13.1		13.3	11.7 11.9		11.8		
15-Dec-14	Cloudy	Moderate	19:15	Surface	1	19.1 19.1	19.1	7.8 7.8	7.8	32.2 32.2	32.2	79.0 80.5	79.8	6.0 6.2	6.1	6.1	8.7 7.9	8.3	7.7	6.6 8.9	7.8	9.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.1	19.1 19.1	19.1	7.8 7.8	7.8	32.2 30.4	31.3	78.7 78.4	78.6	6.0 6.1	6.1		6.1	7.0 7.2		7.1	12.5 9.5		11.0		
17-Dec-14	Cloudy	Moderate	08:38	Surface	1	17.9 18.2	18.1	7.8 7.9	7.9	32.5 33.1	32.8	81.6 81.0	81.3	6.4 6.3	6.4	6.4	4.3 5.2	4.8	4.6	10.4 7.7	9.1	9.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.1	18.2 18.2	18.2	7.7 7.9	7.8	33.1 33.1	33.1	80.6 75.7	78.2	6.2 5.9	6.1		6.1	4.7 4.0		4.4	9.2 10.5		9.9		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*			
20-Dec-14	Fine	Moderate	10:55	Surface	1	17.1 17.1	17.1	7.8 7.8	7.8	31.5 31.5	31.5	69.2 69.0	69.1	5.5 5.5	5.5	5.5	3.2 2.7	3.0	3.1	9.4 12.1	10.8	11.9			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	16.8 16.8	16.8	7.5 17.3	12.4	31.5 31.5	31.5	67.7 68.8	68.3	5.4 5.5	5.5		5.5	3.3 2.9		3.1	11.7 14.1		12.9		
22-Dec-14	Fine	Moderate	12:56	Surface	1	17.9 17.9	17.9	7.9 7.9	7.9	32.0 32.0	32.0	88.8 87.8	88.3	7.0 6.9	7.0	7.0	5.3 5.1	5.2	9.3	8.2 8.2	8.2	7.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	17.8 17.8	17.8	7.7 7.7	7.7	32.0 32.0	32.0	88.9 88.6	88.8	7.0 7.0	7.0		7.0	12.4 14.3		13.4	7.6 6.8		7.2		
24-Dec-14	Sunny	Moderate	15:19	Surface	1	17.8 17.8	17.8	7.4 7.4	7.4	31.3 31.2	31.3	65.3 66.0	65.7	5.1 5.2	5.2	5.2	4.9 4.8	4.9	5.7	6.1 4.3	5.2	5.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.4	17.7 17.7	17.7	7.3 7.3	7.3	31.2 31.2	31.2	67.4 67.7	67.6	5.3 5.4	5.4		5.4	6.0 6.8		6.4	4.9 6.6		5.8		
27-Dec-14	Cloudy	Moderate	16:56	Surface	1	17.7 17.7	17.7	8.0 8.0	8.0	31.6 31.6	31.6	82.9 80.8	81.9	6.5 6.4	6.5	6.5	5.6 6.2	5.9	7.5	11.4 7.2	9.3	7.9			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	17.7 17.7	17.7	8.0 8.0	8.0	31.6 31.6	31.6	78.9 80.1	79.5	6.2 6.3	6.3		6.3	9.2 8.7		9.0	6.4 6.4		6.4		
29-Dec-14	Fine	Moderate	19:15	Surface	1	17.0 17.0	17.0	7.7 7.7	7.7	31.3 31.3	31.3	83.3 79.8	81.6	6.7 6.4	6.6	6.6	5.9 5.9	5.9	6.2	9.0 8.2	8.6	8.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.8	17.0 17.0	17.0	7.7 7.7	7.7	31.3 31.3	31.3	81.1 85.8	83.5	6.5 6.9	6.7		6.7	6.3 6.5		6.4	6.7 9.1		7.9		
31-Dec-14	Fine	Moderate	09:17	Surface	1	17.0 17.0	17.0	8.0 8.0	8.0	30.9 31.0	31.0	86.7 85.8	86.3	7.0 6.9	7.0	7.0	3.7 3.0	3.4	3.2	3.9 3.1	3.5	4.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.8	17.0 17.0	17.0	8.0 8.0	8.0	31.0 31.0	31.0	83.9 82.9	83.4	6.7 6.7	6.7		6.7	3.1 2.9		3.0	4.8 4.2		4.5		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	15:01	Surface	1	23.8	23.8	7.9	7.9	28.6	28.6	73.5	73.7	5.3	5.3	5.3	4.8	5.0	9.9	3.8	4.2	6.5
						23.8		7.9		28.6		73.8		5.3			5.2			4.5		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	4.6	23.8	23.8	7.8	7.8	28.8	28.8	72.6	72.4	5.2	5.2	5.2	15.6	14.7		10.9	8.8	
						23.8		7.8		28.8		72.2		5.2		5.2	13.8			6.6		
3-Dec-14	Cloudy	Calm	16:28	Surface	1	22.0	22.0	7.8	7.9	31.2	31.2	76.1	76.1	5.5	5.5	5.5	7.1	7.2	7.4	7.2	6.8	12.4
						22.0		7.9		31.2		76.0		5.5			7.2			6.4		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	3.7	22.0	22.0	7.8	7.8	31.2	31.2	73.6	71.9	5.3	5.2	5.2	7.7	7.6		23.6	17.9	
						22.0		7.8		31.2		70.1		5.0		5.2	7.5			12.1		
5-Dec-14	Cloudy	Moderate	17:25	Surface	1	21.2	21.2	8.0	8.0	31.6	30.7	70.5	70.3	5.2	5.2	5.2	4.0	4.3	5.5	6.7	6.1	5.3
						21.2		8.0		29.7		70.0		5.2			4.5			5.5		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	4.1	21.3	21.3	8.0	8.0	31.2	32.6	70.0	70.2	5.2	5.2	5.2	6.5	6.6		4.6	4.5	
						21.2		8.0		34.0		70.3		5.1		5.2	6.7			4.3		
8-Dec-14	Cloudy	Moderate	08:22	Surface	1	20.6	20.6	8.1	8.1	31.1	31.2	82.0	81.3	6.1	6.1	6.1	12.9	13.3	13.6	14.8	14.1	15.9
						20.6		8.1		31.2		80.6		6.0			13.6			13.3		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	3.6	20.6	20.6	8.1	8.1	31.2	31.2	79.3	79.2	5.9	5.9	5.9	14.1	13.9		18.8	17.7	
						20.6		8.1		31.2		79.1		5.9		5.9	13.6			16.5		
10-Dec-14	Fine	Moderate	09:58	Surface	1	20.4	20.4	8.3	8.3	33.0	33.1	94.8	93.7	7.1	7.0	7.0	6.2	6.8	9.1	20.2	14.4	12.9
						20.4		8.3		33.1		92.5		6.9			7.3			6.8		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	4.6	20.3	20.3	8.3	8.3	33.1	33.1	92.4	91.6	6.9	6.9	6.9	10.7	11.3		13.0	11.3	
						20.3		8.3		33.1		90.8		6.8		6.9	11.8			9.5		
12-Dec-14	Fine	Moderate	11:53	Surface	1	19.7	19.7	7.7	7.7	32.0	32.0	91.1	91.1	6.9	6.9	6.9	12.8	12.6	19.4	24.5	21.8	24.5
						19.7		7.6		32.0		91.1		6.9			12.4			12.6		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	4.3	19.7	19.7	7.7	7.7	32.0	32.0	89.8	89.6	6.8	6.8	6.8	26.1	26.2		31.4	27.2	
						19.7		7.7		32.0		89.4		6.8		6.8	26.3			23.0		
15-Dec-14	Cloudy	Moderate	13:35	Surface	1	19.4	19.4	7.8	7.8	32.2	31.4	79.2	80.1	6.0	6.1	6.1	8.9	9.1	10.9	7.9	8.4	8.2
						19.4		7.8		30.5		81.0		6.2			9.2			9.1		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	3.9	19.4	19.4	7.8	7.8	32.2	32.2	80.0	79.9	6.1	6.1	6.1	13.0	12.7		6.6	7.9	
						19.4		7.8		32.2		79.8		6.1		6.1	12.4			9.1		
17-Dec-14	Cloudy	Moderate	14:49	Surface	1	18.1	18.1	7.8	7.9	33.1	33.1	78.9	78.8	6.1	6.1	6.1	8.5	8.5	8.6	10.1	8.8	9.7
						18.1		7.9		33.1		78.7		6.1			8.5			8.5		
				Middle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	
				Bottom	4	18.1	18.1	7.8	7.8	33.1	33.1	76.2	74.4	5.9	5.8	5.8	8.6	8.6		10.2	10.5	
						18.1		7.8		33.1		72.6		5.6		5.8	8.5			10.7		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*			
20-Dec-14	Fine	Moderate	16:16	Surface	1	17.5 17.5	17.5	7.8 7.7	7.8	32.3 32.3	32.3	71.7 71.8	71.8	5.7 5.7	5.7	5.7	3.2 3.2	3.2	3.6	7.5 8.5	8.0	7.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.4	17.2 17.2	17.2	7.7 7.8	7.8	32.3 32.3	32.3	72.0 72.3	72.2	5.7 5.7	5.7		5.7	4.0 4.0		4.0	4.0		7.6 7.3	7.5	
22-Dec-14	Fine	Moderate	17:42	Surface	1	17.8 17.8	17.8	8.4 8.3	8.4	30.4 32.1	31.3	80.7 81.9	81.3	6.4 6.4	6.4	6.4	4.6 4.3	4.5	6.2	7.9 8.3	8.1	7.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.4	17.8 17.8	17.8	8.1 8.1	8.1	30.4 32.1	31.3	83.9 83.7	83.8	6.7 6.6	6.7		6.7	8.1 7.5		7.8	7.8		6.8 6.2	6.5	
24-Dec-14	Sunny	Moderate	08:38	Surface	1	17.5 17.5	17.5	7.8 7.9	7.9	31.0 31.1	31.1	81.0 80.5	80.8	6.4 6.4	6.4	6.4	4.2 4.5	4.4	5.6	12.8 10.3	11.6	11.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	17.5 17.5	17.5	7.8 7.8	7.8	31.2 30.2	30.7	76.9 75.8	76.4	6.1 6.1	6.1		6.1	6.1 7.2		6.7	6.7		11.4 10.6	11.0	
27-Dec-14	Cloudy	Moderate	12:04	Surface	1	17.7 17.7	17.7	7.8 7.7	7.8	31.3 31.3	31.3	81.4 85.0	83.2	6.4 6.7	6.6	6.6	6.0 6.0	6.0	6.7	6.8 9.1	8.0	9.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	17.7 17.7	17.7	7.7 7.8	7.8	31.2 31.3	31.3	75.6 76.8	76.2	6.0 6.1	6.1		6.1	7.0 7.8		7.4	7.4		12.6 9.7	11.2	
29-Dec-14	Fine	Moderate	12:29	Surface	1	17.0 17.1	17.1	7.7 7.7	7.7	31.3 31.3	31.3	89.3 84.6	87.0	7.1 6.8	7.0	7.0	6.7 5.5	6.1	6.2	7.0 8.4	7.7	8.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	17.0 17.0	17.0	7.7 7.7	7.7	31.3 31.4	31.4	85.1 83.5	84.3	6.8 6.7	6.8		6.8	6.1 6.5		6.3	6.3		9.5 7.1	8.3	
31-Dec-14	Fine	Moderate	14:38	Surface	1	17.6 17.6	17.6	8.0 7.9	8.0	31.0 30.9	31.0	85.9 85.1	85.5	6.8 6.8	6.8	6.8	3.9 3.6	3.8	4.1	3.1 2.9	3.0	4.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.8	17.3 17.3	17.3	7.9 7.9	7.9	30.9 30.9	30.9	83.5 82.8	83.2	6.7 6.6	6.7		6.7	4.2 4.6		4.4	4.4		5.3 5.6	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 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*
1-Dec-14	Cloudy	Calm	07:54	Surface	1	22.7	22.7	7.7	7.7	31.3	31.3	81.8	81.8	5.9	5.9	5.9	3.6	3.6	4.5	4.2	4.1	4.9
						22.7	22.7	7.7	7.7	31.3	31.3	81.8	81.8	5.9	5.9		3.6	3.6		4.0	4.0	
				Middle	4.5	22.7	22.7	7.6	7.6	31.3	31.3	81.7	81.7	5.9	5.9	4.4	4.4	4.4		4.4	4.8	
				Bottom	8	22.7	22.7	7.6	7.6	32.4	32.4	82.0	81.9	5.9	5.9	5.9	5.5	5.6	5.4	5.2		
						22.7	22.7	7.6	7.6	32.4	32.4	81.8	81.9	5.9	5.9	5.9	5.7	5.6	5.0	5.2		
3-Dec-14	Cloudy	Calm	11:36	Surface	1	22.5	22.5	8.0	8.0	31.2	31.2	76.6	78.8	5.5	5.7	5.8	7.3	8.0	8.7	2.8	2.8	3.5
						22.5	22.5	8.0	8.0	31.2	31.2	81.0	81.0	5.9	5.9		8.7	8.0		2.8	2.8	
				Middle	3.5	22.5	22.5	8.0	8.0	31.3	31.3	77.4	79.2	5.6	5.8	8.5	8.7	3.4		4.3		
				Bottom	6	22.5	22.5	8.0	8.0	31.3	30.7	77.5	82.0	5.6	6.0	6.0	10.1	9.4	3.6	3.4		
						22.5	22.5	8.0	8.0	30.0	30.7	86.4	82.0	6.3	6.0	6.0	8.7	9.4	3.2	3.4		
5-Dec-14	Cloudy	Moderate	13:23	Surface	1	21.0	21.0	8.2	8.2	31.3	31.3	67.4	67.7	5.0	5.0	5.2	6.5	6.3	6.0	8.8	8.7	7.6
						21.0	21.0	8.2	8.2	31.3	31.3	67.9	67.7	5.0	5.0		6.1	6.0		8.5	8.7	
				Middle	3.5	21.2	21.1	8.2	8.2	31.3	31.3	72.1	71.4	5.3	5.3	6.4	6.0	7.9		7.9		
				Bottom	6	21.0	21.0	8.3	8.3	31.3	31.4	68.3	68.0	5.1	5.1	5.1	6.0	5.7	4.5	6.1		
						21.0	21.0	8.2	8.3	31.4	31.4	67.7	68.0	5.0	5.1	5.1	5.3	5.7	7.6	6.1		
8-Dec-14	Cloudy	Moderate	15:14	Surface	1	20.8	20.8	8.1	8.1	31.5	31.5	87.1	87.3	6.5	6.5	6.5	8.8	8.7	8.5	11.2	12.6	13.2
						20.8	20.8	8.1	8.1	31.5	31.5	87.4	87.3	6.5	6.5		8.5	8.7		14.0	12.6	
				Middle	3	20.8	20.8	8.1	8.1	31.5	31.5	85.7	86.1	6.4	6.4	8.2	8.3	14.8		14.5		
				Bottom	5	20.8	20.8	8.1	8.1	31.5	31.5	86.6	86.5	6.5	6.5	6.5	8.8	8.6	12.5	12.6		
						20.8	20.8	8.1	8.1	31.5	31.5	86.3	86.5	6.5	6.5	6.5	8.4	8.6	12.6	12.6		
10-Dec-14	Fine	Moderate	15:36	Surface	1	20.8	20.8	8.3	8.4	31.3	32.1	80.4	79.4	6.0	5.9	6.1	4.9	5.3	5.0	7.5	9.5	8.0
						20.8	20.8	8.4	8.4	32.8	32.1	78.3	79.4	5.8	5.9		5.7	5.3		11.5	9.5	
				Middle	3.5	20.8	20.8	8.1	8.1	32.9	32.9	88.2	85.2	6.5	6.3	4.4	4.5	9.8		8.7		
				Bottom	6	20.8	20.8	8.0	8.0	33.0	33.0	82.6	84.2	6.1	6.2	6.2	5.5	5.2	5.0	5.8		
						20.8	20.8	8.0	8.0	33.0	33.0	85.7	84.2	6.3	6.2	6.2	4.8	5.2	6.5	5.8		
12-Dec-14	Fine	Moderate	16:17	Surface	1	19.6	19.6	7.6	7.6	32.3	32.3	97.7	97.6	7.4	7.4	7.4	5.7	5.8	6.0	14.3	14.0	14.0
						19.6	19.6	7.6	7.6	32.3	32.3	97.5	97.6	7.4	7.4		5.8	5.8		13.7	14.0	
				Middle	3.5	19.6	19.6	7.6	7.6	32.3	32.3	96.5	96.8	7.3	7.4	6.1	6.1	16.4		16.4		
				Bottom	6	19.6	19.7	7.6	7.7	32.4	32.4	97.0	95.9	7.4	7.3	7.3	6.0	6.1	16.4	11.6		
						19.7	19.7	7.7	7.7	32.4	32.4	95.8	95.9	7.2	7.3	7.3	6.1	6.1	10.9	11.6		
15-Dec-14	Cloudy	Moderate	20:07	Surface	1	19.5	19.5	8.0	8.0	32.6	32.6	74.6	74.6	5.7	5.7	5.7	3.8	3.9	4.7	10.1	11.6	9.7
						19.5	19.5	8.0	8.0	32.6	32.6	74.5	74.6	5.6	5.7		4.0	3.9		13.0	11.6	
				Middle	3	19.5	19.5	8.0	8.0	32.6	32.6	74.1	74.0	5.6	5.6	4.2	4.6	7.0		9.2		
				Bottom	5	19.5	19.5	8.0	8.0	32.6	32.6	73.8	73.6	5.6	5.6	5.6	4.9	5.7	11.3	8.4		
						19.5	19.5	8.0	8.0	32.6	32.6	73.7	73.6	5.6	5.6	5.6	6.1	5.7	9.5	8.4		
						19.5	19.5	8.0	8.0	32.6	32.6	73.5	73.6	5.6	5.6	5.6	5.2	5.7	7.3	8.4		
17-Dec-14	Cloudy	Moderate	09:44	Surface	1	17.9	17.9	8.0	8.0	32.8	32.8	84.7	84.0	6.6	6.6	6.5	5.2	5.3	6.4	10.3	17.4	17.0
						17.9	17.9	8.0	8.0	32.8	32.8	83.2	84.0	6.5	6.6		5.3	5.3		24.4	17.4	
				Middle	3.5	17.9	17.9	8.0	8.0	32.8	32.8	79.4	79.8	6.2	6.3	6.2	6.2	13.8		14.5		
				Bottom	6	17.8	18.0	8.0	8.0	32.8	33.1	80.2	80.2	6.3	6.3	6.3	6.1	7.7	15.1	19.0		
						17.9	18.0	8.0	8.0	33.1	33.1	80.4	80.2	6.3	6.3	6.3	7.8	7.7	27.0	19.0		
						18.0	18.0	8.0	8.0	33.0	33.1	80.0	80.2	6.2	6.3	6.3	7.6	7.7	11.0	19.0		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	12:19	Surface	1	17.3 17.4	17.4	8.1 7.9	8.0	31.3 30.0	30.7	67.2 69.9	68.6	5.3 5.6	5.5	5.6	5.0 6.0	5.5	8.9	13.1 19.3	16.2	13.3
				Middle	3.5	17.3 17.3	17.3	7.8 7.8	7.8	31.3 31.3	31.3	71.5 71.7	71.6	5.7 5.7	5.7		8.1 8.0	8.1		16.8 13.6	15.2	
				Bottom	6	17.3 17.3	17.3	7.8 7.8	7.8	31.3 31.3	31.3	70.9 71.2	71.1	5.6 5.7	5.7		13.0 13.4	13.2		10.4 6.4	8.4	
22-Dec-14	Fine	Moderate	14:05	Surface	1	17.4 17.4	17.4	8.1 8.0	8.1	33.6 33.6	33.6	94.0 93.7	93.9	7.4 7.3	7.4	7.4	5.5 5.1	5.3	5.3	13.2 11.6	12.4	10.7
				Middle	3.5	17.3 17.3	17.3	8.1 8.1	8.1	33.6 33.6	33.6	94.4 93.6	94.0	7.4 7.3	7.4		6.9 5.7	6.3		11.6 8.5	10.1	
				Bottom	6	17.3 17.3	17.3	8.2 8.2	8.2	33.6 32.3	33.0	92.8 93.2	93.0	7.3 7.4	7.4		4.3 4.2	4.3		9.5 9.4	9.5	
24-Dec-14	Sunny	Moderate	14:46	Surface	1	17.4 17.4	17.4	7.6 7.6	7.6	32.0 32.0	32.0	66.2 67.6	66.9	5.2 5.4	5.3	5.5	7.1 7.4	7.3	7.8	5.3 3.9	4.6	7.1
				Middle	4.5	17.4 17.4	17.4	7.7 7.7	7.7	32.0 32.0	32.0	71.5 71.5	71.5	5.7 5.7	5.7		8.1 8.1	8.1		13.0 4.8	8.9	
				Bottom	8	17.3 17.3	17.3	7.6 7.7	7.7	31.2 31.2	31.2	72.6 72.6	72.6	5.8 5.8	5.8		8.1 8.1	8.1		10.3 5.2	7.8	
27-Dec-14	Cloudy	Moderate	17:19	Surface	1	17.7 17.7	17.7	7.9 7.8	7.9	31.1 31.1	31.1	73.4 74.6	74.0	5.8 5.9	5.9	6.0	15.9 16.1	16.0	16.8	11.1 7.0	9.1	7.7
				Middle	3	17.7 17.7	17.7	7.8 7.8	7.8	31.1 31.1	31.1	75.5 75.7	75.6	6.0 6.0	6.0		16.7 16.8	16.8		7.9 8.4	8.2	
				Bottom	5	17.7 17.7	17.7	7.8 7.8	7.8	31.1 31.1	31.1	75.9 76.1	76.0	6.0 6.0	6.0		17.3 18.1	17.7		6.6 4.7	5.7	
29-Dec-14	Fine	Moderate	19:18	Surface	1	17.4 17.4	17.4	7.8 7.8	7.8	31.0 31.0	31.0	86.2 86.2	86.2	6.9 6.9	6.9	6.9	6.5 6.4	6.5	7.6	8.3 8.4	8.4	9.0
				Middle	3.5	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.0	31.1	86.4 86.8	86.6	6.9 6.9	6.9		6.4 6.1	6.3		9.4 7.5	8.5	
				Bottom	6	17.3 17.3	17.3	7.7 7.7	7.7	31.1 31.0	31.1	86.7 86.6	86.7	6.9 6.9	6.9		10.1 9.6	9.9		9.1 11.0	10.1	
31-Dec-14	Fine	Moderate	09:49	Surface	1	17.0 17.0	17.0	7.9 7.9	7.9	31.0 31.1	31.1	83.9 83.4	83.7	6.7 6.7	6.7	6.8	4.1 4.6	4.4	6.4	6.6 5.2	5.9	6.5
				Middle	3.5	16.9 16.9	16.9	8.0 8.0	8.0	31.1 31.1	31.1	84.9 84.0	84.5	6.8 6.7	6.8		6.0 7.2	6.6		6.1 6.1	6.1	
				Bottom	6	16.9 16.9	16.9	8.0 8.0	8.0	31.1 31.1	31.1	84.8 84.6	84.7	6.8 6.8	6.8		8.1 8.5	8.3		9.0 5.7	7.4	

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*
1-Dec-14	Cloudy	Calm	14:34	Surface	1	23.3 23.3	23.3	7.7 7.7	7.7	31.1 31.1	31.1	100.2 100.2	100.2	7.2 7.2	7.2	7.0	7.8 8.5	8.2	11.0	4.6 7.9	6.3	6.6
				Middle	4.5	23.3 23.3	23.3	7.6 7.6	7.6	31.1 31.1	31.1	96.1 94.0	95.1	6.9 6.7	6.8		10.4 10.4	10.4		4.3 6.4	5.4	
				Bottom	8	23.3 23.4	23.4	7.6 7.6	7.6	31.1 31.7	31.4	87.3 96.3	91.8	6.2 6.8	6.5		13.6 15.0	14.3		5.2 11.1	8.2	
3-Dec-14	Cloudy	Calm	17:21	Surface	1	22.3 22.3	22.3	8.3 8.2	8.3	30.5 30.5	30.5	81.5 83.7	82.6	5.9 6.1	6.0	6.0	6.0 6.8	6.4	7.5	5.0 7.9	6.5	8.1
				Middle	3.5	22.3 22.3	22.3	8.3 8.2	8.3	30.9 30.8	30.9	79.9 86.1	83.0	5.8 6.2	6.0		6.5 6.7	6.6		9.4 8.1	8.8	
				Bottom	6	22.3 22.4	22.4	8.2 8.2	8.2	28.7 31.1	29.9	84.0 85.5	84.8	6.1 6.2	6.2		8.6 10.5	9.6		10.2 7.9	9.1	
5-Dec-14	Cloudy	Moderate	17:27	Surface	1	20.9 20.9	20.9	8.1 8.1	8.1	31.3 31.3	31.3	71.3 71.5	71.4	5.3 5.3	5.3	5.3	5.2 5.8	5.5	6.7	6.8 9.0	7.9	7.2
				Middle	3.5	20.9 20.9	20.9	8.1 8.2	8.2	31.3 31.3	31.3	69.5 69.5	69.5	5.2 5.2	5.2		7.8 7.4	7.6		6.8 8.0	7.4	
				Bottom	6	20.9 20.9	20.9	8.2 8.2	8.2	31.4 31.4	31.4	68.3 67.7	68.0	5.1 5.0	5.1		7.5 6.7	7.1		6.2 6.1	6.2	
8-Dec-14	Cloudy	Moderate	09:28	Surface	1	20.4 20.4	20.4	8.1 8.1	8.1	31.3 31.3	31.3	87.3 87.8	87.6	6.6 6.6	6.6	6.6	9.2 9.4	9.3	10.9	10.1 12.8	11.5	11.9
				Middle	3.5	20.4 20.4	20.4	8.1 8.1	8.1	31.3 31.3	31.3	87.2 87.3	87.3	6.5 6.6	6.6		10.5 10.2	10.4		12.4 10.5	11.5	
				Bottom	6	20.4 20.4	20.4	8.0 8.0	8.0	31.3 31.3	31.3	86.9 86.8	86.9	6.5 6.5	6.5		12.9 12.9	12.9		13.8 11.5	12.7	
10-Dec-14	Fine	Moderate	10:54	Surface	1	20.7 20.7	20.7	8.1 8.1	8.1	33.0 33.0	33.0	88.2 81.2	84.7	6.5 6.0	6.3	6.4	6.4 6.6	6.5	7.1	13.1 13.9	13.5	17.5
				Middle	3.5	20.8 20.8	20.8	7.9 7.8	7.9	33.0 33.0	33.0	85.3 86.0	85.7	6.3 6.4	6.4		7.1 7.3	7.2		23.8 13.1	18.5	
				Bottom	6	20.8 20.8	20.8	7.8 7.8	7.8	33.0 33.0	33.0	85.6 85.2	85.4	6.3 6.3	6.3		7.5 7.6	7.6		15.6 25.1	20.4	
12-Dec-14	Fine	Moderate	12:03	Surface	1	19.3 19.3	19.3	7.7 7.7	7.7	32.3 32.3	32.3	84.4 84.2	84.3	6.4 6.4	6.4	6.4	11.0 10.8	10.9	11.1	15.3 18.7	17.0	19.9
				Middle	3.5	19.3 19.3	19.3	7.7 7.7	7.7	32.3 32.3	32.3	83.5 83.5	83.5	6.4 6.4	6.4		10.1 10.1	10.1		18.8 18.0	18.4	
				Bottom	6	19.3 19.3	19.3	7.7 7.7	7.7	32.3 32.3	32.3	83.0 82.6	82.8	6.3 6.3	6.3		11.8 13.0	12.4		22.2 26.3	24.3	
15-Dec-14	Cloudy	Moderate	14:33	Surface	1	18.8 18.8	18.8	8.0 8.0	8.0	33.4 33.4	33.4	91.3 91.9	91.6	7.0 7.0	7.0	7.1	2.1 2.3	2.2	2.3	10.3 12.2	11.3	9.6
				Middle	3.5	18.8 18.8	18.8	8.0 8.0	8.0	33.4 33.4	33.4	92.5 92.5	92.5	7.1 7.1	7.1		1.8 1.8	1.8		9.2 8.6	8.9	
				Bottom	6	18.8 18.8	18.8	8.1 8.1	8.1	33.4 33.4	33.4	92.1 91.7	91.9	7.0 7.0	7.0		2.9 2.8	2.9		7.4 9.8	8.6	
17-Dec-14	Cloudy	Moderate	15:43	Surface	1	17.9 17.9	17.9	8.0 8.0	8.0	32.8 32.7	32.8	75.3 75.7	75.5	5.9 5.9	5.9	6.0	5.9 5.7	5.8	9.9	10.7 5.3	8.0	10.8
				Middle	3.5	17.9 17.8	17.9	8.0 7.9	8.0	32.8 32.9	32.9	77.2 77.7	77.5	6.0 6.1	6.1		10.6 10.3	10.5		14.8 10.1	12.5	
				Bottom	6	17.9 17.9	17.9	8.0 8.0	8.0	33.1 33.1	33.1	79.9 79.5	79.7	6.2 6.2	6.2		13.3 13.7	13.5		14.0 9.9	12.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	16:47	Surface	1	17.6 17.6	17.6	8.3 8.3	8.3	31.4 31.4	31.4	65.6 68.0	66.8	5.2 5.4	5.3	5.6	2.4 2.8	2.6	5.4	6.9 6.7	6.8	9.5
				Middle	3.5	17.6 17.6	17.6	8.1 8.1	8.1	31.3 31.3	31.3	73.3 72.3	72.8	5.8 5.7	5.8		4.0 3.8	3.9		13.0 8.0	10.5	
				Bottom	6	17.6 17.6	17.6	8.1 8.1	8.1	30.2 31.3	30.8	72.1 71.9	72.0	5.8 5.7	5.8		9.4 10.1	9.8		10.6 11.7	11.2	
22-Dec-14	Fine	Moderate	17:56	Surface	1	17.3 17.3	17.3	8.1 8.1	8.1	33.6 33.6	33.6	91.0 91.4	91.2	7.2 7.2	7.2	7.2	6.3 5.3	5.8	5.9	23.2 9.7	16.5	15.9
				Middle	3.5	17.2 17.2	17.2	8.2 8.1	8.2	33.6 33.6	33.6	89.2 90.0	89.6	7.0 7.1	7.1		6.4 5.8	6.1		9.3 12.2	10.8	
				Bottom	6	17.2 17.2	17.2	8.1 8.2	8.2	33.6 33.6	33.6	89.3 89.3	89.3	7.0 7.0	7.0		5.8 5.9	5.9		22.4 18.2	20.3	
24-Dec-14	Sunny	Moderate	09:39	Surface	1	17.0 17.0	17.0	7.7 7.7	7.7	32.8 32.8	32.8	72.3 72.3	72.3	5.7 5.7	5.7	5.8	9.1 9.8	9.5	10.0	18.3 15.8	17.1	22.1
				Middle	4.5	17.1 17.1	17.1	7.8 7.8	7.8	32.8 32.8	32.8	73.3 73.3	73.3	5.8 5.8	5.8		10.4 10.2	10.3		20.3 22.0	21.2	
				Bottom	8	17.1 17.1	17.1	7.8 7.8	7.8	32.8 32.8	32.8	81.4 81.4	81.4	6.5 6.5	6.5		10.1 10.1	10.1		27.9 28.2	28.1	
27-Dec-14	Cloudy	Moderate	12:24	Surface	1	17.7 17.7	17.7	8.0 8.0	8.0	31.1 31.1	31.1	66.9 67.9	67.4	5.3 5.4	5.4	5.5	14.5 17.7	16.1	14.9	6.3 7.9	7.1	9.2
				Middle	3.5	17.7 17.7	17.7	7.9 7.9	7.9	31.0 31.0	31.0	69.4 69.3	69.4	5.5 5.5	5.5		14.5 14.2	14.4		8.5 7.6	8.1	
				Bottom	6	17.7 17.7	17.7	7.9 7.9	7.9	31.1 31.0	31.1	69.4 69.4	69.4	5.5 5.5	5.5		14.0 14.2	14.1		12.9 12.1	12.5	
29-Dec-14	Fine	Moderate	14:09	Surface	1	17.2 17.2	17.2	7.7 7.7	7.7	31.0 31.0	31.0	86.2 88.4	87.3	6.9 7.1	7.0	7.1	6.0 5.6	5.8	8.4	10.4 12.2	11.3	11.3
				Middle	3.5	17.2 17.2	17.2	7.8 7.8	7.8	31.1 31.0	31.1	90.5 90.1	90.3	7.2 7.2	7.2		8.3 8.4	8.4		9.7 8.3	9.0	
				Bottom	6	17.1 17.1	17.1	7.7 7.7	7.7	31.0 31.1	31.1	90.9 91.1	91.0	7.3 7.3	7.3		10.8 11.2	11.0		12.8 14.3	13.6	
31-Dec-14	Fine	Moderate	14:42	Surface	1	17.3 17.3	17.3	7.8 7.8	7.8	31.2 31.2	31.2	81.3 81.9	81.6	6.5 6.5	6.5	6.6	5.2 5.2	5.2	6.5	4.3 4.2	4.3	4.8
				Middle	3	17.3 17.3	17.3	7.9 7.9	7.9	31.2 31.2	31.2	82.6 82.4	82.5	6.6 6.6	6.6		5.6 6.5	6.1		4.5 3.8	4.2	
				Bottom	5	17.3 17.3	17.3	7.9 7.9	7.9	31.2 31.2	31.2	82.6 82.3	82.5	6.6 6.6	6.6		7.5 8.6	8.1		5.9 5.9	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 SR1 - Mid-Ebb Tide SR1

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*		
1-Dec-14	Cloudy	Calm	08:26	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	23.7	23.7	8.1	8.1	28.3	28.3	86.9	87.5	87.2	6.3	6.3	6.3	6.3	2.1	2.1	2.1	4.5	7.7	7.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Dec-14	Cloudy	Calm	10:57	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	0.8	22.3	22.3	7.8	7.8	33.1	33.1	84.3	85.3	84.8	6.1	6.1	6.1	6.1	5.7	4.8	5.3	5.1	5.2	5.2
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Dec-14	Cloudy	Moderate	12:53	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.1	22.0	22.1	8.0	8.1	30.4	30.3	103.6	104.1	103.9	7.6	7.6	7.6	7.6	9.8	9.7	9.8	12.7	16.1	16.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8-Dec-14	Cloudy	Moderate	13:44	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.1	21.0	21.0	8.1	8.1	31.6	31.6	83.4	83.6	83.5	6.2	6.2	6.2	6.2	7.7	6.9	7.3	3.2	4.6	4.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10-Dec-14	Fine	Moderate	13:54	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.3	20.5	20.5	8.2	8.3	31.9	31.9	88.2	88.2	88.2	6.6	6.6	6.6	6.6	5.0	5.4	5.2	15.3	11.4	11.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12-Dec-14	Fine	Moderate	15:58	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	20.2	20.2	7.6	7.6	32.3	32.3	115.3	111.0	113.2	8.6	8.5	8.5	8.5	4.4	4.3	4.4	6.7	7.6	7.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-Dec-14	Cloudy	Moderate	18:36	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	19.4	19.4	8.0	8.0	32.2	32.2	72.7	73.3	73.0	5.5	5.6	5.6	5.6	2.9	2.4	2.7	9.3	8.3	8.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-Dec-14	Cloudy	Moderate	09:18	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	0.8	18.1	18.2	7.8	7.8	33.1	33.1	87.3	88.2	87.8	6.8	6.8	6.8	6.8	5.7	4.7	5.2	25.0	19.3	19.3
				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 SR1 - Mid-Ebb Tide SR1

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*				
20-Dec-14	Fine	Moderate	11:25	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.1	17.5	17.5	7.8	7.8	32.0	32.0	65.9	65.5	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	13.3	11.6		
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22-Dec-14	Fine	Moderate	13:37	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.3	18.1	18.1	8.0	8.0	32.0	32.0	82.5	83.2	6.4	6.5	6.4	6.5	6.4	6.5	6.4	6.5	6.4	6.5	8.5	7.3	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24-Dec-14	Sunny	Moderate	14:30	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.2	18.1	18.1	7.1	7.1	31.0	29.9	73.0	74.0	5.7	5.9	5.7	6.0	5.9	6.0	6.0	6.5	6.0	6.5	4.6	4.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27-Dec-14	Cloudy	Moderate	15:55	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.2	17.9	17.9	7.9	7.9	31.3	31.3	69.2	67.9	5.5	5.4	5.5	5.2	5.4	5.5	5.2	5.4	5.5	5.2	5.4	6.3	6.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29-Dec-14	Fine	Moderate	18:17	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.3	17.4	17.4	7.7	7.7	31.9	31.9	72.1	72.4	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	8.4	8.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31-Dec-14	Fine	Moderate	09:55	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.2	17.3	17.3	8.0	8.0	31.5	31.5	85.0	85.0	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	2.6	2.5
				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*		
1-Dec-14	Cloudy	Calm	14:26	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.4	23.7	23.7	7.7	7.7	28.4	28.4	79.1	80.2	5.7	5.8	5.8	5.8	5.8	2.0	2.0	2.0	4.8	3.9	3.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Dec-14	Cloudy	Calm	15:38	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1	22.3	22.3	7.8	7.8	31.4	31.4	81.2	81.4	5.8	5.8	5.8	5.8	5.8	4.5	4.7	4.7	8.1	6.4	6.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Dec-14	Cloudy	Moderate	16:39	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1	21.3	21.3	8.0	8.0	30.6	30.5	71.3	71.1	5.3	5.3	5.3	5.3	5.3	5.4	5.5	5.5	3.7	3.5	3.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8-Dec-14	Cloudy	Moderate	08:49	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.1	20.9	20.9	8.1	8.1	31.6	31.6	79.3	79.3	5.9	5.9	5.9	5.9	5.9	8.4	8.2	8.2	12.7	12.9	12.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10-Dec-14	Fine	Moderate	10:48	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.4	20.3	20.3	8.3	8.3	32.8	32.8	90.5	90.6	6.8	6.8	6.8	6.8	6.8	9.5	9.5	9.5	8.6	11.9	11.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12-Dec-14	Fine	Moderate	12:39	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	19.9	19.9	7.7	7.7	32.0	32.0	79.9	80.2	6.0	6.1	6.1	6.1	6.1	7.6	8.2	8.2	20.7	18.5	18.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-Dec-14	Cloudy	Moderate	14:21	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.1	19.8	19.8	7.9	8.0	32.2	32.2	73.2	74.2	5.5	5.6	5.6	5.6	5.6	7.8	7.7	7.7	10.4	13.1	13.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-Dec-14	Cloudy	Moderate	14:04	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1	18.1	18.1	7.8	7.8	33.1	33.1	83.5	83.7	6.5	6.5	6.5	6.5	6.5	4.3	4.5	4.5	8.4	13.7	13.7
				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*		
20-Dec-14	Fine	Moderate	15:39	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	0.9	17.8 17.7	17.8	7.8 7.8	7.8	31.1 31.2	31.2	76.1 77.0	76.6	6.0 6.1	6.1	6.1	5.6 5.6	5.6	5.6	5.6	7.6 7.7	7.7	7.7	7.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22-Dec-14	Fine	Moderate	17:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	18.1 18.1	18.1	7.8 7.8	7.8	32.0 32.0	32.0	72.9 73.9	73.4	5.7 5.8	5.8	5.8	3.7 3.6	3.7	3.7	3.7	7.8 8.8	8.3	8.3	8.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Dec-14	Sunny	Moderate	09:27	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	17.7 17.7	17.7	7.9 7.8	7.9	31.2 31.2	31.2	70.6 70.8	70.7	5.6 5.6	5.6	5.6	3.7 3.2	3.5	3.5	3.5	14.0 18.8	16.4	16.4	16.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27-Dec-14	Cloudy	Moderate	12:46	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.3	17.9 17.9	17.9	7.9 7.9	7.9	31.8 31.7	31.8	81.7 81.1	81.4	6.4 6.4	6.4	6.4	17.1 14.5	15.8	15.8	15.8	10.9 11.9	11.4	11.4	11.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29-Dec-14	Fine	Moderate	13:08	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	17.4 17.4	17.4	7.7 7.7	7.7	31.9 31.9	31.9	74.7 72.4	73.6	5.9 5.7	5.8	5.8	6.1 5.7	5.9	5.9	5.9	3.6 10.2	6.9	6.9	6.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31-Dec-14	Fine	Moderate	14:17	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
				Middle	1.2	17.5 17.5	17.5	7.8 7.9	7.9	30.5 30.5	30.5	89.8 89.7	89.8	7.2 7.2	7.2	7.2	3.9 3.7	3.8	3.8	3.8	4.5 3.5	4.0	4.0	4.0
				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 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*						
1-Dec-14	Cloudy	Calm	07:30	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
				Middle	1	23.9	23.9	7.9	7.9	29.4	29.4	87.3	87.2	6.2	6.2	6.2	6.2	6.2	16.1	15.7	15.9	15.9	17.4	19.5	19.5			
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3-Dec-14	Cloudy	Calm	09:56	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	0.7	21.7	21.7	7.9	7.9	31.8	31.8	86.0	84.7	6.3	6.2	6.2	6.2	8.2	7.9	8.1	8.1	6.6	7.0	7.0				
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5-Dec-14	Cloudy	Moderate	11:58	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	0.9	21.0	20.8	20.9	8.0	7.9	8.0	31.6	31.0	31.3	76.6	77.5	77.1	5.7	5.8	5.8	5.8	6.4	6.0	6.2	6.2	8.1	8.7	8.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8-Dec-14	Cloudy	Moderate	14:10	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	1.3	20.7	20.6	20.7	8.1	8.1	8.1	31.9	31.9	31.9	86.9	84.5	85.7	6.5	6.3	6.4	6.4	9.9	10.3	10.1	10.1	14.6	14.0	14.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10-Dec-14	Fine	Moderate	14:41	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	1.1	20.4	20.4	20.4	8.2	8.2	8.2	33.1	33.1	33.1	85.4	84.9	85.2	6.3	6.3	6.3	6.3	8.6	8.8	8.7	8.7	15.4	14.0	14.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12-Dec-14	Fine	Moderate	16:52	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	1.3	20.0	20.0	20.0	7.7	7.6	7.6	32.1	32.1	32.1	86.9	87.0	87.0	6.5	6.6	6.6	6.6	11.0	11.2	11.1	11.1	14.0	15.3	15.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15-Dec-14	Cloudy	Moderate	19:22	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	0.9	18.8	18.8	18.8	7.6	7.6	7.6	32.0	32.0	32.0	85.2	85.2	85.2	6.6	6.6	6.6	6.6	7.7	6.6	7.2	7.2	15.0	13.8	13.8
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
17-Dec-14	Cloudy	Moderate	08:27	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
				Middle	0.7	17.9	17.9	17.9	7.9	7.9	7.9	32.3	32.5	32.4	89.6	87.0	88.3	7.0	6.8	6.9	6.9	9.0	8.7	8.9	8.9	9.9	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-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*			
20-Dec-14	Fine	Moderate	10:48	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.9	16.7	16.7	7.3	7.3	31.1	31.1	77.6	77.3	77.5	6.3	6.3	6.3	6.3	9.7	9.8	9.8	8.8	8.8	8.8	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22-Dec-14	Fine	Moderate	12:49	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	1	17.7	17.7	7.6	7.7	32.0	32.0	67.3	68.4	67.9	5.3	5.4	5.4	3.8	3.8	3.8	3.8	12.7	11.7	11.7	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Dec-14	Sunny	Moderate	15:26	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.8	17.8	17.8	7.4	7.4	29.6	31.2	68.0	69.3	68.7	5.4	5.5	5.5	4.6	4.5	4.6	4.6	13.6	13.4	13.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27-Dec-14	Cloudy	Moderate	17:04	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.9	17.6	17.6	8.0	7.8	7.9	31.7	31.8	72.3	73.2	72.8	5.7	5.8	5.8	5.5	5.5	5.5	5.5	6.6	6.0	6.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29-Dec-14	Fine	Moderate	19:22	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.9	17.1	17.1	7.7	7.7	31.8	31.8	89.5	87.4	88.5	7.1	7.1	7.1	8.4	8.1	8.3	8.3	9.2	7.8	8.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31-Dec-14	Fine	Moderate	09:09	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.8	16.6	16.6	7.9	7.9	30.7	30.7	80.5	80.8	80.7	6.5	6.5	6.5	3.9	4.0	4.0	4.0	6.6	3.3	5.0	
				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 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*	
1-Dec-14	Cloudy	Calm	15:11	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	24.0	24.0	7.9	7.9	29.5	29.5	75.4	74.3	5.4	5.3	5.3	9.2	9.2	9.2	24.9	23.5	23.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Dec-14	Cloudy	Calm	16:44	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.6	21.9	21.9	8.0	8.0	30.6	30.6	91.1	89.0	6.6	6.5	6.5	8.2	8.3	8.3	9.5	8.9	8.9	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Dec-14	Cloudy	Moderate	17:32	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.1	21.2	21.2	8.0	8.0	31.8	31.8	78.9	79.0	5.8	5.8	5.8	9.2	9.2	9.2	3.5	4.5	4.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8-Dec-14	Cloudy	Moderate	08:14	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.3	20.3	20.3	8.1	8.1	30.4	30.4	81.2	80.8	6.1	6.1	6.1	10.2	10.0	10.0	11.7	11.6	11.6	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10-Dec-14	Fine	Moderate	09:51	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.2	20.2	20.2	8.2	8.2	32.6	32.6	93.4	92.4	7.0	6.9	6.9	7.4	7.9	7.9	10.2	9.0	9.0	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12-Dec-14	Fine	Moderate	11:47	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	20.0	20.0	7.6	7.6	32.1	32.1	95.3	95.0	7.2	7.2	7.2	5.7	5.8	5.8	14.1	11.1	11.1	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-Dec-14	Cloudy	Moderate	13:27	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.2	19.1	19.1	7.6	7.6	32.0	32.0	82.4	82.7	6.3	6.4	6.4	15.6	14.8	14.8	9.7	10.2	10.2	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-Dec-14	Cloudy	Moderate	15:04	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.6	17.9	17.9	8.0	8.0	32.5	32.5	93.9	91.8	7.3	7.2	7.2	9.2	9.3	9.3	17.5	13.3	13.3	
				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 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*	
20-Dec-14	Fine	Moderate	16:22	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	17.2	17.2	7.8	7.8	32.4	32.4	64.6	64.8	5.1	5.1	5.1	5.1	3.8	3.9	3.9	10.9	12.2	11.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22-Dec-14	Fine	Moderate	17:50	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.8	17.7	17.7	8.2	8.2	32.1	32.1	76.5	77.7	6.0	6.1	6.1	3.5	3.6	3.6	9.2	7.7	8.5	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Dec-14	Sunny	Moderate	08:30	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	17.3	17.3	7.9	7.9	31.1	31.1	64.3	64.7	5.1	5.2	5.2	4.2	4.4	4.3	10.9	9.1	10.0	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27-Dec-14	Cloudy	Moderate	11:55	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	17.6	17.6	7.8	7.8	31.8	31.8	69.1	74.7	5.5	5.9	5.7	4.1	3.9	4.0	3.6	3.7	3.7	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29-Dec-14	Fine	Moderate	12:21	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	17.1	17.1	7.7	7.7	31.8	31.8	88.1	87.3	7.0	7.0	7.0	7.5	7.1	7.3	9.7	8.1	8.9	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31-Dec-14	Fine	Moderate	14:45	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	17.5	17.5	7.9	7.9	31.1	31.1	88.3	87.7	7.0	7.0	7.0	6.5	6.4	6.5	7.5	6.8	7.2	
				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*		
1-Dec-14	Cloudy	Calm	07:10	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1	23.9	23.9	7.7	7.7	28.8	28.9	85.5	85.1	6.1	6.1	6.1	6.1	7.6	7.8	7.8	8.8	8.9	8.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Dec-14	Cloudy	Calm	09:34	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	22.0	22.0	8.3	8.3	30.0	30.0	86.1	86.6	6.3	6.4	6.4	6.4	7.8	7.9	7.9	12.0	10.9	10.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Dec-14	Cloudy	Moderate	11:47	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.8	22.4	22.5	8.1	8.1	30.9	30.8	101.8	101.9	7.4	7.4	7.4	7.4	3.5	3.5	3.5	6.0	6.8	6.8
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8-Dec-14	Cloudy	Moderate	14:27	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.5	20.5	20.5	8.1	8.1	31.4	31.4	89.7	88.2	6.7	6.6	6.7	6.7	5.3	4.8	5.1	8.6	9.1	9.1
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10-Dec-14	Fine	Moderate	14:59	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.2	20.2	20.2	8.1	8.1	33.1	33.1	85.7	85.4	6.4	6.4	6.4	6.4	4.8	4.9	4.9	21.6	19.4	19.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12-Dec-14	Fine	Moderate	17:07	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1	20.0	20.0	7.9	7.9	32.2	31.1	79.2	78.7	6.0	6.0	6.0	6.0	3.4	3.6	3.6	5.2	5.9	5.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-Dec-14	Cloudy	Moderate	19:33	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.8	18.7	18.7	7.5	7.5	31.9	31.9	93.1	92.4	7.2	7.2	7.2	7.2	3.2	3.2	3.2	1.8	3.5	3.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-Dec-14	Cloudy	Moderate	08:08	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	17.9	17.9	8.3	8.3	31.8	31.8	90.1	91.1	7.1	7.1	7.1	7.1	8.8	9.0	8.9	9.0	13.3	13.3
				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 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*	
20-Dec-14	Fine	Moderate	10:34	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.2	16.8 16.8	16.8	7.5 7.5	7.5	31.6 31.7	31.7	79.4 79.1	79.3	6.4 6.3	6.4	6.4	2.1 2.0	2.1	2.1	2.1	7.4 3.4	5.4	5.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22-Dec-14	Fine	Moderate	12:34	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.8	17.5 17.5	17.5	7.3 7.3	7.3	31.9 31.9	31.9	104.5 103.3	103.9	8.3 8.2	8.3	8.3	1.8 1.8	1.8	1.8	1.8	6.0 2.8	4.4	4.4
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Dec-14	Sunny	Moderate	15:37	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	17.6 17.6	17.6	7.6 7.6	7.6	31.3 31.3	31.3	67.0 68.2	67.6	5.3 5.4	5.4	5.4	3.0 3.1	3.1	3.1	3.1	6.5 2.9	4.7	4.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27-Dec-14	Cloudy	Moderate	17:21	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1	17.5 17.5	17.5	7.8 7.8	7.8	32.1 32.0	32.1	78.8 79.5	79.2	6.2 6.3	6.3	6.3	3.1 3.1	3.1	3.1	3.1	4.7 3.9	4.3	4.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29-Dec-14	Fine	Moderate	19:39	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	17.1 17.1	17.1	7.7 7.7	7.7	31.1 31.1	31.1	97.6 95.8	96.7	7.8 7.7	7.8	7.8	3.1 2.8	3.0	3.0	3.0	4.0 3.1	3.6	3.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31-Dec-14	Fine	Moderate	08:56	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1	16.9 17.0	17.0	7.8 7.8	7.8	30.3 30.3	30.3	84.4 82.5	83.5	6.8 6.7	6.8	6.8	1.9 1.9	1.9	1.9	1.9	4.9 7.6	6.3	6.3
				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 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*	
1-Dec-14	Cloudy	Calm	15:27	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	23.9	23.9	7.9	7.9	29.2	29.2	76.4	76.1	5.5	5.5	5.5	5.5	7.8	7.9	7.9	9.5	15.6	15.6
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3-Dec-14	Cloudy	Calm	17:04	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	21.9	21.9	8.3	8.3	29.4	29.4	82.3	83.1	6.0	6.1	6.1	6.1	7.5	7.5	7.5	8.6	9.2	9.2
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Dec-14	Cloudy	Moderate	17:42	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.1	21.2	21.3	8.0	8.0	28.9	30.6	73.6	74.0	5.5	5.5	5.5	5.5	4.2	4.3	4.3	5.7	4.9	4.9
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8-Dec-14	Cloudy	Moderate	08:00	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.6	20.1	20.1	8.1	8.1	31.4	31.4	87.3	86.5	6.6	6.6	6.6	6.6	7.1	6.6	6.9	7.7	8.0	8.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10-Dec-14	Fine	Moderate	09:33	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.3	20.1	20.1	8.1	8.1	32.0	32.1	96.3	96.2	7.2	7.2	7.2	7.2	4.0	3.9	4.0	6.3	9.8	9.8
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12-Dec-14	Fine	Moderate	11:34	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	1.2	20.0	20.0	7.5	7.5	32.0	32.0	101.7	101.9	7.7	7.7	7.7	7.7	3.4	4.0	3.7	7.9	10.3	10.3
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-Dec-14	Cloudy	Moderate	13:11	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.9	19.1	19.1	7.5	7.5	31.9	31.9	93.1	93.1	7.1	7.1	7.1	7.1	4.3	4.1	4.2	6.9	7.8	7.8
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17-Dec-14	Cloudy	Moderate	15:21	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Middle	0.7	17.9	17.9	8.3	8.3	31.9	31.9	85.2	86.0	6.7	6.8	6.8	6.8	8.3	8.3	8.3	9.9	15.5	15.5
				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 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*				
20-Dec-14	Fine	Moderate	16:34	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
				Middle	1.3	17.1	17.1	7.8	7.8	32.4	32.4	72.8	73.3	73.1	5.8	5.8	5.8	5.8	2.4	2.2	2.3	2.3	5.3	10.4	10.4	
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22-Dec-14	Fine	Moderate	18:04	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.8	17.7	17.7	8.3	8.3	32.1	32.1	79.0	81.5	80.3	6.2	6.4	6.3	6.3	3.9	3.2	3.6	3.6	2.8	4.2	3.5	3.5
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24-Dec-14	Sunny	Moderate	08:15	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.8	17.3	17.3	7.7	7.7	31.0	31.0	91.5	90.7	91.1	7.3	7.2	7.3	7.3	3.1	3.2	3.2	3.2	6.5	4.8	5.7	5.7
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27-Dec-14	Cloudy	Moderate	11:36	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.7	17.6	17.6	7.7	7.7	30.8	30.9	86.9	87.1	87.0	6.9	6.9	6.9	6.9	4.1	3.7	3.9	3.9	5.2	4.7	5.0	5.0
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29-Dec-14	Fine	Moderate	12:08	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.7	17.1	17.1	7.7	7.7	30.9	31.0	93.1	95.2	94.2	7.5	7.6	7.6	7.6	1.9	1.8	1.9	1.9	4.6	5.8	5.2	5.2
				Bottom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31-Dec-14	Fine	Moderate	14:59	Surface	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
				Middle	0.8	17.3	17.3	7.9	7.9	31.3	31.3	86.0	85.1	85.6	6.8	6.8	6.8	6.8	1.7	2.0	1.9	1.9	5.1	6.5	5.8	5.8
				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*			
1-Dec-14	Cloudy	Calm	07:06	Surface	1	23.5 23.5	23.5	8.1 8.1	8.1	28.8 28.8	28.8	85.6 85.8	85.7	6.2 6.2	6.2	6.2	2.6 2.7	2.7	2.8	4.7 2.7	3.7	3.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.7	23.3 23.3	23.3	8.1 8.1	8.1	30.2 29.6	29.9	84.7 84.2	84.5	6.1 6.1	6.1		6.1	3.0 2.8		2.9	3.0 3.6		3.3		
3-Dec-14	Cloudy	Calm	10:21	Surface	1	22.6 22.6	22.6	7.7 7.7	7.7	31.2 31.2	31.2	77.4 77.3	77.4	5.6 5.6	5.6	5.6	6.1 5.5	5.8	5.9	4.1 2.8	3.5	3.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	22.6 22.6	22.6	7.7 7.7	7.7	31.2 31.1	31.2	76.1 70.9	73.5	5.5 5.1	5.3		5.3	6.5 5.5		6.0	4.1 2.7		3.4		
5-Dec-14	Cloudy	Moderate	12:26	Surface	1	21.1 21.1	21.1	8.2 8.2	8.2	31.2 31.2	31.2	83.0 82.7	82.9	6.2 6.1	6.2	6.2	2.9 2.7	2.8	3.2	6.5 5.4	6.0	7.0			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	21.2 21.2	21.2	8.2 8.1	8.2	31.3 31.3	31.3	81.3 81.7	81.5	6.0 6.1	6.1		6.1	3.4 3.5		3.5	5.1 10.7		7.9		
8-Dec-14	Cloudy	Moderate	14:20	Surface	1	20.6 20.6	20.6	8.2 8.2	8.2	31.3 31.3	31.3	85.6 86.0	85.8	6.4 6.4	6.4	6.4	8.0 8.2	8.1	8.2	10.4 11.3	10.9	10.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.1	20.6 20.6	20.6	8.2 8.2	8.2	31.3 31.3	31.3	84.1 84.2	84.2	6.3 6.3	6.3		6.3	8.3 8.3		8.3	9.8 9.6		9.7		
10-Dec-14	Fine	Moderate	14:59	Surface	1	20.7 20.7	20.7	8.0 8.0	8.0	32.1 32.2	32.2	83.9 81.8	82.9	6.2 6.1	6.2	6.2	4.4 4.5	4.5	4.6	8.0 16.3	12.2	10.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.4	20.7 20.7	20.7	8.0 8.0	8.0	32.4 32.5	32.5	81.9 85.9	83.9	6.1 6.4	6.3		6.3	4.7 4.7		4.7	9.6 7.2		8.4		
12-Dec-14	Fine	Moderate	15:22	Surface	1	19.8 19.8	19.8	7.7 7.7	7.7	32.0 32.0	32.0	103.5 103.1	103.3	7.8 7.8	7.8	7.8	4.5 4.3	4.4	4.8	9.3 12.8	11.1	9.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.6	19.8 19.8	19.8	7.7 7.7	7.7	32.1 32.1	32.1	101.7 102.0	101.9	7.7 7.7	7.7		7.7	5.0 5.3		5.2	6.5 7.6		7.1		
15-Dec-14	Cloudy	Moderate	18:51	Surface	1	19.5 19.4	19.5	7.9 7.9	7.9	31.8 31.8	31.8	85.8 86.0	85.9	6.5 6.6	6.6	6.6	5.1 4.6	4.9	5.6	9.0 14.3	11.7	10.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.1	19.4 19.4	19.4	8.0 8.0	8.0	31.8 31.8	31.8	84.7 84.0	84.4	6.5 6.4	6.5		6.5	6.6 6.0		6.3	8.4 11.3		9.9		
17-Dec-14	Cloudy	Moderate	08:44	Surface	1	18.7 18.7	18.7	7.9 7.9	7.9	33.1 33.1	33.1	81.1 81.1	81.1	6.2 6.2	6.2	6.2	5.1 6.0	5.6	9.6	14.0 26.3	20.2	14.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4	18.7 18.7	18.7	7.9 7.7	7.8	33.1 33.1	33.1	82.8 83.3	83.1	6.3 6.4	6.4		6.4	14.2 12.8		13.5	9.1 9.4		9.3		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*			
20-Dec-14	Fine	Moderate	11:21	Surface	1	17.8 17.8	17.8	7.1 7.1	7.1	31.2 29.5	30.4	71.5 71.4	71.5	5.6 5.7	5.7	5.7	4.4 4.5	4.5	4.3	5.3 8.6	7.0	7.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.2	17.7 17.7	17.7	7.1 7.1	7.1	31.2 31.2	31.2	71.4 70.5	71.0	5.6 5.6	5.6		5.6	3.8 4.1		4.0	9.0 6.6		7.8		
22-Dec-14	Fine	Moderate	13:16	Surface	1	17.8 17.7	17.8	8.1 8.1	8.1	32.2 32.2	32.2	87.6 87.2	87.4	6.9 6.9	6.9	6.9	7.5 7.3	7.4	7.9	9.3 8.3	8.8	8.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	17.4 17.4	17.4	8.1 8.1	8.1	32.3 32.3	32.3	86.7 86.4	86.6	6.8 6.8	6.8		6.8	8.2 8.3		8.3	8.9 7.0		8.0		
24-Dec-14	Sunny	Moderate	13:51	Surface	1	17.3 17.3	17.3	7.4 7.4	7.4	31.7 31.7	31.7	70.5 70.5	70.5	5.6 5.6	5.6	5.6	8.8 9.0	8.9	8.7	8.4 3.7	6.1	7.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.7	17.3 17.3	17.3	7.4 7.4	7.4	31.7 31.7	31.7	71.2 71.2	71.2	5.7 5.7	5.7		5.7	8.5 8.5		8.5	7.4 9.7		8.6		
27-Dec-14	Cloudy	Moderate	16:19	Surface	1	17.8 17.8	17.8	7.8 7.8	7.8	31.1 31.1	31.1	82.9 83.0	83.0	6.5 6.6	6.6	6.6	13.8 14.3	14.1	16.0	10.9 7.6	9.3	9.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.1	17.8 17.8	17.8	7.7 7.7	7.7	31.1 31.1	31.1	82.9 83.4	83.2	6.5 6.6	6.6		6.6	17.6 18.0		17.8	7.1 11.9		9.5		
29-Dec-14	Fine	Moderate	18:27	Surface	1	17.3 17.3	17.3	7.8 7.8	7.8	30.9 30.9	30.9	67.2 67.1	67.2	5.4 5.4	5.4	5.4	4.6 4.6	4.6	6.7	11.2 10.0	10.6	9.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	17.3 17.2	17.3	7.8 7.8	7.8	30.9 30.9	30.9	67.2 66.6	66.9	5.4 5.3	5.4		5.4	8.8 8.5		8.7	8.0 9.9		9.0		
31-Dec-14	Fine	Moderate	08:55	Surface	1	17.1 17.1	17.1	7.8 7.8	7.8	31.0 31.0	31.0	83.1 83.9	83.5	6.7 6.7	6.7	6.7	3.6 4.0	3.8	5.4	6.3 6.3	6.3	5.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	5	17.1 17.1	17.1	7.8 7.8	7.8	31.0 31.0	31.0	82.8 83.2	83.0	6.6 6.7	6.7		6.7	6.6 7.1		6.9	5.3 5.1		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 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*			
1-Dec-14	Cloudy	Calm	13:41	Surface	1	23.5 23.5	23.5	7.6 7.6	7.6	28.8 28.8	28.8	121.4 121.4	121.4	8.8 8.8	8.8	8.8	5.2 5.2	5.2	8.3	2.3 2.2	2.3	3.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	23.5 23.6	23.6	7.6 7.6	7.6	29.0 30.1	29.6	120.8 119.5	120.2	8.7 8.5	8.6		8.6	10.7 11.8		11.3	4.3 3.3		3.8		
3-Dec-14	Cloudy	Calm	16:18	Surface	1	22.5 22.5	22.5	7.7 7.8	7.8	28.3 30.3	29.3	86.8 87.9	87.4	6.3 6.4	6.4	6.4	2.1 2.1	2.1	2.4	6.2 5.4	5.8	7.7			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	22.5 22.5	22.5	7.8 7.8	7.8	30.6 30.6	30.6	84.9 86.8	85.9	6.1 6.3	6.2		6.2	2.6 2.7		2.7	6.7 12.5		9.6		
5-Dec-14	Cloudy	Moderate	16:30	Surface	1	21.0 21.0	21.0	8.2 8.2	8.2	31.3 31.3	31.3	79.4 78.4	78.9	5.9 5.8	5.9	5.9	3.8 3.9	3.9	4.8	6.4 7.7	7.1	8.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.1	21.0 21.0	21.0	8.1 8.1	8.1	31.3 31.3	31.3	77.7 77.1	77.4	5.8 5.7	5.8		5.8	5.5 5.7		5.6	9.5 10.2		9.9		
8-Dec-14	Cloudy	Moderate	08:34	Surface	1	20.5 20.5	20.5	8.0 8.0	8.0	31.3 31.3	31.3	97.1 96.3	96.7	7.3 7.2	7.3	7.3	17.8 16.3	17.1	23.2	31.0 18.6	24.8	21.2			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	20.5 20.5	20.5	8.0 8.0	8.0	31.3 31.3	31.3	95.6 94.5	95.1	7.2 7.1	7.2		7.2	28.9 29.5		29.2	18.4 16.8		17.6		
10-Dec-14	Fine	Moderate	10:12	Surface	1	20.7 20.6	20.7	8.1 8.1	8.1	32.8 32.8	32.8	91.8 91.4	91.6	6.8 6.8	6.8	6.8	9.2 9.7	9.5	10.7	18.2 14.9	16.6	15.1			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.5	20.6 20.6	20.6	8.0 8.0	8.0	32.8 32.8	32.8	89.2 88.8	89.0	6.6 6.6	6.6		6.6	13.0 10.5		11.8	13.0 14.2		13.6		
12-Dec-14	Fine	Moderate	11:01	Surface	1	19.4 19.4	19.4	7.7 7.6	7.7	30.8 30.8	30.8	98.8 98.8	98.8	7.6 7.6	7.6	7.6	8.3 8.3	8.3	8.4	11.1 10.3	10.7	11.9			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	3.8	19.4 19.4	19.4	7.6 7.7	7.7	30.9 30.9	30.9	98.8 98.8	98.8	7.6 7.6	7.6		7.6	8.4 8.6		8.5	13.3 12.6		13.0		
15-Dec-14	Cloudy	Moderate	13:25	Surface	1	19.1 19.1	19.1	7.9 7.9	7.9	32.2 32.2	32.2	97.8 97.2	97.5	7.5 7.4	7.5	7.5	3.8 3.8	3.8	4.8	9.1 10.1	9.6	9.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	19.1 19.1	19.1	8.1 8.0	8.1	32.2 32.2	32.2	95.3 94.9	95.1	7.3 7.3	7.3		7.3	6.0 5.4		5.7	8.1 10.9		9.5		
17-Dec-14	Cloudy	Moderate	14:37	Surface	1	18.7 18.7	18.7	7.8 7.8	7.8	33.2 33.1	33.2	81.0 82.2	81.6	6.2 6.3	6.3	6.3	0.8 0.9	0.9	7.3	9.1 16.6	12.9	11.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	18.7 18.7	18.7	7.8 7.8	7.8	33.1 33.1	33.1	83.0 82.4	82.7	6.4 6.3	6.4		6.4	14.9 12.4		13.7	9.9 9.4		9.7		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*			
20-Dec-14	Fine	Moderate	16:00	Surface	1	17.7 17.7	17.7	7.7 7.7	7.7	31.4 31.4	31.4	82.9 82.9	82.9	6.5 6.5	6.5	6.5	4.0 4.8	4.4	8.9	7.9 6.0	7.0	7.5			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	-
				Bottom	4.3	17.7 17.7	17.7	7.6 7.6	7.6	31.3 31.3	31.3	81.8 81.9	81.9	6.5 6.5	6.5		6.5	13.6 13.1		13.4	7.1 8.6		7.9		
22-Dec-14	Fine	Moderate	17:06	Surface	1	17.7 17.7	17.7	8.0 8.1	8.1	32.6 32.6	32.6	83.9 84.3	84.1	6.6 6.6	6.6	6.6	6.3 6.5	6.4	7.5	6.5 7.9	7.2	7.4			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	17.3 17.3	17.3	8.1 8.1	8.1	32.7 32.7	32.7	83.6 83.6	83.6	6.6 6.6	6.6		6.6	8.6 8.4		8.5	7.3 7.8		7.6		
24-Dec-14	Sunny	Moderate	08:41	Surface	1	17.2 17.2	17.2	7.7 7.7	7.7	31.7 31.7	31.7	70.0 70.1	70.1	5.6 5.6	5.6	5.6	11.8 11.8	11.8	11.8	11.3 15.1	13.2	14.8			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	17.2 17.2	17.2	7.7 7.7	7.7	31.6 31.6	31.6	67.7 67.7	67.7	5.4 5.4	5.4		5.4	11.8 11.8		11.8	16.9 15.7		16.3		
27-Dec-14	Cloudy	Moderate	11:20	Surface	1	17.7 17.7	17.7	7.8 7.8	7.8	30.9 30.9	30.9	82.9 82.9	82.9	6.6 6.6	6.6	6.6	13.8 13.7	13.8	14.8	10.8 13.2	12.0	9.9			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.3	17.7 17.7	17.7	7.8 7.8	7.8	30.9 30.9	30.9	83.0 83.1	83.1	6.6 6.6	6.6		6.6	15.9 15.6		15.8	6.3 9.1		7.7		
29-Dec-14	Fine	Moderate	13:10	Surface	1	17.2 17.1	17.2	7.6 7.6	7.6	30.8 30.8	30.8	83.0 82.8	82.9	6.6 6.6	6.6	6.6	2.3 2.2	2.3	4.6	9.4 7.9	8.7	8.6			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.2	17.0 17.1	17.1	7.6 7.6	7.6	28.7 30.9	29.8	82.5 82.6	82.6	6.7 6.6	6.7		6.7	6.7 6.8		6.8	8.9 7.8		8.4		
31-Dec-14	Fine	Moderate	13:45	Surface	1	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.1	31.1	85.5 85.9	85.7	6.8 6.8	6.8	6.8	4.1 4.2	4.2	5.0	5.0 4.6	4.8	4.3			
				Middle	-	-	-	-	-	-	-	-	-	-	-		-	-		-	-		-	-	
				Bottom	4.6	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.1	31.1	85.3 85.5	85.4	6.8 6.8	6.8		6.8	5.6 6.0		5.8	5.7 1.8		3.8		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	07:17	Surface	1	24.0	24.0	7.9	7.9	29.3	29.3	92.2	91.9	6.6	6.6	6.5	8.9	8.9	9.7	12.2	15.5	12.3
						24.0	24.0	7.9	7.9	29.2	29.3	91.6	91.9	6.5	6.6		8.8	8.9		15.7	11.8	
				Middle	3	24.0	24.0	7.7	7.8	29.3	29.3	87.7	87.9	6.2	6.3		9.8	9.9		10.0	10.3	
				Bottom	5	24.0	24.0	7.7	7.7	29.3	29.3	84.3	84.5	6.0	6.0	6.0	10.2	10.3		10.8	9.6	
3-Dec-14	Cloudy	Calm	09:45	Surface	1	21.9	22.0	8.1	8.1	31.2	31.3	78.5	80.0	5.7	5.8	5.8	5.6	5.8	5.7	7.3	7.4	6.8
						22.0	22.0	8.0	8.0	31.4	31.5	78.6	78.1	5.7	5.7		6.0	5.7		7.5	6.9	
				Middle	3	22.0	22.0	8.0	8.0	31.5	31.5	77.5	78.1	5.6	5.7		5.8	5.7		5.8	5.7	
				Bottom	5	22.0	22.0	8.0	8.0	31.5	31.6	71.0	71.3	5.2	5.2	5.2	5.8	5.7		5.3	6.1	
						22.0	22.0	7.9	8.0	31.6	31.6	71.6	71.3	5.2	5.2	5.2	5.5	5.7		6.9	6.1	
5-Dec-14	Cloudy	Moderate	11:51	Surface	1	22.9	22.0	8.1	8.1	30.9	31.2	106.3	103.9	7.7	7.6	7.3	5.0	5.1	10.6	11.1	10.6	12.1
						21.1	22.0	8.0	8.1	31.4	31.2	101.5	103.9	7.5	7.6		5.1	5.1		10.1	10.6	
				Middle	3.5	23.0	21.6	8.1	8.0	30.9	30.8	98.0	95.0	7.0	7.0		9.9	9.9		13.0	12.3	
						20.1	21.6	7.9	8.0	30.7	30.8	91.9	95.0	7.0	7.0	9.8	9.9		11.5	12.3		
				Bottom	6	22.9	21.3	8.1	8.1	30.9	31.0	92.3	89.2	6.6	6.6	6.6	16.8	16.7		11.2	13.3	
						19.6	21.3	8.0	8.1	31.1	31.0	86.0	89.2	6.6	6.6	6.6	16.5	16.7		15.3	13.3	
8-Dec-14	Cloudy	Moderate	14:18	Surface	1	20.5	20.5	8.1	8.1	31.5	31.5	95.5	94.7	7.2	7.1	7.0	11.9	11.6	11.1	13.0	12.0	11.7
						20.5	20.5	8.1	8.1	31.5	31.5	93.9	94.7	7.0	7.1		11.3	11.6		10.9	12.0	
				Middle	4.5	20.5	20.5	8.1	8.1	31.8	31.8	91.9	91.7	6.9	6.9		9.4	10.3		12.2	11.0	
						20.5	20.5	8.1	8.1	31.8	31.8	91.5	91.7	6.8	6.9	6.8	11.2	10.3		9.7	11.0	
				Bottom	8	20.5	20.5	8.1	8.1	31.8	31.8	90.5	90.3	6.8	6.8	6.8	11.7	11.5		10.8	12.0	
						20.5	20.5	8.1	8.1	31.8	31.8	90.0	90.3	6.7	6.8	6.8	11.3	11.5		13.1	12.0	
10-Dec-14	Fine	Moderate	14:49	Surface	1	20.4	20.4	8.1	8.1	33.2	33.2	87.1	86.6	6.5	6.5	6.5	5.6	5.4	5.5	23.5	17.7	14.3
						20.3	20.4	8.1	8.1	33.2	33.2	86.1	86.6	6.4	6.5		5.1	5.4		11.9	17.7	
				Middle	4	20.4	20.4	8.1	8.1	33.3	33.3	87.2	86.7	6.5	6.5		5.6	5.5		5.6	5.5	
						20.4	20.4	8.1	8.1	33.3	33.3	86.2	86.7	6.4	6.5	6.5	5.3	5.5		12.7	12.3	
				Bottom	7	20.4	20.4	8.1	8.1	33.3	33.3	87.3	87.2	6.5	6.5	6.5	5.9	5.5		13.8	13.0	
						20.4	20.4	8.1	8.1	33.3	33.3	87.1	87.2	6.5	6.5	6.5	5.1	5.5		12.2	13.0	
12-Dec-14	Fine	Moderate	17:00	Surface	1	20.0	20.0	7.7	7.7	29.9	31.1	84.1	84.8	6.4	6.4	6.4	3.6	3.6	4.3	4.6	5.4	9.0
						20.0	20.0	7.7	7.7	32.2	31.1	85.5	84.8	6.4	6.4		3.5	3.6		6.1	5.4	
				Middle	3	20.0	20.0	7.6	7.7	32.2	32.2	83.2	83.1	6.3	6.3		4.0	3.6		13.3	12.8	
						20.0	20.0	7.7	7.7	32.2	32.2	83.0	83.1	6.2	6.3	6.2	3.2	3.6		12.2	12.8	
				Bottom	5	20.0	20.0	7.6	7.6	32.2	32.2	82.3	82.3	6.2	6.2	6.2	5.7	5.7		8.8	8.7	
						20.0	20.0	7.6	7.6	32.2	32.2	82.3	82.3	6.2	6.2	6.2	5.7	5.7		8.5	8.7	
15-Dec-14	Cloudy	Moderate	19:28	Surface	1	18.7	18.7	7.5	7.5	31.9	31.9	90.5	90.4	7.0	7.0	7.0	5.8	5.8	5.7	4.2	3.7	5.7
						18.7	18.7	7.5	7.5	31.9	31.9	90.2	90.4	7.0	7.0		5.8	5.8		3.2	3.7	
				Middle	3.5	18.7	18.7	7.5	7.5	31.9	31.2	89.4	89.3	6.9	7.0		5.4	5.5		5.9	6.4	
						18.7	18.7	7.5	7.5	30.4	31.2	89.2	89.3	7.0	7.0	5.6	5.5		6.8	6.4		
				Bottom	6	18.7	18.7	7.5	7.5	31.9	31.9	89.6	89.5	6.9	6.9	6.9	5.8	5.8		7.6	7.1	
						18.7	18.7	7.4	7.5	31.9	31.9	89.3	89.5	6.9	6.9	6.9	5.7	5.8		6.5	7.1	
17-Dec-14	Cloudy	Moderate	08:17	Surface	1	17.9	17.9	8.1	8.1	31.9	32.1	82.3	83.5	6.5	6.6	6.5	6.3	6.4	6.0	9.4	16.7	18.0
						17.9	17.9	8.0	8.1	32.2	32.1	84.7	83.5	6.6	6.6		6.5	6.4		23.9	16.7	
				Middle	3	17.9	17.9	8.0	8.0	32.2	32.2	81.7	81.1	6.4	6.4		6.3	6.0		13.2	19.9	
						17.9	17.9	8.0	8.0	32.2	32.2	80.5	81.1	6.3	6.4	6.4	5.7	6.0		26.6	19.9	
				Bottom	5	17.9	17.9	8.0	8.0	32.2	32.2	74.0	74.3	5.8	5.8	5.8	6.2	5.7		14.5	17.3	
						17.9	17.9	7.9	8.0	32.2	32.2	74.5	74.3	5.8	5.8	5.8	5.1	5.7		20.0	17.3	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	10:40	Surface	1	16.8 16.8	16.8	7.4 7.5	7.5	31.9 31.9	31.9	75.6 74.9	75.3	6.1 6.0	6.1	6.1	2.9 2.8	2.9	2.4	5.4 18.3	11.9	11.2
				Middle	3.5	16.7 16.8	16.8	7.4 7.4	7.4	31.9 31.9	31.9	74.3 74.4	74.4	6.0 6.0	6.0		2.4 2.3	2.4		6.4 9.0	7.7	
				Bottom	6	16.7 16.7	16.7	7.4 7.4	7.4	31.9 31.9	31.9	73.5 73.2	73.4	5.9 5.9	5.9		2.0 2.0	2.0		5.3 22.5	13.9	
22-Dec-14	Fine	Moderate	12:42	Surface	1	17.5 17.4	17.5	8.0 8.0	8.0	32.0 32.0	32.0	96.6 94.5	95.6	7.6 7.5	7.6	6.8	5.5 5.4	5.5	8.5	5.2 5.4	5.3	5.4
				Middle	4.5	17.4 17.4	17.4	7.7 7.7	7.7	32.0 32.0	32.0	75.3 73.5	74.4	6.0 5.8	5.9		12.9 11.8	12.4		4.3 5.4	4.9	
				Bottom	8	17.4 17.4	17.4	7.8 7.8	7.8	31.9 31.8	31.9	88.4 85.1	86.8	7.0 6.7	6.9		7.1 8.0	7.6		6.0 5.9	6.0	
24-Dec-14	Sunny	Moderate	15:31	Surface	1	17.7 17.7	17.7	7.5 7.5	7.5	31.3 31.2	31.3	64.6 66.6	65.6	5.1 5.3	5.2	5.5	3.9 3.9	3.9	5.7	5.2 4.7	5.0	5.1
				Middle	4.5	17.7 17.7	17.7	7.4 7.4	7.4	31.3 31.3	31.3	71.8 71.7	71.8	5.7 5.7	5.7		8.8 7.7	8.3		4.3 7.4	5.9	
				Bottom	8	17.7 17.7	17.7	7.4 7.4	7.4	29.2 31.3	30.3	70.8 71.2	71.0	5.7 5.6	5.7		4.6 5.0	4.8		6.1 2.4	4.3	
27-Dec-14	Cloudy	Moderate	17:12	Surface	1	17.6 17.6	17.6	7.7 7.7	7.7	31.9 31.9	31.9	81.4 82.8	82.1	6.4 6.5	6.5	6.3	3.4 3.1	3.3	4.9	4.0 4.0	4.0	4.2
				Middle	4.5	17.6 17.6	17.6	7.8 7.7	7.8	31.9 32.0	32.0	77.3 75.8	76.6	6.1 6.0	6.1		4.6 4.5	4.6		4.7 5.0	4.9	
				Bottom	8	17.6 17.6	17.6	7.8 7.8	7.8	31.9 32.0	32.0	75.5 73.5	74.5	6.0 5.8	5.9		6.4 7.3	6.9		2.8 4.4	3.6	
29-Dec-14	Fine	Moderate	19:30	Surface	1	17.1 17.1	17.1	7.7 7.7	7.7	31.5 31.5	31.5	99.1 99.6	99.4	7.9 7.9	7.9	7.9	3.0 2.9	3.0	6.1	7.7 6.8	7.3	7.0
				Middle	4.5	17.1 17.1	17.1	7.4 7.7	7.6	31.5 31.5	31.5	96.5 97.5	97.0	7.7 7.8	7.8		4.5 4.6	4.6		6.6 7.5	7.1	
				Bottom	8	17.1 17.1	17.1	7.7 7.4	7.6	31.6 31.6	31.6	94.3 94.2	94.3	7.5 7.5	7.5		10.5 10.6	10.6		6.1 7.2	6.7	
31-Dec-14	Fine	Moderate	09:01	Surface	1	17.0 17.0	17.0	7.9 7.9	7.9	30.5 30.5	30.5	83.1 82.5	82.8	6.7 6.6	6.7	6.7	4.3 4.3	4.3	4.7	7.8 4.3	6.1	5.1
				Middle	4	17.0 17.0	17.0	7.9 7.9	7.9	30.5 30.5	30.5	81.8 81.3	81.6	6.6 6.5	6.6		3.9 3.9	3.9		4.2 4.3	4.3	
				Bottom	7	17.0 17.0	17.0	7.9 7.9	7.9	30.5 30.5	30.5	80.3 79.6	80.0	6.5 6.4	6.5		6.1 5.4	5.8		4.3 5.3	4.8	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	15:19	Surface	1	24.0	24.0	7.9	7.9	29.4	29.4	74.7	74.7	5.3	5.3	5.3	6.7	6.9	7.5	13.0	12.3	11.4
						24.0	24.0	7.9	7.9	29.4	29.4	74.7	74.7	5.3	5.3		7.0	6.9		11.5	12.3	
				Middle	3.5	24.0	24.0	7.8	7.8	29.4	29.4	72.9	72.5	5.2	5.2		7.5	7.5		9.3	9.8	
		24.0	24.0	7.8	7.8	29.4	29.4	72.0	72.5	5.1	5.2	7.5	7.5	10.2	9.8							
		24.0	24.0	7.8	7.8	29.5	29.5	71.2	71.2	5.1	5.1	5.1	5.1	7.9	8.2	14.9	12.1					
		24.0	24.0	7.8	7.8	29.5	29.5	71.2	71.2	5.1	5.1	5.1	5.1	8.4	8.2	9.3	12.1					
3-Dec-14	Cloudy	Calm	16:54	Surface	1	21.9	21.9	8.2	8.1	29.6	29.7	85.7	85.5	6.2	6.2	6.2	6.9	7.2	7.6	9.2	8.2	8.3
						21.9	21.9	8.0	8.1	29.7	29.7	85.3	85.5	6.2	6.2		7.5	7.2		7.2	8.2	
				Middle	3	21.9	21.9	8.1	8.1	29.7	29.7	85.4	85.1	6.2	6.2		7.3	7.4		6.9	7.3	
		21.9	21.9	8.0	8.1	29.7	29.7	84.8	85.1	6.1	6.2	7.5	7.4	7.6	7.3							
		21.9	21.9	8.0	8.0	29.7	29.7	75.7	75.9	5.5	5.5	5.5	5.5	7.4	8.1	9.5	9.3					
		21.9	21.9	8.0	8.0	29.7	29.7	76.1	75.9	5.5	5.5	5.5	5.5	8.7	8.1	9.1	9.3					
5-Dec-14	Cloudy	Moderate	17:37	Surface	1	21.2	21.2	8.0	8.0	29.7	29.5	68.3	69.8	5.1	5.2	5.3	4.2	4.1	4.2	5.0	4.4	5.2
						21.2	21.2	8.0	8.0	29.2	29.5	71.3	69.8	5.3	5.2		3.9	4.1		3.8	4.4	
				Middle	3.5	21.2	21.2	8.0	8.0	31.2	31.3	71.8	72.0	5.3	5.3		4.2	4.1		8.5	6.9	
		21.2	21.2	8.0	8.0	31.3	31.3	72.1	72.0	5.3	5.3	3.9	4.1	5.3	6.9							
		21.3	21.3	8.0	8.0	31.0	31.1	70.7	70.7	5.2	5.2	5.2	5.2	4.5	4.4	3.9	4.4					
		21.3	21.3	8.0	8.0	31.1	31.1	70.7	70.7	5.2	5.2	5.2	5.2	4.2	4.4	4.9	4.4					
8-Dec-14	Cloudy	Moderate	08:07	Surface	1	20.2	20.2	8.1	8.1	31.7	31.7	85.0	84.2	6.4	6.4	6.3	5.0	5.6	6.1	5.6	5.5	6.4
						20.2	20.2	8.1	8.1	31.7	31.7	83.4	84.2	6.3	6.4		6.2	5.6		5.4	5.5	
				Middle	4.5	20.2	20.2	8.1	8.1	31.7	31.7	82.2	82.0	6.2	6.2		6.6	6.6		7.8	7.1	
		20.2	20.2	8.1	8.1	31.7	31.7	81.8	82.0	6.2	6.2	6.6	6.6	6.4	7.1							
		20.2	20.2	8.1	8.1	31.7	31.7	81.6	82.1	6.1	6.2	6.2	6.2	6.1	6.2	6.9	6.5					
		20.2	20.2	8.1	8.1	31.7	31.7	82.6	82.1	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.5					
10-Dec-14	Fine	Moderate	09:40	Surface	1	20.2	20.2	8.2	8.2	32.2	32.3	97.2	95.5	7.3	7.2	7.2	4.2	4.4	5.1	9.0	8.4	8.8
						20.2	20.2	8.2	8.2	32.3	32.3	93.8	95.5	7.0	7.2		4.6	4.4		7.8	8.4	
				Middle	4	20.2	20.2	8.2	8.2	32.3	32.3	95.3	94.4	7.1	7.1		4.7	4.4		15.3	10.2	
		20.1	20.2	8.2	8.2	32.3	32.3	93.5	94.4	7.0	7.1	4.1	4.4	5.1	10.2							
		20.2	20.2	8.2	8.2	32.3	32.4	94.1	92.5	7.1	7.0	6.3	6.4	9.8	7.7							
		20.2	20.2	8.2	8.2	32.4	32.4	90.8	92.5	6.8	7.0	6.4	6.4	5.5	7.7							
12-Dec-14	Fine	Moderate	11:40	Surface	1	20.0	20.0	7.6	7.6	32.1	32.1	93.0	90.9	7.0	6.9	6.7	5.5	5.6	5.6	10.0	10.2	10.2
						20.0	20.0	7.6	7.6	32.1	32.1	88.7	90.9	6.7	6.9		5.6	5.6		10.4	10.2	
				Middle	3.5	19.9	20.0	7.5	7.5	32.1	32.1	83.9	84.5	6.3	6.4		5.2	5.4		12.9	10.7	
		20.0	20.0	7.5	7.5	32.1	32.1	85.0	84.5	6.4	6.4	5.5	5.4	8.4	10.7							
		19.9	19.9	7.5	7.5	32.1	30.5	79.9	78.8	6.0	6.0	5.4	5.7	10.3	9.6							
		19.9	19.9	7.5	7.5	28.8	30.5	77.6	78.8	6.0	6.0	6.0	5.7	8.8	9.6							
		19.9	19.9	7.5	7.5	28.8	30.5	77.6	78.8	6.0	6.0	6.0	5.7	8.8	9.6							
15-Dec-14	Cloudy	Moderate	13:17	Surface	1	19.1	19.1	7.5	7.5	31.9	31.9	92.1	92.6	7.1	7.1	7.1	4.2	4.3	3.3	6.4	6.9	10.3
						19.1	19.1	7.5	7.5	31.9	31.9	93.1	92.6	7.1	7.1		4.3	4.3		7.3	6.9	
				Middle	3.5	19.1	19.1	7.5	7.5	31.9	31.9	91.0	90.9	7.0	7.0		3.0	3.3		19.5	16.6	
		19.1	19.1	7.5	7.5	31.9	31.9	90.8	90.9	7.0	7.0	3.6	3.3	13.6	16.6							
		19.1	19.1	7.5	7.5	31.9	31.9	89.7	89.7	6.9	6.9	2.6	2.4	8.8	7.3							
		19.0	19.1	7.4	7.5	31.9	31.9	91.0	90.4	7.0	7.0	2.1	2.4	5.8	7.3							
17-Dec-14	Cloudy	Moderate	15:13	Surface	1	17.9	18.0	8.2	8.1	32.2	32.7	88.8	89.0	7.0	7.0	7.0	7.4	7.6	7.6	7.2	9.9	12.6
						18.1	18.0	8.0	8.1	33.1	32.7	89.1	89.0	6.9	7.0		7.7	7.6		12.5	9.9	
				Middle	3	17.9	18.0	8.1	8.1	32.3	32.7	88.3	88.3	6.9	6.9		7.7	7.7		22.3	16.1	
		18.0	18.0	8.0	8.1	33.1	32.7	88.3	88.3	6.9	6.9	7.7	7.7	9.8	16.1							
		17.9	17.9	8.0	8.0	32.3	32.8	78.3	78.8	6.1	6.2	6.2	6.2	11.2	11.9							
		17.9	17.9	8.0	8.0	33.3	32.8	79.3	78.8	6.2	6.2	6.2	6.2	12.5	11.9							

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	16:27	Surface	1	17.1 17.1	17.1	7.8 7.8	7.8	32.3 32.3	32.3	77.3 77.4	77.4	6.1 6.1	6.1	6.2	3.4 3.4	3.4	2.9	10.4 13.3	11.9	9.5
				Middle	3.5	17.0 17.1	17.1	7.8 7.8	7.8	32.3 32.3	32.3	77.5 77.7	77.6	6.2 6.2	6.2		1.7 1.7	1.7		17.0 4.9	11.0	
				Bottom	6	17.0 17.0	17.0	7.8 7.8	7.8	32.4 32.4	32.4	77.0 76.4	76.7	6.1 6.1	6.1		3.8 3.6	3.7		5.4 5.5	5.5	
22-Dec-14	Fine	Moderate	17:56	Surface	1	17.5 17.5	17.5	8.2 8.2	8.2	32.1 32.1	32.1	75.2 75.7	75.5	5.9 6.0	6.0	6.1	2.1 2.6	2.4	5.6	8.8 6.0	7.4	8.3
				Middle	4.5	17.5 17.5	17.5	8.0 8.1	8.1	32.1 30.6	31.4	78.2 77.9	78.1	6.2 6.2	6.2		6.1 5.8	6.0		8.7 8.6	8.7	
				Bottom	8	17.5 17.5	17.5	8.0 8.0	8.0	32.1 32.1	32.1	79.7 79.2	79.5	6.3 6.2	6.3		7.9 9.1	8.5		10.4 7.3	8.9	
24-Dec-14	Sunny	Moderate	08:22	Surface	1	17.3 17.3	17.3	7.9 7.8	7.9	31.0 31.0	31.0	75.9 74.0	75.0	6.1 5.9	6.0	5.8	3.9 4.5	4.2	7.2	5.1 4.4	4.8	4.8
				Middle	4.5	17.3 17.3	17.3	7.7 7.7	7.7	31.0 31.0	31.0	67.5 68.9	68.2	5.4 5.5	5.5		6.2 7.1	6.7		4.4 7.0	5.7	
				Bottom	8	17.3 17.3	17.3	7.7 7.7	7.7	31.1 31.1	31.1	67.3 66.6	67.0	5.4 5.3	5.4		10.0 11.2	10.6		3.4 4.3	3.9	
27-Dec-14	Cloudy	Moderate	11:43	Surface	1	17.5 17.5	17.5	7.8 7.7	7.8	31.4 31.4	31.4	73.8 76.3	75.1	5.8 6.0	5.9	5.9	2.8 2.4	2.6	6.0	4.7 3.6	4.2	4.4
				Middle	4.5	17.5 17.6	17.6	7.8 7.5	7.7	31.5 31.5	31.5	73.1 72.2	72.7	5.8 5.7	5.8		10.1 9.9	10.0		4.3 4.3	4.3	
				Bottom	8	17.5 17.5	17.5	7.6 7.5	7.6	31.5 31.5	31.5	72.8 72.2	72.5	5.8 5.7	5.8		5.4 5.1	5.3		4.7 4.7	4.7	
29-Dec-14	Fine	Moderate	12:13	Surface	1	17.1 17.1	17.1	7.7 7.7	7.7	31.5 31.5	31.5	101.3 100.4	100.9	8.1 8.0	8.1	8.0	3.1 3.1	3.1	5.4	5.1 6.3	5.7	6.0
				Middle	4.5	17.1 17.1	17.1	7.7 7.7	7.7	31.5 31.6	31.6	97.3 96.1	96.7	7.8 7.7	7.8		3.9 3.8	3.9		6.7 5.4	6.1	
				Bottom	8	17.1 17.1	17.1	7.7 7.7	7.7	31.6 31.6	31.6	94.9 94.7	94.8	7.6 7.6	7.6		9.4 9.2	9.3		5.7 6.7	6.2	
31-Dec-14	Fine	Moderate	14:51	Surface	1	17.3 17.4	17.4	7.9 7.9	7.9	31.2 31.2	31.2	83.2 83.9	83.6	6.6 6.7	6.7	6.7	3.3 3.1	3.2	4.7	6.3 6.2	6.3	6.4
				Middle	4	17.2 17.3	17.3	7.9 7.9	7.9	31.2 31.2	31.2	82.9 83.8	83.4	6.6 6.7	6.7		3.1 3.8	3.5		6.1 6.7	6.4	
				Bottom	7	17.2 17.2	17.2	7.9 7.9	7.9	31.2 31.2	31.2	82.9 83.4	83.2	6.6 6.7	6.7		6.9 8.1	7.5		7.8 5.2	6.5	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*		
1-Dec-14	Cloudy	Calm	07:32	Surface	1	23.3 23.2	23.3	7.9 7.9	7.9	29.0 29.2	29.1	85.4 85.2	85.3	6.2 6.2	6.2	6.1	2.2 1.9	2.1	2.1	4.5 12.1	8.3	6.9		
				Middle	5	23.2 23.2	23.2	8.0 8.0	8.0	30.1 30.1	30.1	83.6 83.9	83.8	6.0 6.0	6.0		1.8 1.8			1.8			8.8 5.4	7.1
				Bottom	9	23.2 23.2	23.2	8.1 8.1	8.1	29.9 30.0	30.0	82.1 81.8	82.0	5.9 5.9	5.9		2.5 2.5			2.5			6.0 4.8	5.4
3-Dec-14	Cloudy	Calm	10:49	Surface	1	22.7 22.7	22.7	7.9 7.8	7.9	31.3 31.3	31.3	77.9 80.7	79.3	5.6 5.8	5.7	5.7	4.6 5.2	4.9	6.4	10.9 11.6	11.3	10.5		
				Middle	5	22.7 22.7	22.7	7.8 7.8	7.8	31.3 31.3	31.3	77.4 79.9	78.7	5.6 5.8	5.7		5.3 4.8			5.1			10.9 11.7	11.3
				Bottom	9	22.7 22.7	22.7	7.8 7.8	7.8	31.3 31.3	31.3	79.5 80.2	79.9	5.8 5.8	5.8		9.2 9.2			9.2			9.8 7.8	8.8
5-Dec-14	Cloudy	Moderate	12:48	Surface	1	21.5 21.5	21.5	8.2 8.2	8.2	31.5 31.5	31.5	85.6 86.8	86.2	6.3 6.4	6.4	6.0	3.9 4.3	4.1	9.3	5.8 7.0	6.4	11.0		
				Middle	5	21.5 21.5	21.5	8.2 8.2	8.2	31.5 31.5	31.5	74.5 73.6	74.1	5.5 5.4	5.5		7.3 7.3			7.3			7.1 12.5	9.8
				Bottom	9	21.5 21.5	21.5	8.2 8.2	8.2	31.5 31.5	31.5	74.2 74.6	74.4	5.5 5.5	5.5		15.6 17.6			16.6			14.8 18.7	16.8
8-Dec-14	Cloudy	Moderate	14:48	Surface	1	20.7 20.7	20.7	8.1 8.0	8.1	31.4 31.4	31.4	84.6 83.8	84.2	6.3 6.3	6.3	6.3	7.4 7.6	7.5	8.2	7.5 9.2	8.4	8.6		
				Middle	5	20.7 20.7	20.7	8.1 8.1	8.1	31.4 31.4	31.4	82.9 82.9	82.9	6.2 6.2	6.2		7.6 7.2			7.4			8.7 8.6	8.7
				Bottom	9	20.7 20.7	20.7	8.2 8.2	8.2	31.4 31.4	31.4	82.9 82.5	82.7	6.2 6.2	6.2		9.8 9.8			9.8			9.0 8.2	8.6
10-Dec-14	Fine	Moderate	15:11	Surface	1	20.7 20.7	20.7	8.1 8.2	8.2	32.3 32.3	32.3	81.5 74.9	78.2	6.1 5.6	5.9	6.1	4.7 4.7	4.7	4.8	7.0 9.2	8.1	7.9		
				Middle	5	20.7 20.7	20.7	7.9 7.8	7.9	32.4 32.4	32.4	85.4 84.9	85.2	6.3 6.3	6.3		4.8 4.8			4.8			7.4 7.5	7.5
				Bottom	9	20.7 20.7	20.7	7.8 7.8	7.8	32.4 32.4	32.4	94.4 86.3	90.4	7.0 6.4	6.7		4.8 4.9			4.9			8.0 8.3	8.2
12-Dec-14	Fine	Moderate	15:47	Surface	1	19.8 19.8	19.8	7.7 7.7	7.7	32.2 32.3	32.3	100.8 100.7	100.8	7.6 7.6	7.6	7.6	4.3 4.5	4.4	4.5	11.4 10.2	10.8	9.3		
				Middle	5	19.8 19.8	19.8	7.7 7.7	7.7	32.3 32.3	32.3	100.0 100.0	100.0	7.5 7.5	7.5		4.6 4.2			4.4			9.6 7.2	8.4
				Bottom	9	19.8 19.8	19.8	7.6 7.7	7.7	32.4 32.4	32.4	99.1 98.7	98.9	7.5 7.4	7.5		4.5 4.7			4.6			9.2 8.2	8.7
15-Dec-14	Cloudy	Moderate	19:29	Surface	1	19.6 19.6	19.6	7.9 7.9	7.9	32.4 32.4	32.4	77.1 77.1	77.1	5.8 5.8	5.8	5.8	5.3 5.1	5.2	7.1	11.7 13.5	12.6	11.5		
				Middle	5	19.6 19.6	19.6	8.0 8.0	8.0	32.4 32.4	32.4	76.7 76.4	76.6	5.8 5.8	5.8		5.1 5.8			5.5			13.4 7.9	10.7
				Bottom	9	19.6 19.6	19.6	8.0 8.0	8.0	32.4 32.4	32.4	75.5 75.1	75.3	5.7 5.7	5.7		9.7 11.6			10.7			10.0 12.6	11.3
17-Dec-14	Cloudy	Moderate	09:09	Surface	1	18.7 18.7	18.7	7.7 7.7	7.7	33.1 33.1	33.1	85.0 85.1	85.1	6.5 6.5	6.5	6.6	2.4 2.1	2.3	8.6	13.2 14.5	13.9	11.9		
				Middle	5	18.7 18.7	18.7	7.7 7.7	7.7	33.1 33.1	33.1	85.6 85.9	85.8	6.6 6.6	6.6		7.9 8.7			8.3			9.8 8.7	9.3
				Bottom	9	18.7 18.7	18.7	7.7 7.7	7.7	33.1 33.1	33.1	86.1 86.0	86.1	6.6 6.6	6.6		14.7 15.4			15.1			13.2 11.9	12.6

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*
20-Dec-14	Fine	Moderate	11:52	Surface	1	17.8 17.8	17.8	7.4 7.4	7.4	31.3 31.3	31.3	67.9 68.7	68.3	5.4 5.4	5.4	5.5	4.9 4.9	4.9	6.8	7.2 25.9	16.6	11.5
				Middle	5.5	17.6 17.6	17.6	7.3 7.3	7.3	31.3 30.0	30.7	67.6 68.6	68.1	5.4 5.5	5.5		2.8 2.7	2.8		9.3 9.5	9.4	
				Bottom	10	17.5 17.5	17.5	7.3 7.3	7.3	31.3 31.3	31.3	67.8 68.4	68.1	5.4 5.4	5.4		12.3 12.8	12.6		9.2 7.6	8.4	
22-Dec-14	Fine	Moderate	13:37	Surface	1	17.5 17.5	17.5	8.1 8.1	8.1	33.0 33.0	33.0	93.0 91.0	92.0	7.3 7.1	7.2	7.2	3.3 3.1	3.2	7.0	8.9 7.1	8.0	8.3
				Middle	5	17.5 17.5	17.5	8.2 8.2	8.2	33.0 33.0	33.0	92.2 90.5	91.4	7.2 7.1	7.2		6.1 7.1	6.6		9.3 6.3	7.8	
				Bottom	9	17.5 17.5	17.5	8.2 8.2	8.2	33.0 33.0	33.0	92.0 89.8	90.9	7.2 7.0	7.1		10.4 12.2	11.3		10.0 8.2	9.1	
24-Dec-14	Sunny	Moderate	14:19	Surface	1	17.5 17.5	17.5	7.5 7.5	7.5	31.9 31.9	31.9	66.7 66.7	66.7	5.3 5.3	5.3	5.4	6.2 6.4	6.3	7.6	6.0 5.8	5.9	6.5
				Middle	5	17.4 17.4	17.4	7.5 7.5	7.5	31.9 31.9	31.9	68.0 68.0	68.0	5.4 5.4	5.4		8.1 8.1	8.1		5.7 6.6	6.2	
				Bottom	9	17.4 17.4	17.4	7.5 7.5	7.5	31.9 31.0	31.5	71.5 71.5	71.5	5.7 5.7	5.7		8.2 8.3	8.3		7.0 8.0	7.5	
27-Dec-14	Cloudy	Moderate	16:47	Surface	1	17.7 17.7	17.7	7.7 7.7	7.7	31.0 31.0	31.0	80.1 80.4	80.3	6.3 6.4	6.4	6.4	15.4 15.4	15.4	16.8	9.3 8.6	9.0	8.6
				Middle	5	17.7 17.7	17.7	7.8 7.8	7.8	31.0 31.0	31.0	80.6 80.6	80.6	6.4 6.4	6.4		15.9 16.1	16.0		8.1 9.2	8.7	
				Bottom	9	17.7 17.7	17.7	7.7 7.7	7.7	31.0 31.0	31.0	80.5 80.6	80.6	6.4 6.4	6.4		19.5 18.7	19.1		8.2 8.1	8.2	
29-Dec-14	Fine	Moderate	18:50	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.0 31.0	31.0	87.3 87.4	87.4	7.0 7.0	7.0	7.0	3.4 2.8	3.1	7.4	9.5 9.6	9.6	10.0
				Middle	5.5	17.4 17.4	17.4	7.7 7.7	7.7	31.0 31.0	31.0	87.1 87.3	87.2	6.9 7.0	7.0		5.2 5.4	5.3		10.9 11.1	11.0	
				Bottom	10	17.4 17.4	17.4	7.7 7.7	7.7	31.0 31.0	31.0	87.0 86.9	87.0	6.9 6.9	6.9		13.3 14.1	13.7		10.4 8.4	9.4	
31-Dec-14	Fine	Moderate	09:21	Surface	1	17.1 17.1	17.1	7.9 7.9	7.9	31.0 31.0	31.0	89.6 89.0	89.3	7.2 7.1	7.2	7.1	6.0 5.4	5.7	9.0	5.5 7.4	6.5	5.4
				Middle	5	17.1 17.1	17.1	7.9 7.8	7.9	31.0 31.0	31.0	87.1 86.5	86.8	7.0 6.9	7.0		8.2 9.0	8.6		5.1 4.0	4.6	
				Bottom	9	17.1 17.1	17.1	7.9 7.9	7.9	31.0 29.7	30.4	88.5 87.5	88.0	7.1 7.1	7.1		12.0 13.1	12.6		5.3 4.7	5.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
1-Dec-14	Cloudy	Calm	14:08	Surface	1	23.4	23.4	7.6	7.6	30.5	30.6	131.9	130.1	9.4	9.3	9.0	7.6	7.6	8.2	8.5	7.5	5.8
						23.4	23.4	7.6	7.6	30.6	30.6	128.3	128.3	9.2	9.2		7.6	7.6		6.4	6.4	
				Middle	4.5	23.4	23.4	7.6	7.6	30.9	30.9	121.6	121.6	8.7	8.7		7.8	7.8		7.8	7.8	
				Bottom	8	23.4	23.4	7.6	7.6	31.7	31.7	116.7	116.7	8.3	8.3	8.3	8.3	9.2	9.2	5.9	6.0	
						23.4	23.4	7.6	7.6	31.7	31.7	116.7	116.7	8.3	8.3	8.3	8.3	9.2	9.2	6.1	6.0	
3-Dec-14	Cloudy	Calm	16:42	Surface	1	22.6	22.6	8.0	8.0	31.4	31.4	86.9	88.5	6.3	6.4	6.4	7.6	7.8	8.7	7.2	6.4	7.0
						22.6	22.6	7.9	8.0	31.4	31.4	90.0	89.8	6.5	6.5		8.0	8.8		4.5	5.5	
				Middle	6	22.6	22.6	7.9	8.0	31.4	31.4	85.7	87.8	6.2	6.4		9.1	8.8		6.4	6.4	
				Bottom	11	22.6	22.6	7.9	7.9	29.4	30.4	84.4	86.2	6.1	6.3	6.3	6.3	9.1	9.6	7.9	9.1	
						22.6	22.6	7.9	7.9	31.4	30.4	87.9	86.2	6.4	6.3	6.3	6.3	10.1	9.6	10.2	9.1	
5-Dec-14	Cloudy	Moderate	16:55	Surface	1	21.4	21.4	8.1	8.1	31.4	31.5	73.1	73.7	5.4	5.5	5.5	5.1	4.9	9.9	7.9	7.7	9.2
						21.4	21.4	8.0	8.1	31.5	31.5	74.3	73.7	5.5	5.5		4.6	4.9		7.4	7.7	
				Middle	4.5	21.4	21.4	8.1	8.1	31.5	31.5	73.8	73.4	5.4	5.4		8.0	8.3		13.7	10.3	
				Bottom	8	21.4	21.4	8.2	8.3	31.5	30.4	72.9	73.0	5.4	5.5	5.5	5.5	16.8	16.5	6.7	9.5	
						21.4	21.4	8.3	8.3	29.3	30.4	73.1	73.0	5.5	5.5	5.5	5.5	16.1	16.5	12.2	9.5	
8-Dec-14	Cloudy	Moderate	09:04	Surface	1	20.4	20.4	8.3	8.3	31.1	31.1	96.8	95.9	7.3	7.2	7.1	10.3	10.2	13.5	8.8	12.3	14.8
						20.4	20.4	8.2	8.3	31.1	31.1	94.9	95.9	7.1	7.2		10.0	10.2		15.7	12.3	
				Middle	5	20.5	20.5	8.1	8.1	31.2	31.2	93.4	93.0	7.0	7.0		13.3	13.6		26.9	19.0	
				Bottom	9	20.6	20.6	8.1	8.1	31.3	31.3	91.8	92.2	6.9	6.9	6.9	6.9	16.6	16.7	11.9	13.0	
						20.5	20.5	8.1	8.1	31.2	31.2	92.5	92.5	6.9	6.9	6.9	6.9	16.8	16.8	14.1	13.0	
10-Dec-14	Fine	Moderate	10:30	Surface	1	20.6	20.6	8.1	8.1	32.6	32.6	86.4	86.1	6.4	6.4	6.6	7.5	7.6	8.7	17.5	14.7	14.3
						20.6	20.6	8.1	8.1	32.6	32.6	85.8	86.1	6.4	6.4		7.7	7.6		11.9	14.7	
				Middle	5	20.6	20.6	8.0	8.1	32.6	32.6	90.4	91.1	6.7	6.8		7.4	7.6		20.3	15.6	
				Bottom	9	20.6	20.6	8.1	8.1	32.7	32.7	91.2	91.0	6.8	6.8	6.8	6.8	10.8	10.8	8.8	12.7	
						20.6	20.6	8.1	8.1	32.7	32.7	90.7	91.0	6.7	6.8	6.8	6.8	10.8	10.8	16.5	12.7	
12-Dec-14	Fine	Moderate	11:31	Surface	1	19.5	19.5	7.8	7.8	31.6	31.6	105.9	105.0	8.1	8.0	7.9	8.5	8.0	9.8	12.9	10.5	11.7
						19.5	19.5	7.7	7.8	31.6	31.6	104.0	105.0	7.9	8.0		7.5	8.0		8.0	10.5	
				Middle	5	19.5	19.5	7.8	7.8	31.6	31.6	101.4	101.6	7.7	7.8		11.6	12.4		17.5	14.6	
				Bottom	9	19.5	19.5	7.7	7.7	31.6	31.6	101.7	101.6	7.8	7.8	7.7	7.7	13.1	11.6	11.5	10.1	
						19.5	19.5	7.7	7.7	31.6	31.6	101.0	100.8	7.7	7.7	7.7	7.7	9.4	9.0	8.6	10.1	
						19.5	19.5	7.7	7.7	31.6	31.6	100.6	100.8	7.7	7.7	7.7	7.7	8.6	9.0	8.6	10.1	
15-Dec-14	Cloudy	Moderate	13:53	Surface	1	19.3	19.3	7.9	7.9	32.8	32.8	95.8	95.8	7.3	7.3	7.3	4.6	4.7	5.6	11.9	11.7	10.3
						19.3	19.3	7.9	7.9	32.8	32.8	95.7	95.8	7.3	7.3		4.7	4.7		11.4	11.7	
				Middle	5	19.3	19.3	8.0	8.1	32.8	32.8	94.9	94.8	7.2	7.2		5.2	5.1		6.4	7.6	
				Bottom	9	19.3	19.3	8.0	8.0	32.8	32.8	94.7	94.8	7.2	7.2	7.1	7.1	5.0	5.1	8.8	7.6	
						19.3	19.3	8.0	8.0	32.9	32.9	93.1	93.0	7.1	7.1	7.1	7.1	7.2	7.0	10.5	11.6	
						19.3	19.3	8.0	8.0	32.9	32.9	92.8	93.0	7.1	7.1	7.1	7.1	6.8	7.0	12.7	11.6	
17-Dec-14	Cloudy	Moderate	15:04	Surface	1	18.7	18.7	7.8	7.8	33.1	33.1	82.7	82.7	6.3	6.3	6.4	3.8	3.7	8.6	7.2	14.9	13.1
						18.7	18.7	7.8	7.8	33.1	33.1	82.7	82.7	6.3	6.3		3.6	3.7		22.6	14.9	
				Middle	5	18.7	18.7	7.9	7.9	33.1	33.1	83.1	83.1	6.4	6.4		9.4	9.6		9.2	9.0	
				Bottom	9	18.7	18.7	7.9	7.9	33.1	33.1	83.1	83.1	6.4	6.4	6.4	6.4	9.7	9.6	8.8	9.0	
						18.7	18.7	7.9	7.9	33.1	33.1	83.0	83.1	6.4	6.4	6.4	6.4	12.2	12.4	9.2	15.4	
						18.7	18.7	7.9	7.9	33.1	33.1	83.2	83.1	6.4	6.4	6.4	6.4	12.5	12.4	21.6	15.4	

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*
20-Dec-14	Fine	Moderate	16:22	Surface	1	17.9	17.9	7.8	7.8	31.3	31.3	74.7	75.5	5.9	6.0	6.1	5.7	5.4	8.5	16.6	12.6	11.7
						17.9		7.8		31.3		76.2		6.0			5.0			8.6		
				Middle	5	17.9	17.9	7.8	7.8	30.2	30.8	76.9	77.0	6.1	6.1		5.8	5.7		17.9	13.0	
		17.9		7.8		31.3		77.0		6.1		6.1		5.5		8.0						
		17.8	17.8	7.8	7.8	31.4	30.8	76.3	76.5	6.0	6.1	6.1	14.9	14.5	10.6	9.6						
		17.8		7.8		30.1		76.7		6.1		6.1	14.0		8.5							
22-Dec-14	Fine	Moderate	17:25	Surface	1	17.4	17.4	8.2	8.2	33.6	33.6	92.9	92.7	7.3	7.3	7.3	7.7	7.2	6.4	12.0	13.8	15.8
						17.4		8.2		33.6		91.3		7.2			6.6			15.5		
				Middle	5	17.5	17.5	8.2	8.2	33.7	33.7	91.6	91.5	7.2	7.2		6.8	6.8		17.7	19.1	
		17.5		8.2		33.7		91.6		7.2		7.2		6.8		20.5						
		17.4	17.4	8.1	8.2	33.6	33.6	93.7	93.9	7.3	7.4	7.4	5.2	5.3	12.9	14.4						
		17.4		8.2		33.6		94.1		7.4		7.4	5.4		15.8							
24-Dec-14	Sunny	Moderate	09:07	Surface	1	17.1	17.1	7.7	7.7	31.9	31.9	86.7	86.6	6.9	6.9	6.5	7.3	7.4	15.1	25.2	24.2	35.8
						17.1		7.7		31.9		86.5		6.9			7.5			23.2		
				Middle	4.5	17.0	17.1	7.7	7.7	32.0	32.0	74.6	75.3	5.9	6.0		19.6	18.9		41.0	39.9	
		17.1		7.7		32.0		76.0		6.1		6.0		18.1		38.7						
		17.1	17.1	7.7	7.7	31.9	31.9	77.4	77.4	6.2	6.2	6.2	19.1	19.1	40.2	43.3						
		17.1		7.7		31.9		77.4		6.2		6.2	19.1		46.3							
27-Dec-14	Cloudy	Moderate	11:53	Surface	1	17.8	17.8	7.9	7.9	31.0	31.0	71.2	71.5	5.6	5.7	5.7	14.5	14.4	15.4	9.3	11.4	13.4
						17.8		7.9		31.0		71.8		5.7			14.2			13.5		
				Middle	5	17.8	17.8	7.8	7.8	31.0	31.0	72.2	72.3	5.7	5.7		14.0	14.1		17.2	14.9	
		17.8		7.8		31.0		72.3		5.7		5.7		14.2		12.5						
		17.8	17.8	7.8	7.8	31.0	31.0	72.6	72.7	5.7	5.8	5.8	17.7	17.6	16.8	13.9						
		17.8		7.8		31.0		72.8		5.8		5.8	17.5		11.0							
29-Dec-14	Fine	Moderate	13:31	Surface	1	17.2	17.2	7.7	7.7	31.0	31.0	90.0	90.0	7.2	7.2	7.2	2.3	2.5	5.4	9.0	9.0	10.3
						17.2		7.7		31.0		90.0		7.2			2.7			8.9		
				Middle	5	17.2	17.2	7.7	7.8	31.0	31.0	89.7	89.7	7.2	7.2		2.7	2.8		10.4	9.8	
		17.2		7.7		31.0		89.6		7.2		7.2		2.8		9.1						
		17.2	17.2	7.8	7.8	31.0	31.0	89.4	89.6	7.1	7.2	7.2	10.2	10.8	9.2	12.1						
		17.2		7.8		31.0		89.7		7.2		7.2	11.3		15.0							
31-Dec-14	Fine	Moderate	14:15	Surface	1	17.3	17.3	7.8	7.9	31.1	31.1	82.9	83.1	6.6	6.6	6.6	5.7	6.0	9.8	3.8	3.9	3.6
						17.3		7.9		31.1		83.3		6.6			6.2			4.0		
				Middle	5	17.3	17.3	7.9	7.9	31.1	30.0	82.6	82.4	6.6	6.6		9.1	8.8		3.0	3.1	
		17.3		7.9		28.9		82.1		6.6		6.6		8.5		3.2						
		17.3	17.3	7.9	7.9	31.1	31.1	82.7	82.6	6.6	6.6	6.6	15.1	14.6	4.1	3.7						
		17.3		7.9		31.1		82.5		6.6		6.6	14.0		3.3							

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*
1-Dec-14	Cloudy	Calm	07:23	Surface	1	23.5	23.5	8.1	8.1	28.8	28.7	85.2	85.2	6.1	6.1	6.1	2.6	2.6	2.6	2.6	3.1	6.6
						23.5	23.5	8.1	8.1	28.6	28.6	85.2	85.2	6.1	6.1		2.6	2.6		3.5	3.1	
				Middle	4.5	23.5	23.5	8.1	8.1	29.0	29.6	84.9	85.2	6.1	6.1		2.9	2.8		7.7	8.1	
				23.3	23.3	8.1	8.1	30.1	30.5	82.8	82.8	5.9	5.9	5.9	5.9	2.3	2.4	9.0	8.5			
				23.3	23.3	8.1	8.1	30.5	30.5	82.7	82.7	5.9	5.9	5.9	5.9	2.4	2.4	7.9	8.5			
3-Dec-14	Cloudy	Calm	10:37	Surface	1	22.5	22.5	7.8	7.8	31.1	31.1	76.4	78.6	5.5	5.7	5.6	3.7	3.7	7.0	8.9	9.7	8.6
						22.5	22.5	7.8	7.8	31.1	31.1	80.8	80.8	5.9	5.9		3.6	3.7		10.5	9.7	
				Middle	4	22.6	22.6	7.8	7.8	31.1	31.1	74.1	74.3	5.4	5.4		4.9	5.2		9.6	9.3	
				22.6	22.6	7.8	7.8	31.1	31.1	74.4	74.3	5.4	5.4	5.4	5.2	5.4	5.2	8.9	9.3			
				22.6	22.6	7.8	7.8	31.1	31.1	76.3	74.3	5.5	5.4	5.4	5.4	12.1	12.1	6.3	6.9			
				22.6	22.6	7.8	7.8	31.1	31.1	72.3	74.3	5.2	5.4	5.4	5.4	12.0	12.1	7.5	6.9			
5-Dec-14	Cloudy	Moderate	12:36	Surface	1	21.1	21.1	8.2	8.3	31.2	31.3	81.5	81.9	6.0	6.1	6.1	3.3	3.2	3.7	13.6	13.6	9.5
						21.1	21.1	8.3	8.3	31.3	31.3	82.3	81.9	6.1	6.1		3.1	3.2		13.6	13.6	
				Middle	4	21.2	21.2	8.2	8.2	31.3	31.3	82.1	81.8	6.1	6.1		3.5	3.6		7.6	6.9	
				21.2	21.2	8.2	8.2	31.3	31.3	81.5	81.8	6.0	6.1	3.7	3.6	6.2	6.9					
				21.2	21.2	8.1	8.1	31.3	31.3	81.4	81.2	6.0	6.0	3.9	4.3	8.2	8.1					
				21.2	21.2	8.1	8.1	31.3	31.3	81.0	81.2	6.0	6.0	4.7	4.3	8.0	8.1					
8-Dec-14	Cloudy	Moderate	14:38	Surface	1	20.6	20.6	8.0	8.0	31.3	31.3	89.5	89.4	6.7	6.7	6.7	10.3	9.8	9.0	11.6	9.7	9.6
						20.6	20.6	8.0	8.0	31.3	31.3	89.2	89.4	6.7	6.7		9.3	9.8		7.8	9.7	
				Middle	4	20.6	20.6	8.0	8.0	31.3	31.3	88.3	87.6	6.6	6.6		8.8	8.6		9.2	9.5	
				20.6	20.6	8.0	8.0	31.3	31.3	86.9	87.6	6.5	6.6	8.4	8.6	9.8	9.5					
				20.6	20.6	8.1	8.1	31.3	31.3	87.1	86.5	6.5	6.5	8.0	8.5	9.4	9.7					
				20.6	20.6	8.1	8.1	31.3	31.3	85.8	86.5	6.4	6.5	8.9	8.5	8.9	8.5					
10-Dec-14	Fine	Moderate	15:04	Surface	1	20.7	20.7	8.0	8.0	32.2	32.2	84.9	84.3	6.3	6.3	6.4	5.0	5.0	5.3	8.7	8.5	9.0
						20.7	20.7	8.0	8.0	32.2	32.2	83.7	84.3	6.2	6.3		4.9	5.0		8.2	8.5	
				Middle	4	20.7	20.7	8.0	8.0	32.4	32.4	86.3	85.5	6.4	6.4		4.6	4.5		9.3	8.7	
				20.7	20.7	8.0	8.0	32.4	32.4	84.7	85.5	6.3	6.4	4.3	4.5	8.1	8.7					
				20.8	20.8	8.0	8.0	31.8	32.3	84.3	85.0	6.3	6.3	6.5	6.5	11.6	9.7					
				20.8	20.8	8.0	8.0	32.7	32.3	85.6	85.0	6.3	6.3	6.5	6.5	7.8	9.7					
12-Dec-14	Fine	Moderate	15:37	Surface	1	19.8	19.8	7.7	7.7	32.1	32.1	99.1	99.0	7.5	7.5	7.5	4.8	4.8	5.1	14.8	14.7	9.6
						19.8	19.8	7.7	7.7	32.1	32.1	98.9	99.0	7.5	7.5		4.7	4.8		14.5	14.7	
				Middle	3.5	19.8	19.8	7.7	7.7	32.2	32.2	97.8	98.1	7.4	7.4		4.6	4.7		2.5	5.9	
				19.8	19.8	7.7	7.7	32.2	32.2	98.3	98.1	7.4	7.4	4.7	4.7	9.3	5.9					
				19.8	19.8	7.7	7.7	32.3	32.3	96.8	96.6	7.3	7.3	5.7	5.8	7.8	8.1					
				19.8	19.8	7.7	7.7	32.3	32.3	96.3	96.6	7.3	7.3	5.8	5.8	8.3	8.1					
15-Dec-14	Cloudy	Moderate	19:04	Surface	1	19.5	19.5	7.9	7.9	31.9	31.9	83.3	83.5	6.3	6.4	6.4	3.7	3.7	5.9	8.5	8.8	9.3
						19.5	19.5	7.9	7.9	31.9	31.9	83.6	83.5	6.4	6.4		3.7	3.7		9.0	8.8	
				Middle	4	19.4	19.4	8.0	8.0	31.9	31.9	83.4	83.3	6.4	6.4		4.2	4.3		12.2	9.6	
				19.4	19.4	8.0	8.0	31.9	31.9	83.1	83.3	6.3	6.4	4.3	4.3	7.0	9.6					
				19.4	19.4	8.0	8.0	31.9	31.9	81.7	81.5	6.2	6.2	9.8	9.6	10.3	9.4					
				19.4	19.4	8.0	8.0	31.9	31.9	81.2	81.5	6.2	6.2	9.3	9.6	8.4	9.4					
17-Dec-14	Cloudy	Moderate	08:58	Surface	1	18.7	18.7	7.7	7.7	33.1	33.1	85.2	85.8	6.5	6.6	6.7	4.0	4.1	7.4	16.9	11.6	12.1
						18.7	18.7	7.7	7.7	33.1	33.1	86.4	85.8	6.6	6.6		4.1	4.1		6.2	11.6	
				Middle	4	18.7	18.7	7.7	7.7	33.1	33.1	87.9	87.7	6.7	6.7		6.3	6.4		23.7	15.5	
				18.7	18.7	7.7	7.7	33.1	33.1	87.5	87.7	6.7	6.7	6.5	6.4	7.2	15.5					
				18.7	18.7	7.7	7.7	33.1	33.1	87.1	87.2	6.7	6.7	11.8	11.6	10.2	9.2					
				18.7	18.7	7.7	7.7	33.1	33.1	87.2	87.2	6.7	6.7	11.4	11.6	8.2	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 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*
20-Dec-14	Fine	Moderate	11:43	Surface	1	17.8 17.8	17.8	7.2 7.2	7.2	31.2 31.2	31.2	70.1 70.6	70.4	5.5 5.6	5.6	5.6	4.5 4.6	4.6	7.3	11.8 10.2	11.0	13.0
				Middle	3	17.8 17.8	17.8	7.2 7.2	7.2	31.2 31.2	31.2	70.0 71.0	70.5	5.5 5.6	5.6		4.4 4.4	4.4		13.3 24.0	18.7	
				Bottom	5	17.6 17.6	17.6	7.2 7.2	7.2	29.7 31.2	30.5	67.8 68.6	68.2	5.4 5.4	5.4		13.0 13.0	13.0		9.8 8.9	9.4	
22-Dec-14	Fine	Moderate	13:27	Surface	1	17.8 17.8	17.8	8.1 8.1	8.1	32.3 32.4	32.4	95.0 93.0	94.0	7.4 7.3	7.4	7.4	4.5 5.6	5.1	9.1	7.7 6.3	7.0	6.8
				Middle	4	17.5 17.5	17.5	8.1 8.1	8.1	32.4 32.5	32.5	94.1 91.8	93.0	7.4 7.2	7.3		7.6 8.3	8.0		7.7 6.3	7.0	
				Bottom	7	17.4 17.4	17.4	8.1 8.1	8.1	32.4 32.5	32.5	93.4 91.4	92.4	7.4 7.2	7.3		12.8 15.3	14.1		6.4 6.5	6.5	
24-Dec-14	Sunny	Moderate	14:10	Surface	1	17.3 17.3	17.3	7.4 7.4	7.4	31.8 30.9	31.4	69.6 69.8	69.7	5.5 5.6	5.6	5.6	8.0 8.0	8.0	8.5	8.8 10.9	9.9	7.0
				Middle	4.5	17.3 17.3	17.3	7.4 7.4	7.4	31.8 31.8	31.8	70.5 70.5	70.5	5.6 5.6	5.6		8.6 8.6	8.6		6.7 1.5	4.1	
				Bottom	8	17.2 17.2	17.2	7.5 7.5	7.5	31.8 31.8	31.8	71.8 71.8	71.8	5.7 5.7	5.7		8.9 8.9	8.9		8.1 5.6	6.9	
27-Dec-14	Cloudy	Moderate	16:34	Surface	1	17.6 17.6	17.6	7.8 7.8	7.8	31.0 31.0	31.0	83.1 83.4	83.3	6.6 6.6	6.6	6.6	20.4 19.5	20.0	17.3	6.3 6.3	6.3	7.0
				Middle	4	17.6 17.6	17.6	7.7 7.7	7.7	31.0 31.0	31.0	83.5 83.7	83.6	6.6 6.6	6.6		15.7 15.4	15.6		7.8 7.3	7.6	
				Bottom	7	17.6 17.6	17.6	7.8 7.8	7.8	31.0 31.0	31.0	83.6 83.5	83.6	6.6 6.6	6.6		16.2 16.1	16.2		5.9 8.1	7.0	
29-Dec-14	Fine	Moderate	18:38	Surface	1	17.3 17.3	17.3	7.8 7.8	7.8	30.9 30.9	30.9	85.5 86.7	86.1	6.8 6.9	6.9	7.0	4.6 4.6	4.6	7.9	8.0 11.4	9.7	7.7
				Middle	4	17.3 17.3	17.3	7.8 7.8	7.8	30.9 30.9	30.9	87.2 87.1	87.2	7.0 7.0	7.0		7.3 7.1	7.2		7.8 7.3	7.6	
				Bottom	7	17.3 17.3	17.3	7.8 7.8	7.8	30.9 30.9	30.9	87.1 87.0	87.1	7.0 6.9	7.0		12.2 11.6	11.9		4.8 6.5	5.7	
31-Dec-14	Fine	Moderate	09:11	Surface	1	17.1 17.1	17.1	7.8 7.8	7.8	31.0 30.9	31.0	89.6 89.2	89.4	7.2 7.1	7.2	7.2	4.1 5.0	4.6	6.8	5.3 5.2	5.3	6.0
				Middle	4	17.1 17.1	17.1	7.8 7.8	7.8	31.0 30.9	31.0	87.9 88.2	88.1	7.0 7.1	7.1		6.7 7.1	6.9		5.9 8.1	7.0	
				Bottom	7	17.1 17.1	17.1	7.8 7.8	7.8	30.9 30.9	30.9	89.9 87.9	88.9	7.2 7.0	7.1		7.1 9.0	9.0		4.7 6.9	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 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*			
1-Dec-14	Cloudy	Calm	14:01	Surface	1	23.5	23.5	7.6	7.6	28.9	28.9	118.5	118.5	8.5	8.5	8.5	5.2	5.3	9.6	3.5	3.9	4.1			
						23.5	23.5	7.6	7.6	28.9	28.9	118.4	118.4	8.5	8.5										
				Middle	4	23.5	23.5	7.6	7.6	29.1	29.1	118.2	118.2	118.2	118.2		8.5	8.5			3.4		3.4		2.6
				Bottom	7	23.6	23.6	7.6	7.6	30.5	30.5	117.2	117.2	8.4	8.4	8.4	20.0	20.1		8.1	5.3				
						23.6	23.6	7.6	7.6	30.5	30.5	117.2	117.2	8.4	8.4	8.4	20.1	20.1		2.5	5.3				
3-Dec-14	Cloudy	Calm	16:29	Surface	1	22.5	22.5	7.8	7.8	30.3	30.3	80.4	80.8	5.8	5.9	5.9	3.0	3.1	5.1	8.4	7.3	6.8			
						22.5	22.5	7.8	7.8	30.3	30.3	81.1	80.8	5.9	5.9										
				Middle	4	22.5	22.5	7.8	7.8	30.5	29.6	81.1	79.5	5.9	5.8			2.5		2.7			4.7	6.2	
						22.5	22.5	7.8	7.8	28.6	29.6	77.8	79.5	5.6	5.8		2.8	2.7		7.7	6.2				
				Bottom	7	22.5	22.5	7.8	7.8	31.0	31.0	78.8	79.9	5.7	5.8	5.8	9.2	9.5		7.7	6.8				
						22.5	22.5	7.8	7.8	31.0	31.0	81.0	79.9	5.9	5.8	5.8	9.7	9.5		5.8	6.8				
5-Dec-14	Cloudy	Moderate	16:44	Surface	1	21.1	21.1	8.1	8.1	31.3	31.3	77.8	78.3	5.8	5.8	5.8	4.1	4.1	7.5	7.3	8.5	7.2			
						21.0	21.1	8.0	8.1	31.3	31.3	78.7	78.3	5.8	5.8										
				Middle	3.5	21.1	21.1	8.1	8.1	31.4	31.4	77.2	77.7	5.7	5.8			6.5		6.9			7.8	6.9	
						21.1	21.1	8.1	8.1	31.4	31.4	78.1	77.7	5.8	5.8		7.3	6.9		5.9	6.9				
				Bottom	6	21.1	21.1	8.1	8.1	31.4	31.4	76.2	76.6	5.7	5.7	5.7	12.0	11.4		6.0	6.1				
						21.1	21.1	8.1	8.1	31.4	31.4	76.9	76.6	5.7	5.7	5.7	10.8	11.4		6.1	6.1				
8-Dec-14	Cloudy	Moderate	08:54	Surface	1	20.6	20.6	8.0	8.1	31.3	31.3	95.2	94.6	7.1	7.1	7.1	15.8	16.7	24.8	16.4	17.8	19.0			
						20.6	20.6	8.1	8.1	31.3	31.3	94.0	94.6	7.0	7.1										
				Middle	4	20.5	20.5	8.1	8.1	31.3	31.3	93.2	93.0	7.0	7.0			21.4		20.4			20.9	20.6	
						20.5	20.5	8.1	8.1	31.3	31.3	92.7	93.0	6.9	7.0		19.3	20.4		20.3	20.6				
				Bottom	7	20.5	20.5	8.1	8.1	31.3	31.3	92.1	92.2	6.9	6.9	6.9	37.4	37.4		18.8	18.5				
						20.5	20.5	8.1	8.1	31.3	31.3	92.2	92.2	6.9	6.9	6.9	37.4	37.4		18.2	18.5				
10-Dec-14	Fine	Moderate	10:22	Surface	1	20.6	20.6	8.0	8.0	32.8	32.8	89.2	89.0	6.6	6.6	6.6	9.4	9.2	11.8	9.4	11.5	12.2			
						20.6	20.6	8.0	8.0	32.8	32.8	88.8	89.0	6.6	6.6										
				Middle	4	20.6	20.6	8.0	8.0	32.8	32.8	88.5	88.6	6.6	6.6			10.6		10.6			10.9	14.1	
						20.6	20.6	8.0	8.0	32.8	32.8	88.7	88.6	6.6	6.6		10.6	10.6		17.3	14.1				
				Bottom	7	20.6	20.6	8.0	8.0	32.8	32.8	85.2	85.8	6.3	6.4	6.4	15.2	15.7		9.1	10.9				
						20.6	20.6	8.0	8.0	32.8	32.8	86.4	85.8	6.4	6.4	6.4	16.1	15.7		12.6	10.9				
12-Dec-14	Fine	Moderate	11:15	Surface	1	19.4	19.4	7.7	7.7	30.9	30.9	98.7	98.7	7.6	7.6	7.6	8.1	8.1	8.7	7.4	9.0	10.0			
						19.4	19.4	7.6	7.7	30.9	30.9	98.7	98.7	7.6	7.6										
				Middle	4	19.4	19.4	7.7	7.8	31.0	31.0	98.6	98.6	7.6	7.6			8.9		8.9			10.1	11.1	
						19.4	19.4	7.7	7.7	31.0	31.0	98.6	98.6	7.6	7.6		8.9	8.9		12.0	11.1				
				Bottom	7	19.4	19.4	7.6	7.7	31.0	31.0	98.6	98.6	7.6	7.6	7.6	8.9	9.0		8.6	10.0				
						19.4	19.4	7.7	7.7	31.0	31.0	98.6	98.6	7.6	7.6	7.6	9.1	9.0		11.3	10.0				
15-Dec-14	Cloudy	Moderate	13:42	Surface	1	19.1	19.1	7.9	7.9	32.3	32.3	94.5	94.6	7.2	7.2	7.2	4.7	4.6	5.5	9.6	8.7	11.7			
						19.1	19.1	7.9	7.9	32.3	32.3	94.7	94.6	7.2	7.2										
				Middle	4	19.1	19.1	8.0	8.0	32.3	32.3	94.1	93.9	7.2	7.2			4.8		4.7			14.4	17.7	
						19.1	19.1	8.0	8.0	32.3	32.3	93.7	93.9	7.2	7.2		4.5	4.7		8.3	8.6				
				Bottom	7	19.1	19.1	8.0	8.0	32.3	32.4	92.4	92.0	7.1	7.1	7.1	7.6	7.3		8.3	8.6				
						19.1	19.1	8.0	8.0	32.4	32.4	91.6	92.0	7.0	7.1	7.1	6.9	7.3		8.9	8.6				
17-Dec-14	Cloudy	Moderate	14:51	Surface	1	18.7	18.7	7.8	7.8	33.1	33.1	80.7	81.0	6.2	6.2	6.3	2.6	2.7	8.3	11.0	11.3	11.6			
						18.7	18.7	7.8	7.8	33.1	33.1	81.2	81.0	6.2	6.2										
				Middle	4	18.7	18.7	7.8	7.8	33.1	33.1	82.1	82.0	6.3	6.3			5.9		6.0			20.4	14.6	
						18.7	18.7	7.8	7.8	33.1	33.1	81.9	82.0	6.3	6.3		6.0	6.0		8.8	14.6				
				Bottom	7	18.7	18.7	7.8	7.8	33.1	33.1	82.4	82.5	6.3	6.3	6.3	16.8	16.1		8.3	8.9				
						18.7	18.7	7.8	7.8	33.1	33.1	82.6	82.5	6.3	6.3	6.3	15.3	16.1		9.4	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 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*
20-Dec-14	Fine	Moderate	16:14	Surface	1	17.7 17.7	17.7	7.7 7.7	7.7	31.3 31.4	31.4	83.0 83.3	83.2	6.6 6.6	6.6	6.5	3.8 4.0	3.9	6.4	21.0 8.2	14.6	12.7
				Middle	4	17.7 17.7	17.7	7.7 7.7	7.7	31.4 31.4	31.4	80.9 80.9	80.9	6.4 6.4	6.4		3.9 3.2	3.6		7.4 17.6	12.5	
				Bottom	7	17.6 17.6	17.6	7.7 7.7	7.7	31.4 31.4	31.4	81.4 81.0	81.2	6.4 6.4	6.4		11.0 12.1	11.6		5.5 16.5	11.0	
22-Dec-14	Fine	Moderate	17:16	Surface	1	17.7 17.7	17.7	8.1 8.1	8.1	32.7 32.7	32.7	94.4 92.8	93.6	7.4 7.3	7.4	7.4	5.6 5.7	5.7	8.4	10.4 10.0	10.2	9.2
				Middle	4	17.3 17.3	17.3	8.1 8.2	8.2	32.7 32.7	32.7	93.8 92.1	93.0	7.4 7.3	7.4		7.1 7.9	7.5		7.7 10.4	9.1	
				Bottom	7	17.2 17.2	17.2	8.1 8.2	8.2	32.7 32.8	32.8	93.1 91.0	92.1	7.4 7.2	7.3		12.2 11.7	12.0		7.1 9.6	8.4	
24-Dec-14	Sunny	Moderate	08:59	Surface	1	17.2 17.2	17.2	7.7 7.7	7.7	31.7 31.7	31.7	79.4 79.4	79.4	6.3 6.3	6.3	6.3	15.0 15.0	15.0	12.7	20.1 15.0	17.6	17.5
				Middle	4	17.2 17.2	17.2	7.7 7.7	7.7	31.7 31.7	31.7	78.8 78.8	78.8	6.3 6.3	6.3		11.4 11.4	11.4		14.6 17.4	16.0	
				Bottom	7	17.2 17.2	17.2	7.7 7.7	7.7	31.7 31.7	31.7	75.2 75.2	75.2	6.0 6.0	6.0		11.4 12.2	11.8		20.7 17.3	19.0	
27-Dec-14	Cloudy	Moderate	11:41	Surface	1	17.8 17.8	17.8	7.9 7.9	7.9	31.0 31.0	31.0	75.5 75.9	75.7	6.0 6.0	6.0	6.1	15.0 14.0	14.5	16.0	13.7 9.9	11.8	10.5
				Middle	4	17.8 17.8	17.8	7.8 7.8	7.8	31.0 28.7	29.9	76.1 76.0	76.1	6.0 6.1	6.1		14.9 14.2	14.6		8.8 9.2	9.0	
				Bottom	7	17.8 17.8	17.8	7.8 7.8	7.8	31.0 31.0	31.0	75.9 76.1	76.0	6.0 6.0	6.0		18.9 18.7	18.8		10.5 10.6	10.6	
29-Dec-14	Fine	Moderate	13:20	Surface	1	17.1 17.1	17.1	7.6 7.6	7.6	30.9 30.9	30.9	85.5 85.6	85.6	6.8 6.9	6.9	6.9	2.4 2.3	2.4	5.0	12.5 7.5	10.0	8.9
				Middle	4	17.1 17.0	17.1	7.6 7.6	7.6	30.9 30.9	30.9	85.4 85.3	85.4	6.8 6.8	6.8		4.3 3.5	3.9		7.9 7.6	7.8	
				Bottom	7	17.0 17.0	17.0	7.6 7.6	7.6	30.9 30.9	30.9	84.9 84.9	84.9	6.8 6.8	6.8		8.5 9.1	8.8		7.2 10.7	9.0	
31-Dec-14	Fine	Moderate	13:59	Surface	1	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.1	31.1	84.7 84.8	84.8	6.7 6.8	6.8	6.8	3.8 4.2	4.0	5.9	5.5 4.0	4.8	4.7
				Middle	4	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.1	31.1	84.4 84.4	84.4	6.7 6.7	6.7		5.1 6.0	5.6		5.3 5.3	5.3	
				Bottom	7	17.3 17.3	17.3	7.8 7.8	7.8	31.1 31.1	31.1	83.6 83.6	83.6	6.7 6.7	6.7		7.6 8.6	8.1		3.0 5.0	4.0	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*		
1-Dec-14	Cloudy	Calm	08:10	Surface	1	23.7	23.7	8.0	8.0	28.3	28.3	89.9	90.2	6.5	6.5	6.5	3.1	2.9	4.6	3.9	3.5	4.2		
						23.7	23.7	8.0	8.0	28.3	28.3	90.4	90.2	6.5	6.5		2.7	2.1		2.1	2.1		2.9	3.4
				Middle	6	23.6	23.7	8.1	8.1	29.1	29.1	89.8	89.4	6.4	6.4		6.4	6.4		6.4	6.4		8.7	8.7
			Bottom	11	23.7	23.7	8.1	8.1	30.1	30.0	88.2	88.7	6.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
						23.6	23.7	8.1	8.1	29.9	30.0	89.1	88.7	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
3-Dec-14	Cloudy	Calm	10:28	Surface	1	22.3	22.3	7.8	7.8	33.1	33.1	84.7	84.7	6.1	6.1	6.1	4.3	4.4	4.8	5.5	5.1	5.1		
						22.3	22.3	7.8	7.8	33.1	33.1	82.2	83.1	5.9	6.0		6.0	6.0		4.5	4.9		4.7	5.1
				Middle	6.5	22.3	22.3	7.8	7.8	33.1	33.1	83.9	83.1	6.0	6.0		6.0	6.0		4.8	4.9		4.8	5.1
			Bottom	12	22.3	22.3	7.8	7.8	33.1	33.1	80.0	80.8	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
						22.3	22.3	7.8	7.8	33.1	33.1	81.6	80.8	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
						22.3	22.3	7.8	7.8	33.1	33.1	81.6	80.8	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
						22.3	22.3	7.8	7.8	33.1	33.1	81.6	80.8	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
5-Dec-14	Cloudy	Moderate	12:32	Surface	1	22.0	21.7	8.0	8.0	28.5	30.3	91.3	91.6	6.8	6.8	6.9	3.5	3.6	4.2	5.8	6.7	6.1		
						21.4	21.7	8.0	8.0	32.4	30.4	96.4	94.9	7.1	7.0		7.0	7.0		3.7	4.1		6.0	5.6
				Middle	6	21.4	21.7	8.0	8.0	28.3	30.4	93.4	94.9	6.9	7.0		7.0	7.0		4.0	4.1		4.2	5.1
			Bottom	11	22.0	21.8	8.0	8.0	28.4	29.9	87.2	88.1	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
						21.5	21.8	8.0	8.0	31.4	29.9	89.0	88.1	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
						21.5	21.8	8.0	8.0	31.4	29.9	89.0	88.1	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
8-Dec-14	Cloudy	Moderate	13:31	Surface	1	21.0	21.0	8.1	8.1	31.4	31.4	87.5	86.9	6.5	6.5	6.4	5.9	6.2	6.2	6.5	6.2	6.1		
						21.0	21.0	8.1	8.1	31.4	31.4	86.3	86.9	6.4	6.5		6.5	6.5		6.1	6.2		6.1	6.3
				Middle	6	21.0	21.0	8.1	8.1	31.5	31.5	84.9	84.7	6.3	6.3		6.3	6.3		6.1	6.2		6.1	6.3
			Bottom	11	20.9	20.9	8.1	8.1	31.6	31.6	83.8	83.5	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	
						20.9	20.9	8.1	8.1	31.6	31.6	83.1	83.5	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	
						20.9	20.9	8.1	8.1	31.6	31.6	83.1	83.5	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	
10-Dec-14	Fine	Moderate	13:43	Surface	1	20.4	20.4	8.1	8.2	31.2	31.3	96.2	95.9	7.2	7.2	7.2	5.2	5.1	5.8	6.7	6.0	5.9		
						20.4	20.4	8.2	8.2	31.3	31.3	95.6	95.9	7.2	7.2		7.2	7.2		5.0	5.1		5.3	6.0
				Middle	7	20.5	20.5	8.2	8.2	32.0	32.0	95.9	95.5	7.2	7.2		7.2	7.2		6.7	6.2		5.2	6.1
			Bottom	13	20.5	20.5	8.2	8.2	31.9	32.0	94.4	93.8	7.1	7.1	7.1	7.1	6.2	6.0	5.7	5.7				
						20.5	20.5	8.2	8.2	32.1	32.0	93.2	93.8	7.0	7.1	7.1	7.1	6.2	6.0	5.8	5.7			
						20.5	20.5	8.2	8.2	32.1	32.0	93.2	93.8	7.0	7.1	7.1	7.1	6.2	6.0	5.8	5.7			
						20.5	20.5	8.2	8.2	32.1	32.0	93.2	93.8	7.0	7.1	7.1	7.1	6.2	6.0	5.8	5.7			
12-Dec-14	Fine	Moderate	16:18	Surface	1	20.2	20.2	7.8	7.8	32.4	32.4	108.3	109.6	8.1	8.2	7.5	4.1	4.2	4.3	8.5	9.4	10.2		
						20.2	20.2	7.8	7.8	32.3	32.4	110.8	109.6	8.3	8.2		8.2	8.2		4.2	4.2		4.2	4.2
				Middle	5.5	20.1	20.1	7.7	7.7	32.5	32.5	90.9	89.8	6.8	6.8		6.8	6.8		4.1	4.1		4.1	4.1
			Bottom	10	20.1	20.1	7.7	7.7	32.5	32.5	88.7	76.2	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8		
						20.1	20.1	7.7	7.7	32.5	32.5	75.4	76.2	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8		
						20.1	20.1	7.7	7.7	32.5	32.5	77.0	76.2	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8		
15-Dec-14	Cloudy	Moderate	19:03	Surface	1	19.5	19.5	7.9	7.9	32.2	31.2	74.0	73.7	5.6	5.6	5.7	4.9	4.9	4.5	8.1	7.5	9.1		
						19.4	19.5	7.9	7.9	30.2	31.2	73.4	73.7	5.6	5.6		5.6	5.6		4.8	4.9		4.8	4.9
				Middle	5.5	19.4	19.4	7.9	7.9	32.2	32.2	73.4	74.0	5.6	5.7		5.7	5.7		3.7	3.5		3.3	3.5
			Bottom	10	19.4	19.4	7.9	7.9	32.2	32.2	74.5	73.5	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6		
						19.4	19.4	7.9	7.9	32.2	32.2	73.2	73.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6		
						19.4	19.4	7.9	7.9	32.2	32.2	73.8	73.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6		
17-Dec-14	Cloudy	Moderate	08:54	Surface	1	18.6	18.6	7.8	7.8	33.3	33.4	88.5	88.5	6.8	6.8	6.8	4.6	4.5	4.6	7.8	9.5	12.8		
						18.6	18.6	7.8	7.8	33.4	33.4	88.5	88.5	6.8	6.8		6.8	6.8		4.4	4.5		4.4	4.5
				Middle	6.5	18.5	18.6	7.8	7.8	33.1	33.3	85.7	86.7	6.6	6.7		6.7	6.7		4.9	4.8		4.6	4.8
			Bottom	12	18.5	18.5	7.8	7.8	33.3	33.4	83.5	84.4	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5		
						18.5	18.5	7.8	7.8	33.4	33.4	85.2	84.4	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5		
						18.5	18.5	7.8	7.8	33.4	33.4	85.2	84.4	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5		

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at 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*
20-Dec-14	Fine	Moderate	11:18	Surface	1	17.6 17.6	17.6	7.8 7.8	7.8	31.8 31.8	31.8	66.6 66.4	66.5	5.3 5.2	5.3	5.3	4.0 4.5	4.3	5.4	6.8 6.6	6.7	10.4
				Middle	5.5	17.4 17.5	17.5	7.8 7.8	7.8	31.9 31.9	31.9	64.8 65.5	65.2	5.1 5.2	5.2		4.4 3.7	4.1		7.6 18.4	13.0	
				Bottom	10	17.4 17.4	17.4	7.8 7.8	7.8	31.9 31.9	31.9	64.2 63.7	64.0	5.1 5.0	5.1		8.1 7.4	7.8		11.3 11.9	11.6	
22-Dec-14	Fine	Moderate	13:20	Surface	1	18.0 18.1	18.1	7.9 7.9	7.9	32.0 32.0	32.0	82.7 81.6	82.2	6.5 6.4	6.5	6.3	6.8 6.9	6.9	8.2	9.6 7.7	8.7	9.0
				Middle	6.5	17.9 17.9	17.9	7.8 7.8	7.8	32.0 32.0	32.0	75.9 76.3	76.1	5.9 6.0	6.0		5.1 6.0	5.6		8.4 7.3	7.9	
				Bottom	12	17.6 17.6	17.6	7.8 7.8	7.8	31.8 32.0	31.9	78.4 78.2	78.3	6.2 6.2	6.2		11.0 13.2	12.1		7.4 13.3	10.4	
24-Dec-14	Sunny	Moderate	14:42	Surface	1	18.1 18.1	18.1	6.6 6.6	6.6	31.2 29.1	30.2	75.9 76.1	76.0	6.0 6.0	6.0	5.8	4.0 4.0	4.0	6.6	3.4 4.0	3.7	4.8
				Middle	6.5	17.7 17.8	17.8	6.6 6.6	6.6	31.2 31.2	31.2	70.3 70.0	70.2	5.6 5.5	5.6		6.6 6.4	6.5		5.7 8.6	7.2	
				Bottom	12	17.7 17.7	17.7	6.6 6.6	6.6	31.2 31.2	31.2	72.0 71.2	71.6	5.7 5.6	5.7		9.6 8.8	9.2		4.2 2.8	3.5	
27-Dec-14	Cloudy	Moderate	16:05	Surface	1	17.9 17.9	17.9	7.9 7.9	7.9	30.9 30.9	30.9	83.3 82.1	82.7	6.6 6.5	6.6	6.3	8.4 8.2	8.3	10.9	9.0 8.2	8.6	7.7
				Middle	5.5	17.9 17.9	17.9	7.5 7.5	7.5	31.2 31.2	31.2	71.9 79.0	75.5	5.7 6.2	6.0		9.4 8.4	8.9		8.5 7.0	7.8	
				Bottom	10	17.9 17.9	17.9	7.6 7.6	7.6	31.0 31.0	31.0	88.3 88.7	88.5	7.0 7.0	7.0		15.2 15.7	15.5		6.4 6.7	6.6	
29-Dec-14	Fine	Moderate	18:28	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.8 31.8	31.8	75.2 73.5	74.4	6.0 5.8	5.9	5.9	6.0 5.8	5.9	11.3	13.1 9.1	11.1	8.9
				Middle	6.5	17.3 17.3	17.3	7.7 7.7	7.7	31.9 31.8	31.9	73.8 74.2	74.0	5.9 5.9	5.9		9.2 9.5	9.4		7.1 8.7	7.9	
				Bottom	12	17.3 17.3	17.3	7.7 7.7	7.7	31.9 31.9	31.9	73.9 73.9	73.9	5.9 5.9	5.9		18.2 19.0	18.6		7.3 8.0	7.7	
31-Dec-14	Fine	Moderate	09:39	Surface	1	17.3 17.3	17.3	8.0 8.0	8.0	31.4 31.4	31.4	85.5 85.4	85.5	6.8 6.8	6.8	6.8	3.4 3.3	3.4	6.5	5.3 3.5	4.4	5.1
				Middle	6.5	17.3 17.3	17.3	8.0 8.0	8.0	31.4 31.4	31.4	85.2 85.1	85.2	6.8 6.8	6.8		5.8 6.0	5.9		5.3 5.8	5.6	
				Bottom	12	17.3 17.3	17.3	8.0 8.0	8.0	31.4 31.5	31.5	85.5 85.6	85.6	6.8 6.8	6.8		9.7 10.5	10.1		4.8 5.9	5.4	

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*				
1-Dec-14	Cloudy	Calm	14:50	Surface	1	23.7	23.7	7.7	7.7	28.4	28.4	78.3	78.6	5.6	5.7	5.7	2.6	2.5	3.4	2.9	4.6	4.4				
						23.7		7.7		28.4		78.9		5.7			2.4			6.2			4.7			
				Middle	6	23.6	23.6	7.8	7.8	29.1	29.1	77.7	78.3	5.6	5.7		2.0	2.1		4.2	4.3					
		23.6		7.7		29.0		78.9		5.7		2.1		4.2		4.1		4.2								
		23.6	23.6	7.7	7.7	29.6	29.6	77.2	77.4	5.5	5.6	5.6	5.6	5.6	5.6	5.7	5.7	4.2	4.2							
		23.6		7.7		29.5		77.5		5.6		5.6		5.6		5.6		4.1		4.2						
3-Dec-14	Cloudy	Calm	15:52	Surface	1	22.3	22.3	7.9	7.9	31.4	31.4	80.3	80.2	5.7	5.7	5.8	4.4	4.7	6.3	7.2	6.7	6.3				
						22.3		7.8		31.4		81.0		5.7			4.9			6.1			8.3		6.5	
				Middle	5.5	22.2	22.3	7.8	7.8	31.4	31.4	80.4	80.7	5.8	5.8		6.4	6.5		4.6	6.5					
		22.2		7.8		31.4		80.4		5.7		6.5		4.6		6.5		4.6		6.5						
		22.2	22.3	7.8	7.8	31.4	31.4	76.5	76.4	5.5	5.5	5.5	5.5	5.5	5.5	7.4	7.7	6.4	5.8							
		22.2		7.8		31.4		76.3		5.4		5.5		5.5		7.9		5.2		5.8						
5-Dec-14	Cloudy	Moderate	16:59	Surface	1	21.3	21.3	8.0	8.0	30.9	30.3	74.6	73.7	5.5	5.5	5.6	4.5	4.4	3.9	4.8	5.1	4.9				
						21.2		8.0		29.6		72.7		5.4			4.3			5.3			5.5		5.6	
				Middle	6	21.2	21.2	8.1	8.1	29.6	29.6	77.4	76.2	5.8	5.7		3.4	3.5		5.7	5.6					
		21.2		8.1		29.6		74.9		5.6		3.6		5.7		3.6		5.7		5.6						
		21.2	21.2	8.1	8.1	29.6	30.6	77.3	77.8	5.8	5.8	5.8	5.8	5.8	5.8	3.8	3.9	4.3	4.1							
		21.2		8.0		31.6		78.2		5.8		4.0		3.9		4.0		3.9		4.1						
8-Dec-14	Cloudy	Moderate	08:39	Surface	1	20.9	20.9	8.1	8.1	31.6	31.6	82.4	82.2	6.1	6.1	6.1	11.9	10.8	9.7	10.0	9.2	9.6				
						20.9		8.1		31.6		82.0		6.1			9.7			8.4			10.0		9.2	
				Middle	6	20.9	20.9	8.1	8.1	31.6	31.6	81.2	81.2	6.0	6.0		8.5	8.6		10.0	9.7					
		20.9		8.0		31.6		81.1		6.0		8.7		9.3		10.0		9.3		9.7						
		20.9	20.9	8.1	8.1	31.6	31.6	80.2	80.0	6.0	6.0	6.0	6.0	6.0	6.0	10.5	9.8	10.8	9.9							
		20.9		8.0		31.6		79.8		5.9		9.0		9.0		9.0		9.0		9.9						
10-Dec-14	Fine	Moderate	10:25	Surface	1	20.3	20.3	8.3	8.3	32.7	32.7	96.5	96.0	7.2	7.2	7.2	6.8	7.4	7.6	7.6	8.3	9.7				
						20.3		8.3		32.7		95.5		7.1			8.0			8.9			8.6		8.3	
				Middle	7	20.3	20.3	8.3	8.3	32.8	32.8	96.4	95.9	7.2	7.2		9.5	9.3		12.9	10.8					
		20.3		8.3		32.8		95.3		7.1		9.1		12.9		10.8		12.9		10.8						
		20.2	20.2	8.3	8.3	32.4	32.4	96.0	95.5	7.2	7.2	6.1	6.1	10.5	10.1											
		20.2		8.3		32.4		94.9		7.1		6.1		9.7		10.1		9.7		10.1						
12-Dec-14	Fine	Moderate	12:17	Surface	1	19.9	19.9	7.7	7.7	32.0	32.0	84.4	84.5	6.4	6.4	6.3	6.2	6.2	8.9	13.0	13.1	13.5				
						19.9		7.7		32.0		84.5		6.4			6.1			13.2			14.9		14.6	
				Middle	5.5	19.9	19.9	7.7	7.7	32.0	32.0	80.2	80.2	6.1	6.1		7.6	7.8		14.2	14.6					
		19.9		7.7		32.0		80.1		6.0		7.9		14.2		14.6		14.2		14.6						
		19.9	19.9	7.7	7.7	32.0	32.0	76.6	76.7	5.8	5.8	5.8	5.8	11.6	12.7	10.0	12.8									
		19.9		7.7		32.0		76.8		5.8		13.7		15.6		12.8		15.6		12.8						
15-Dec-14	Cloudy	Moderate	14:10	Surface	1	19.8	19.8	8.0	8.0	32.2	32.2	75.3	74.4	5.7	5.6	5.6	8.1	8.0	8.1	10.0	10.1	10.5				
						19.8		8.0		32.2		73.4		5.5			7.9			10.1			11.5		11.3	
				Middle	5.5	19.8	19.8	8.0	8.0	32.2	32.2	74.1	73.9	5.6	5.6		7.4	8.0		11.1	11.3					
		19.8		8.0		32.2		73.7		5.6		8.6		11.1		11.3		9.6		11.3						
		19.8	19.8	8.0	8.0	32.2	32.2	73.5	73.6	5.6	5.6	5.6	5.6	8.3	8.3	9.6	10.0									
		19.8		8.0		32.2		73.6		5.6		8.2		10.3		10.0		8.2		10.0						
17-Dec-14	Cloudy	Moderate	14:17	Surface	1	18.1	18.1	7.8	7.8	33.1	33.2	82.5	82.5	6.4	6.4	6.5	5.6	5.6	7.0	23.2	19.2	14.8				
						18.1		7.8		33.2		82.4		6.4			5.5			15.2			15.2		19.2	
				Middle	5.5	18.1	18.1	7.8	7.8	33.1	33.2	83.2	82.9	6.5	6.5		7.0	7.0		15.2	13.2					
		18.1		7.8		33.2		82.5		6.4		6.9		11.1		13.2		11.1		13.2						
		18.1	18.1	7.8	7.8	33.1	33.2	78.6	78.5	6.1	6.1	6.1	6.1	8.5	8.5	10.6	11.9									
		18.1		7.8		33.2		78.4		6.1		8.5		13.2		11.9		8.5		11.9						

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

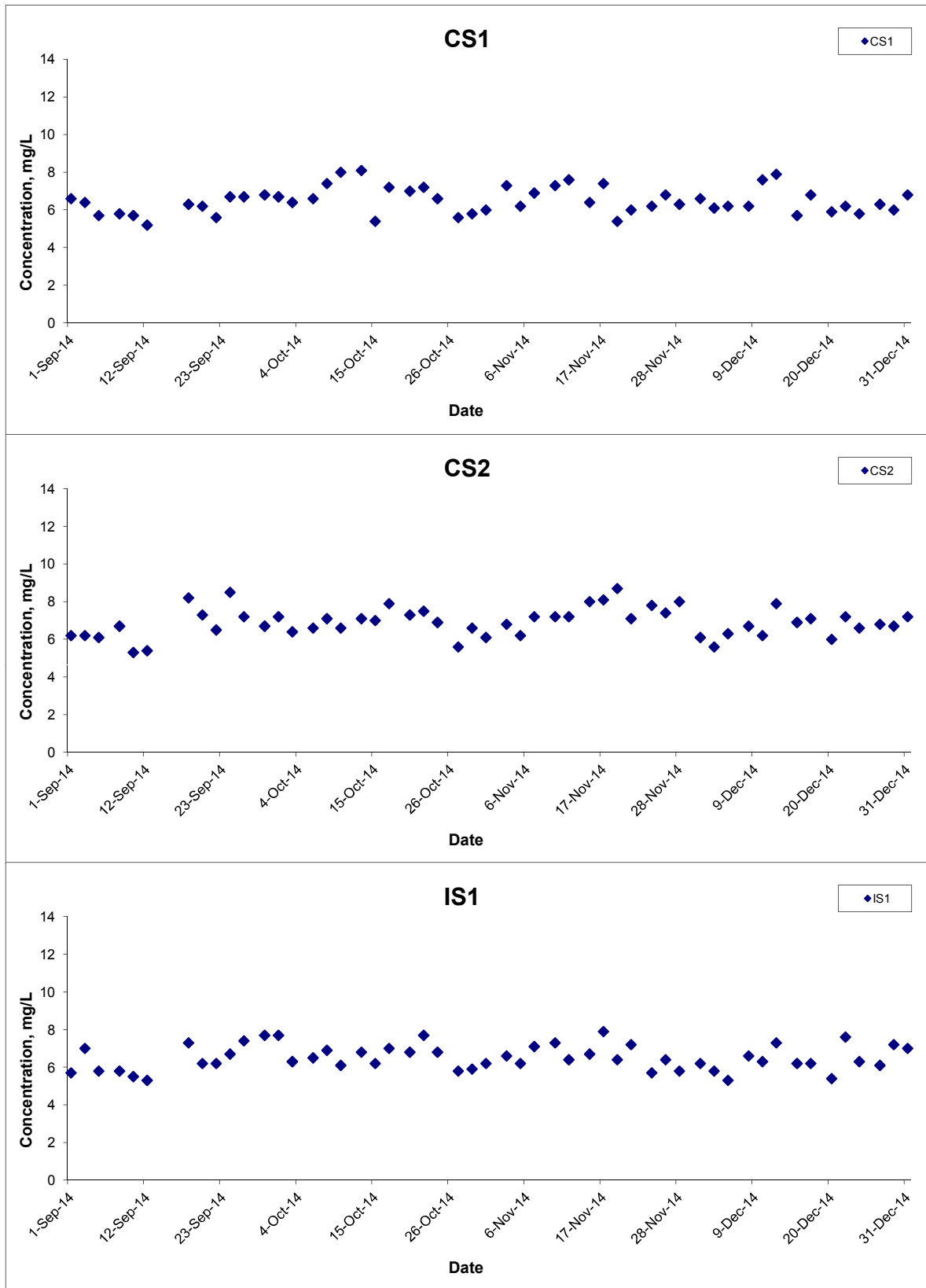
Water Quality Monitoring Results at ST3 - Mid-Flood Tide

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*
20-Dec-14	Fine	Moderate	16:04	Surface	1	17.7 17.7	17.7	7.8 7.8	7.8	32.0 32.0	32.0	74.7 75.1	74.9	5.9 5.9	5.9	6.0	3.0 3.1	3.1	3.2	16.6 10.6	13.6	11.7
				Middle	5.5	17.6 17.6	17.6	7.8 7.8	7.8	32.0 32.0	32.0	75.9 76.2	76.1	6.0 6.0	6.0		3.7 3.6	3.7		8.5 11.9	10.2	
				Bottom	10	17.5 17.5	17.5	7.8 7.8	7.8	32.0 32.0	32.0	74.0 72.9	73.5	5.8 5.8	5.8		2.9 2.8	2.9		14.3 8.4	11.4	
22-Dec-14	Fine	Moderate	17:15	Surface	1	18.1 18.1	18.1	7.8 7.8	7.8	32.1 32.0	32.1	74.0 73.1	73.6	5.8 5.7	5.8	5.7	7.6 7.2	7.4	7.8	9.4 8.2	8.8	8.3
				Middle	6.5	17.9 17.9	17.9	7.8 7.8	7.8	32.0 32.0	32.0	71.2 70.9	71.1	5.6 5.6	5.6		5.7 5.2	5.5		9.4 7.3	8.4	
				Bottom	12	17.7 17.7	17.7	7.8 7.8	7.8	32.1 32.1	32.1	72.9 72.5	72.7	5.7 5.7	5.7		10.6 10.3	10.5		7.7 7.6	7.7	
24-Dec-14	Sunny	Moderate	09:09	Surface	1	17.7 17.7	17.7	7.8 7.8	7.8	31.2 31.2	31.2	69.0 68.9	69.0	5.5 5.4	5.5	5.4	3.6 3.5	3.6	5.9	13.5 11.2	12.4	13.5
				Middle	6	17.7 17.7	17.7	7.9 7.8	7.9	31.2 31.3	31.3	67.2 67.4	67.3	5.3 5.3	5.3		4.7 4.8	4.8		14.2 13.2	13.7	
				Bottom	11	17.7 17.7	17.7	7.8 7.8	7.8	31.3 31.3	31.3	68.2 68.2	68.2	5.4 5.4	5.4		8.9 9.6	9.3		15.2 13.7	14.5	
27-Dec-14	Cloudy	Moderate	12:33	Surface	1	17.9 17.9	17.9	7.9 7.6	7.8	31.7 31.7	31.7	77.7 77.1	77.4	6.1 6.1	6.1	6.0	14.4 13.9	14.2	17.6	11.0 10.5	10.8	13.5
				Middle	5.5	17.9 17.9	17.9	7.9 7.9	7.9	31.7 31.8	31.8	72.4 74.0	73.2	5.7 5.8	5.8		19.7 19.5	19.6		17.5 16.7	17.1	
				Bottom	10	17.9 17.9	17.9	7.6 7.9	7.8	31.7 31.7	31.7	82.8 79.0	80.9	6.5 6.2	6.4		17.6 20.4	19.0		15.2 10.1	12.7	
29-Dec-14	Fine	Moderate	12:56	Surface	1	17.4 17.4	17.4	7.7 7.7	7.7	31.8 31.8	31.8	78.1 77.1	77.6	6.2 6.1	6.2	6.4	5.8 5.5	5.7	9.1	9.4 11.0	10.2	10.4
				Middle	6.5	17.4 17.4	17.4	7.7 7.7	7.7	31.7 31.8	31.8	82.3 81.6	82.0	6.5 6.5	6.5		8.3 8.1	8.2		11.0 9.5	10.3	
				Bottom	12	17.3 17.3	17.3	7.7 7.7	7.7	31.7 31.8	31.8	84.9 83.4	84.2	6.7 6.6	6.7		13.1 13.6	13.4		10.8 10.4	10.6	
31-Dec-14	Fine	Moderate	14:09	Surface	1	17.5 17.5	17.5	7.6 7.6	7.6	30.3 30.5	30.4	89.2 88.1	88.7	7.1 7.0	7.1	7.1	2.8 3.3	3.1	7.1	5.0 5.3	5.2	4.9
				Middle	6	17.4 17.4	17.4	7.7 7.7	7.7	30.4 30.5	30.5	87.1 86.5	86.8	7.0 6.9	7.0		4.9 5.3	5.1		5.7 4.5	5.1	
				Bottom	11	17.3 17.3	17.3	7.8 7.8	7.8	30.4 30.5	30.5	86.0 85.5	85.8	6.9 6.8	6.9		12.9 13.0	13.0		4.0 4.5	4.3	

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



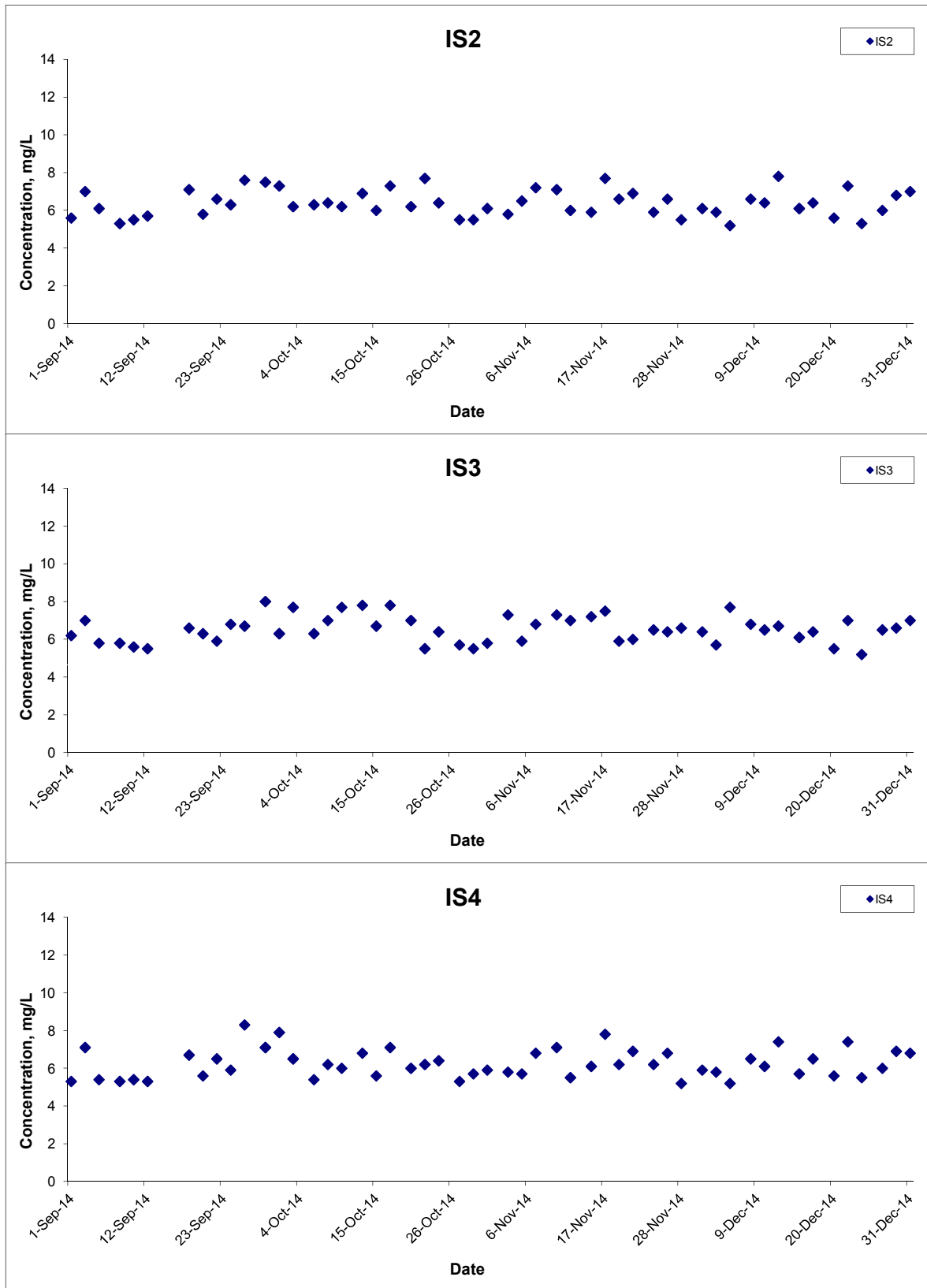
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Link Road-Section between
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Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



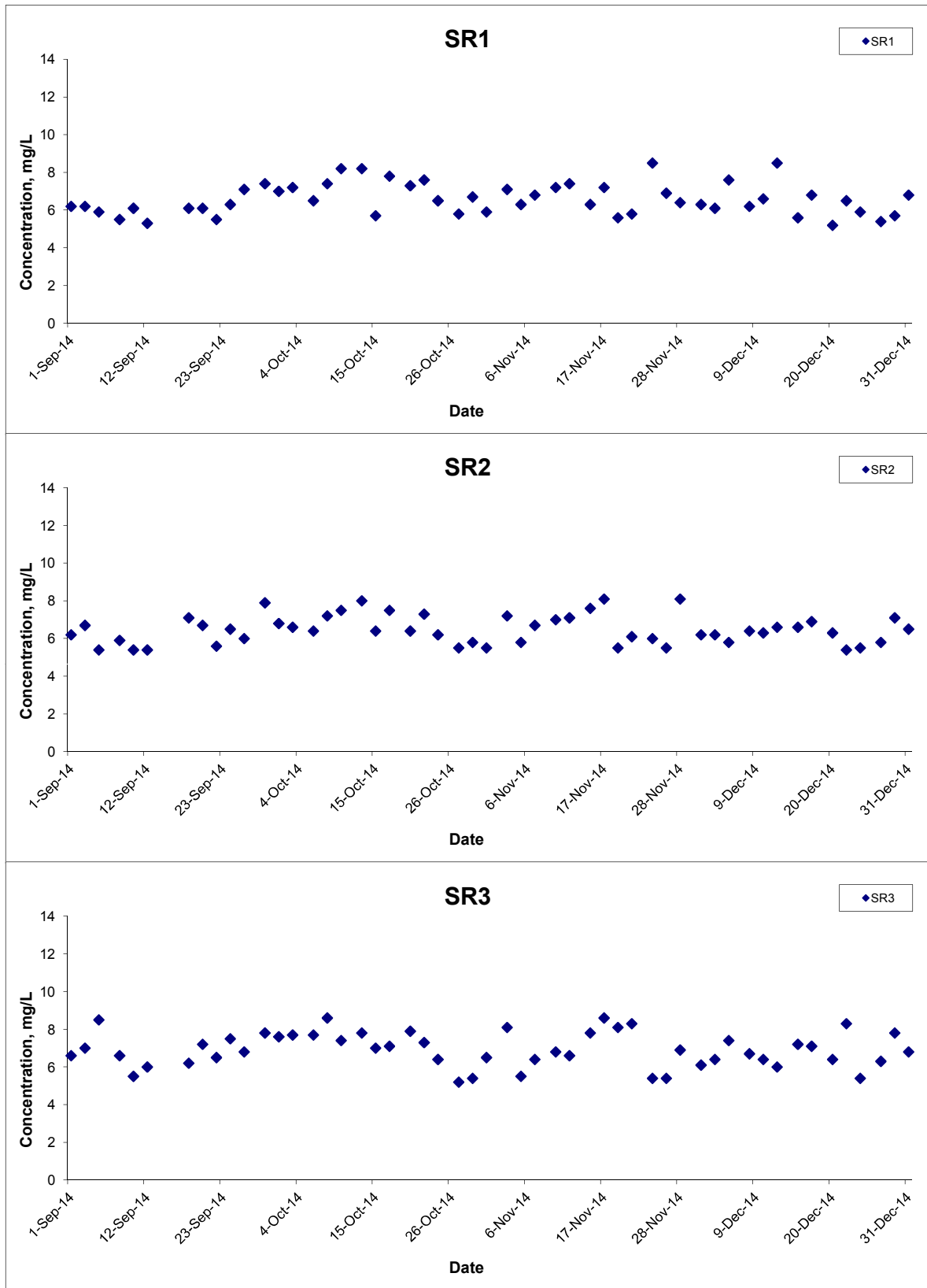
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Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



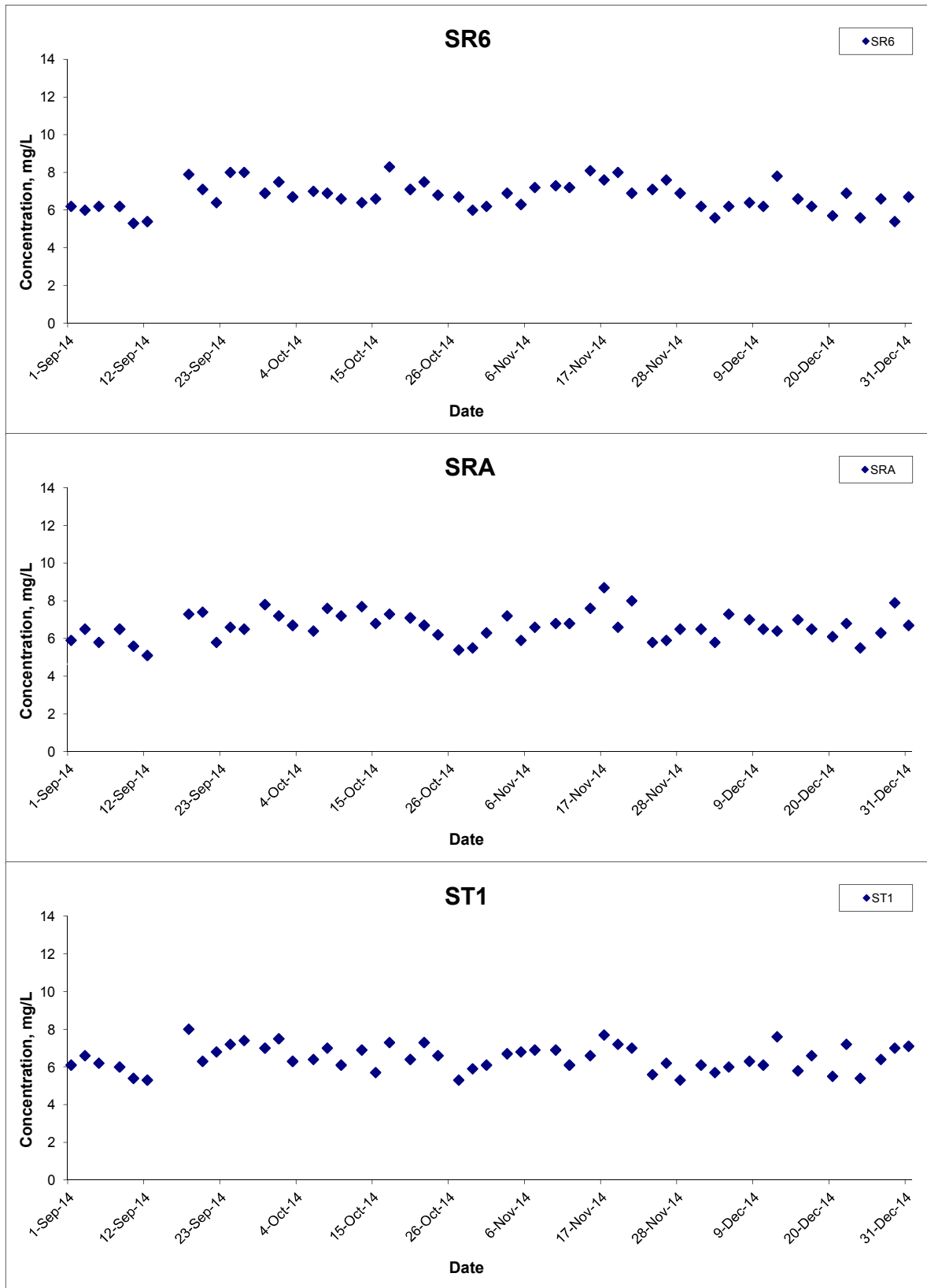
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Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



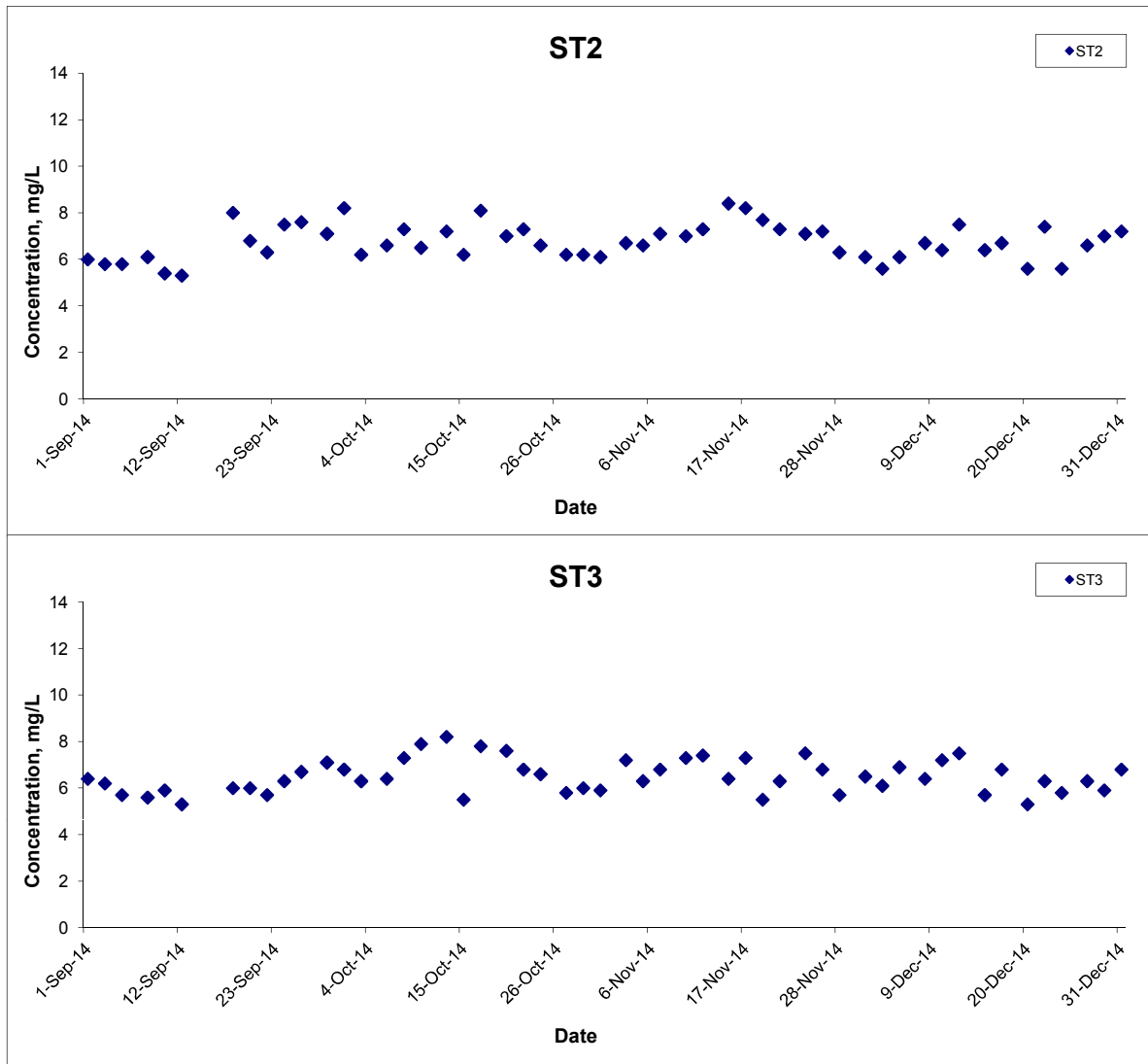
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 HKSAR Boundary and Scenic Hill
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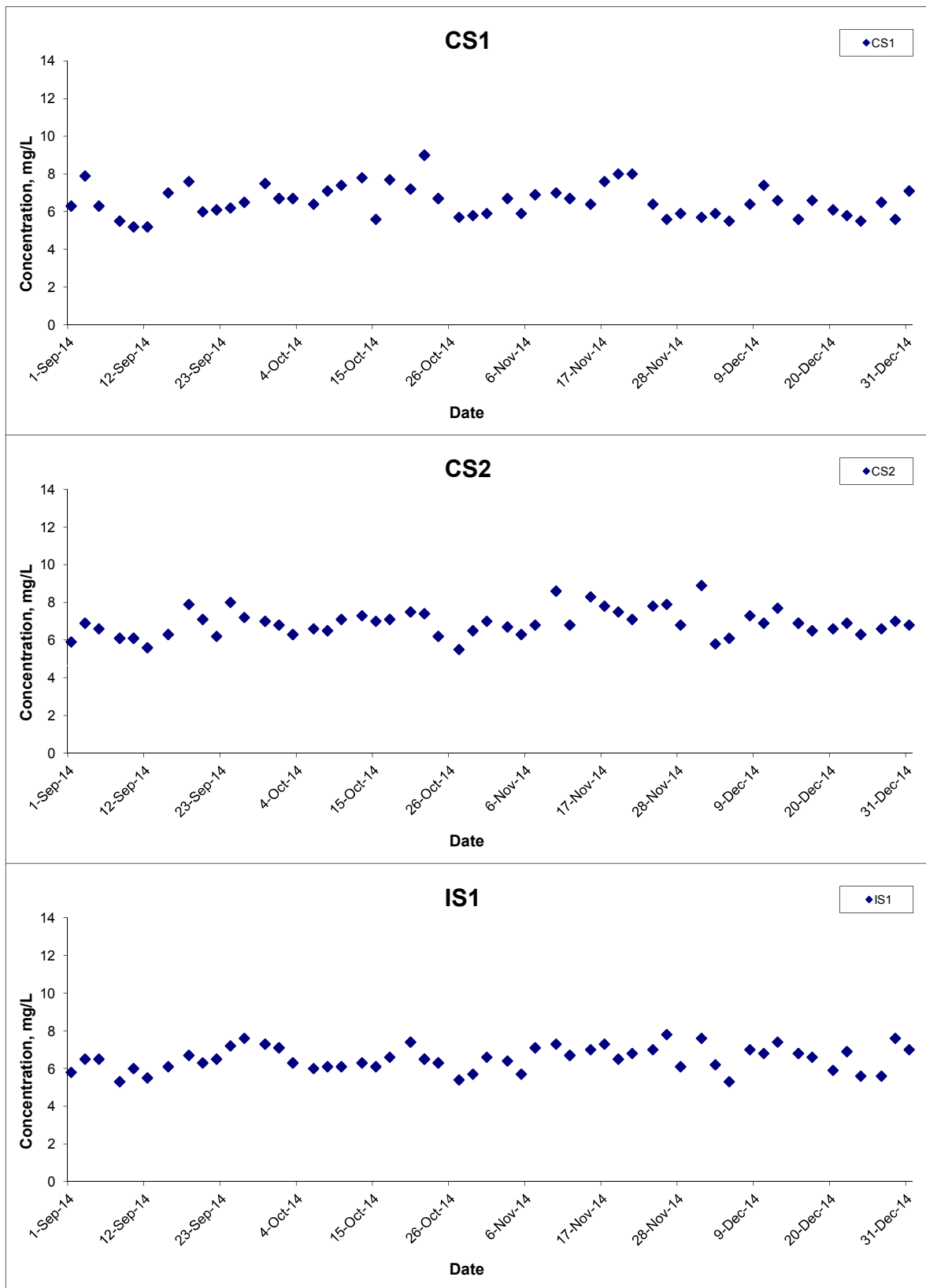


Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill	Scale	Project No. MA12014	CINOTECH
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



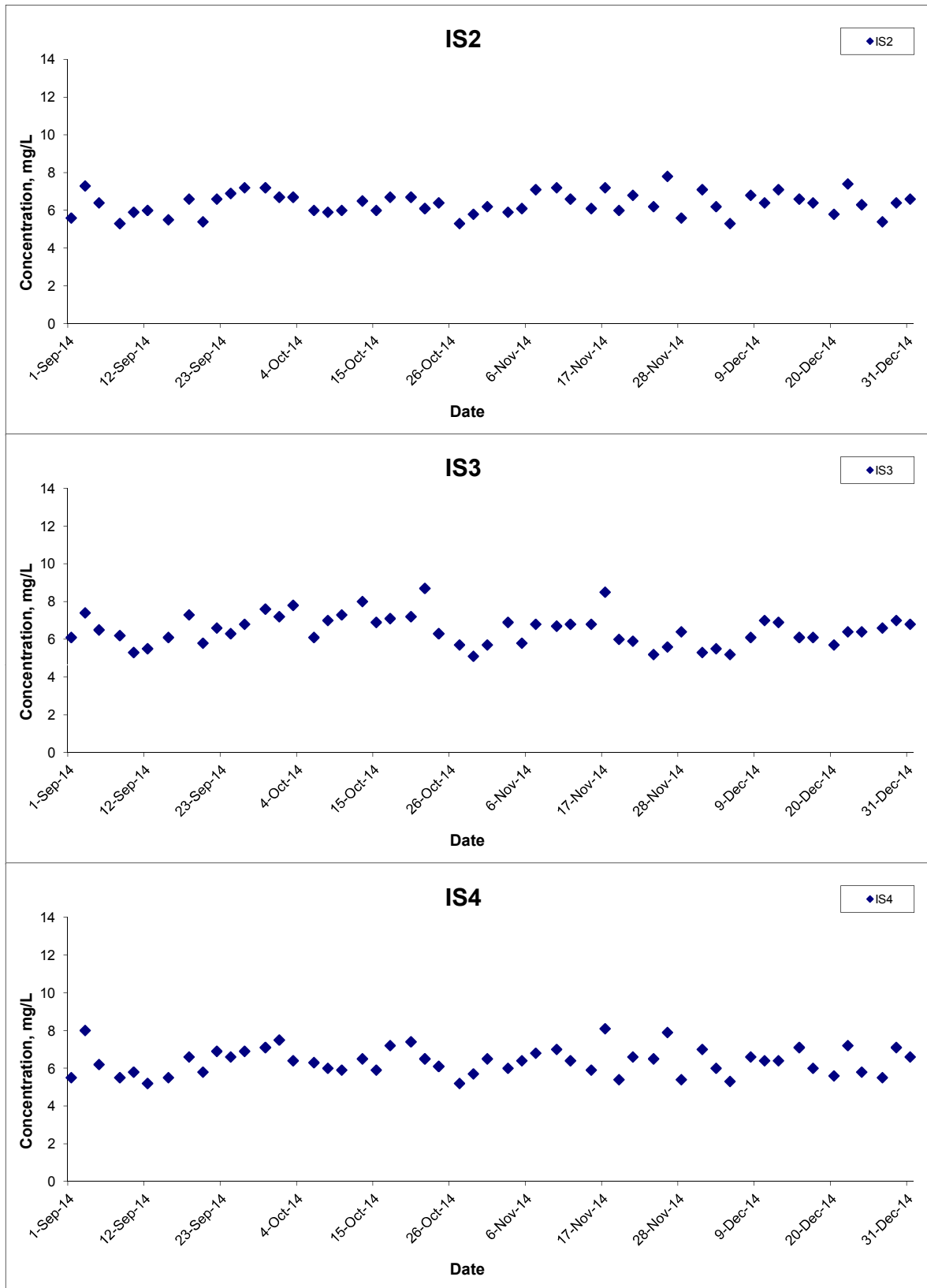
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



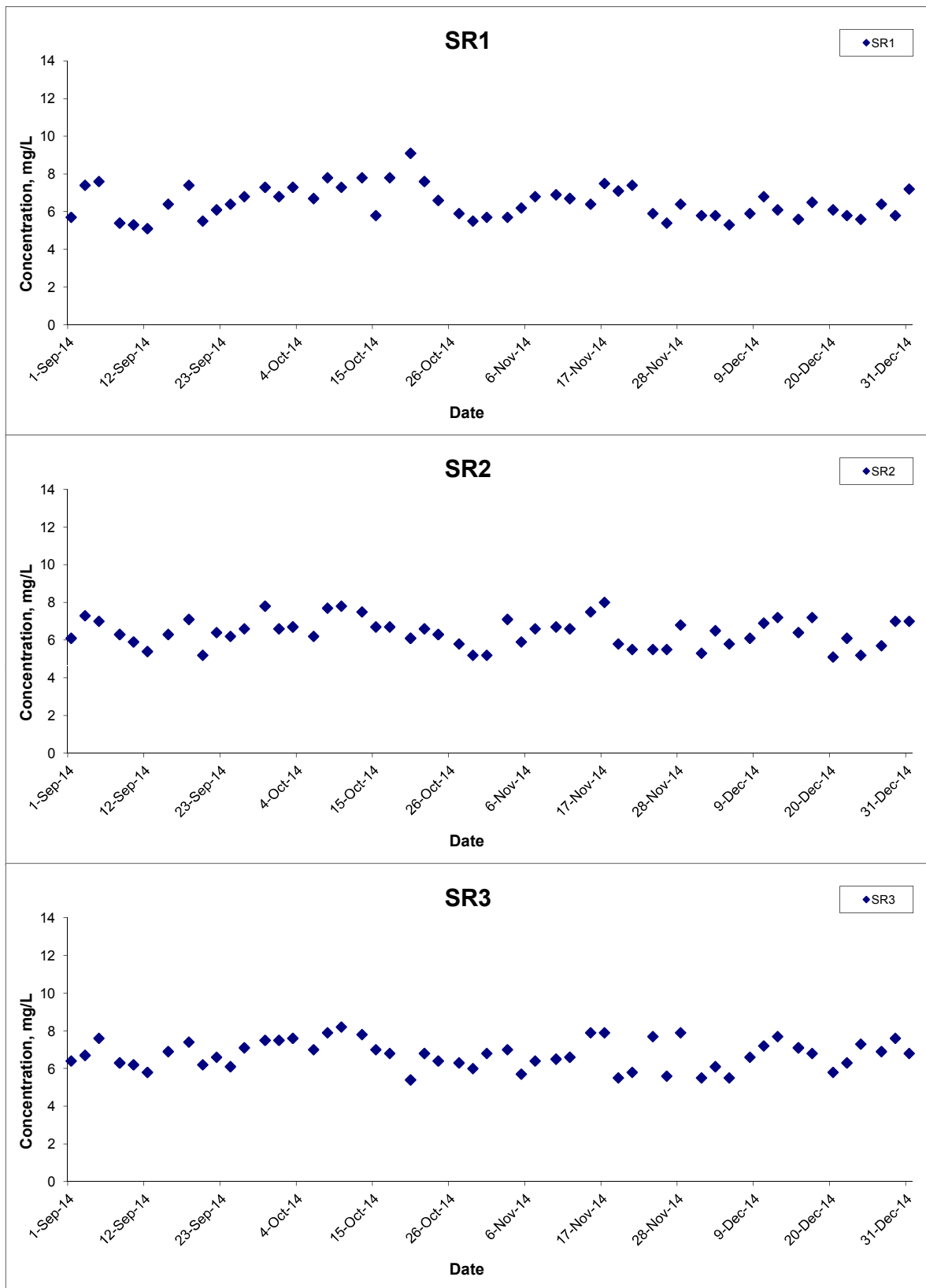
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



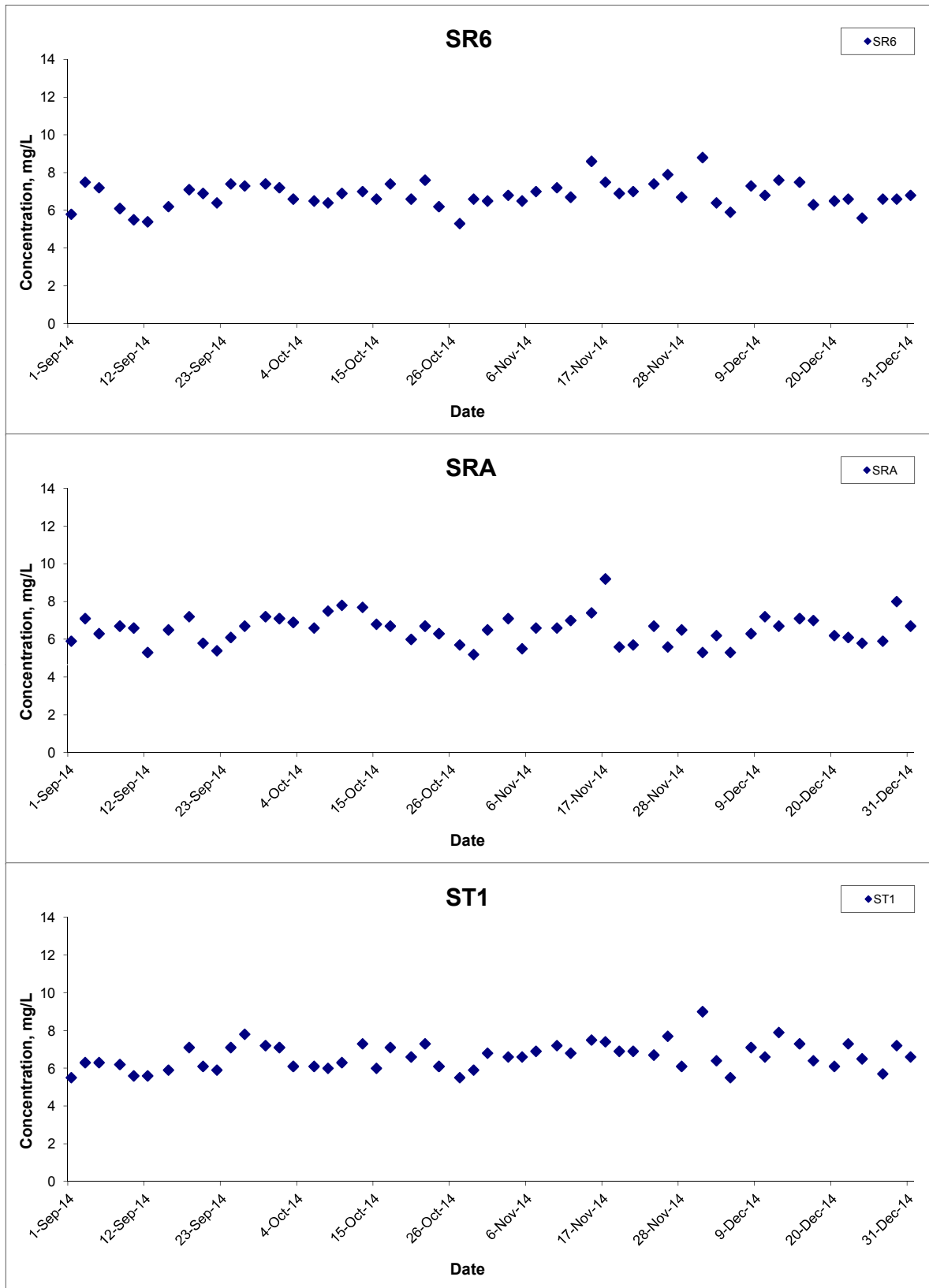
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



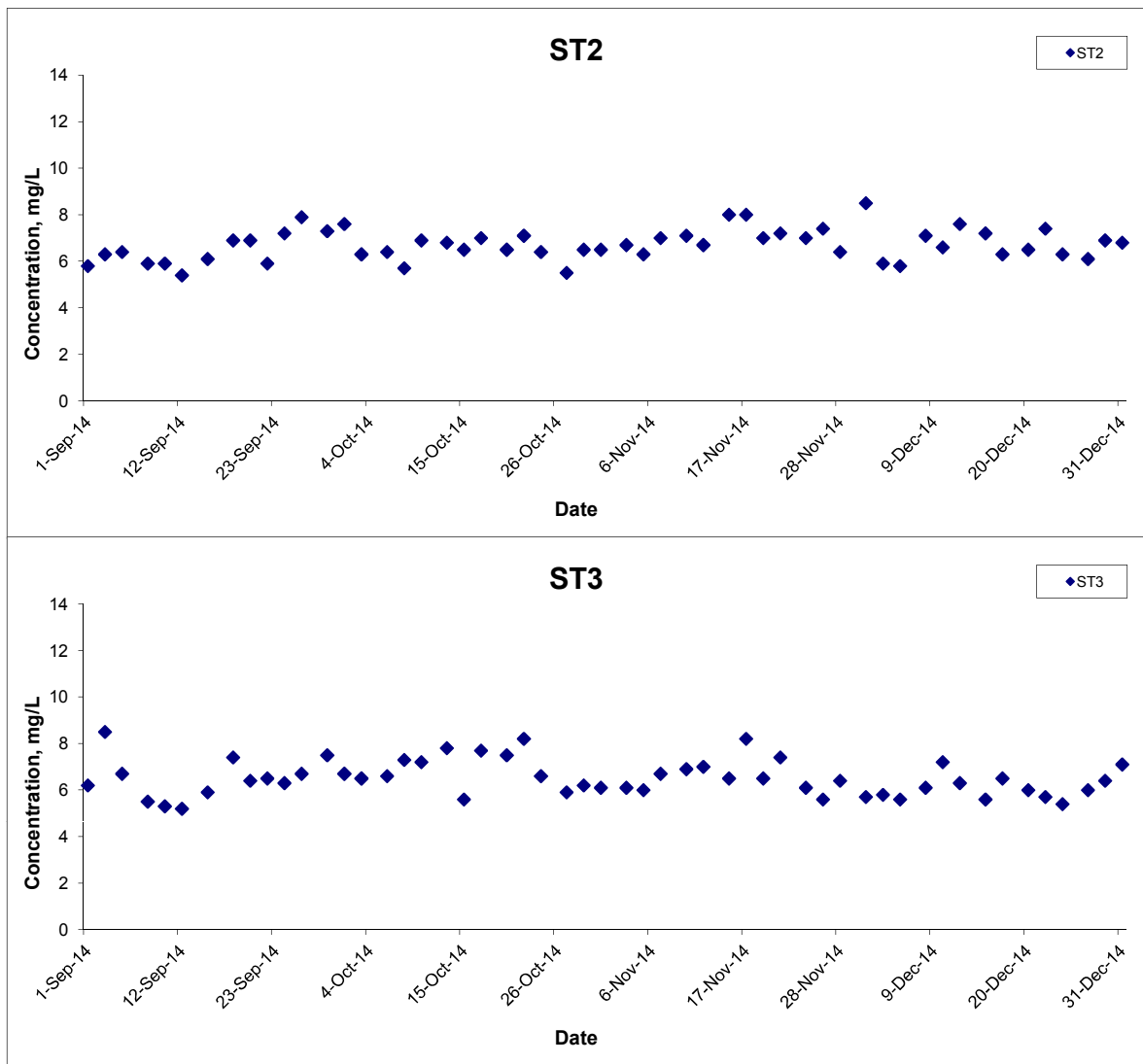
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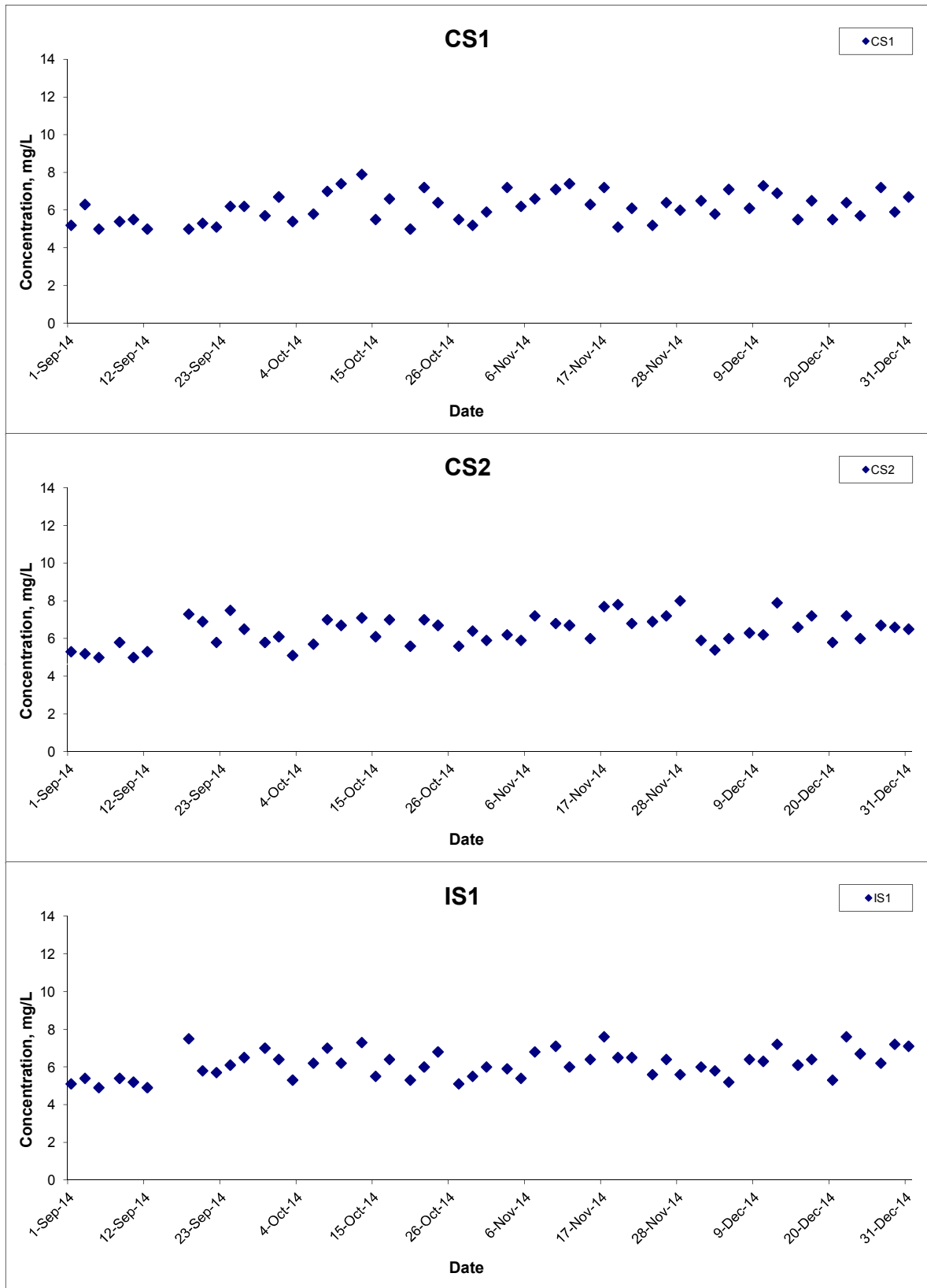


Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill	Scale	Project No. MA12014	CINOTECH
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



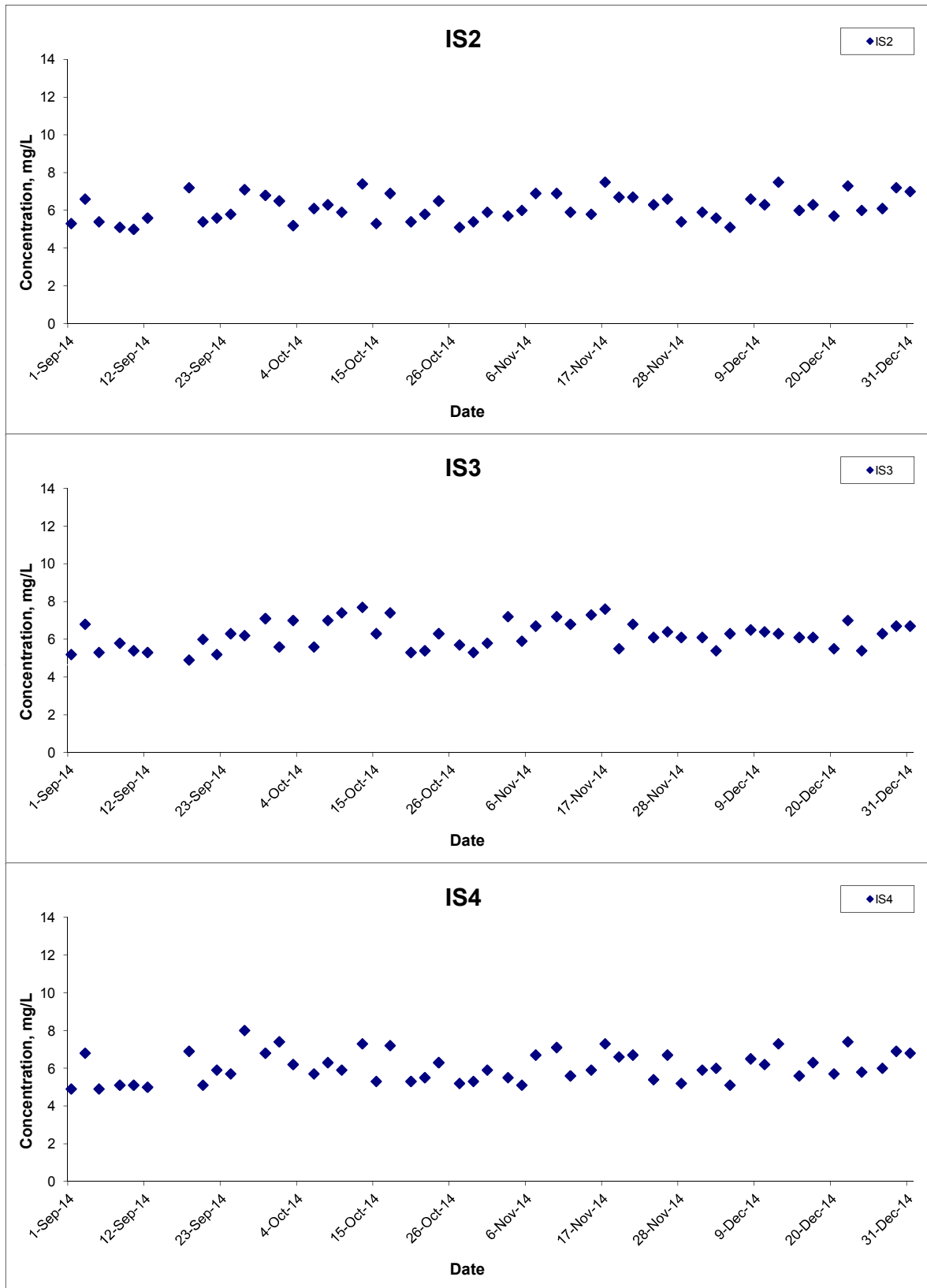
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



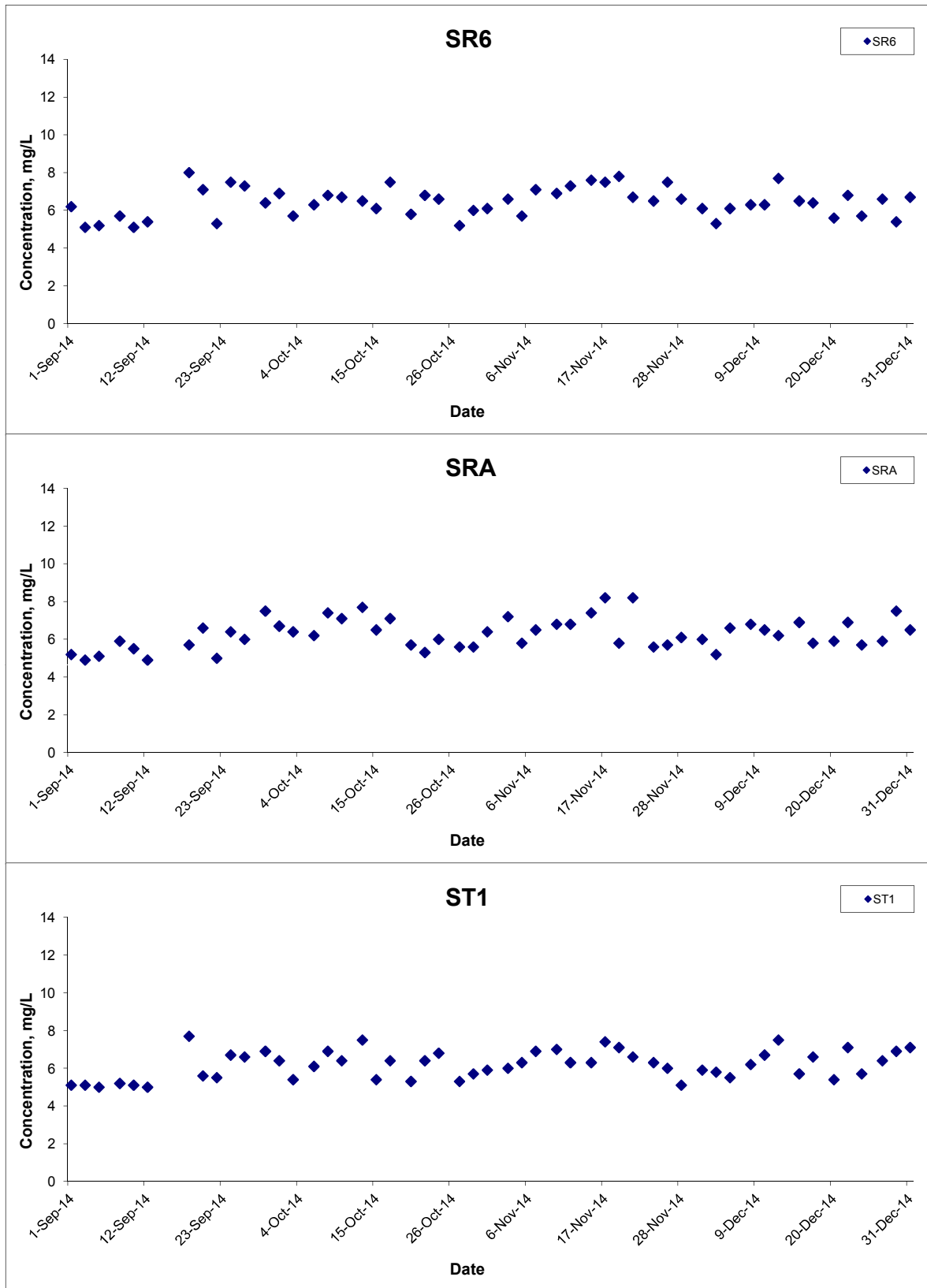
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



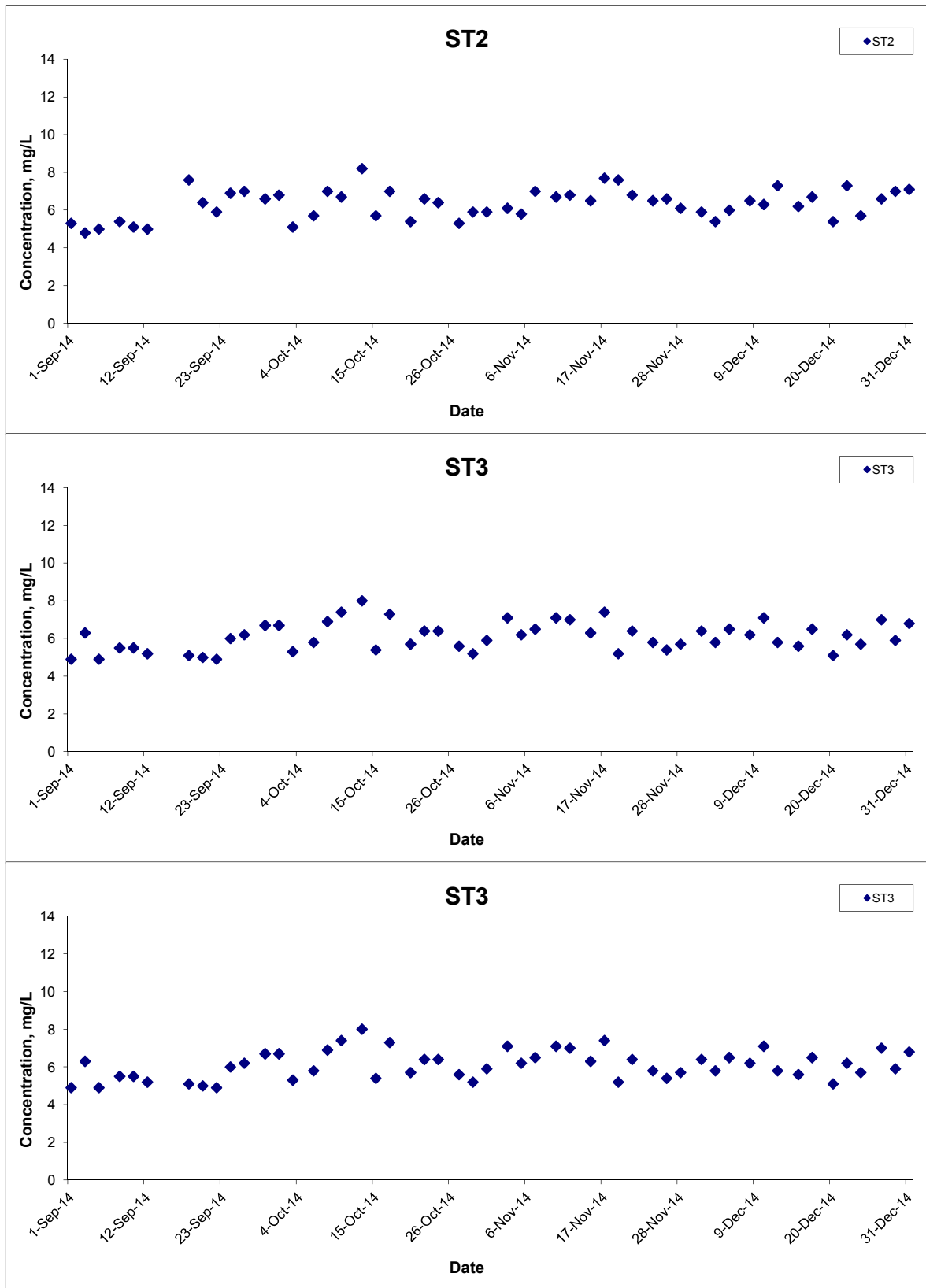
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



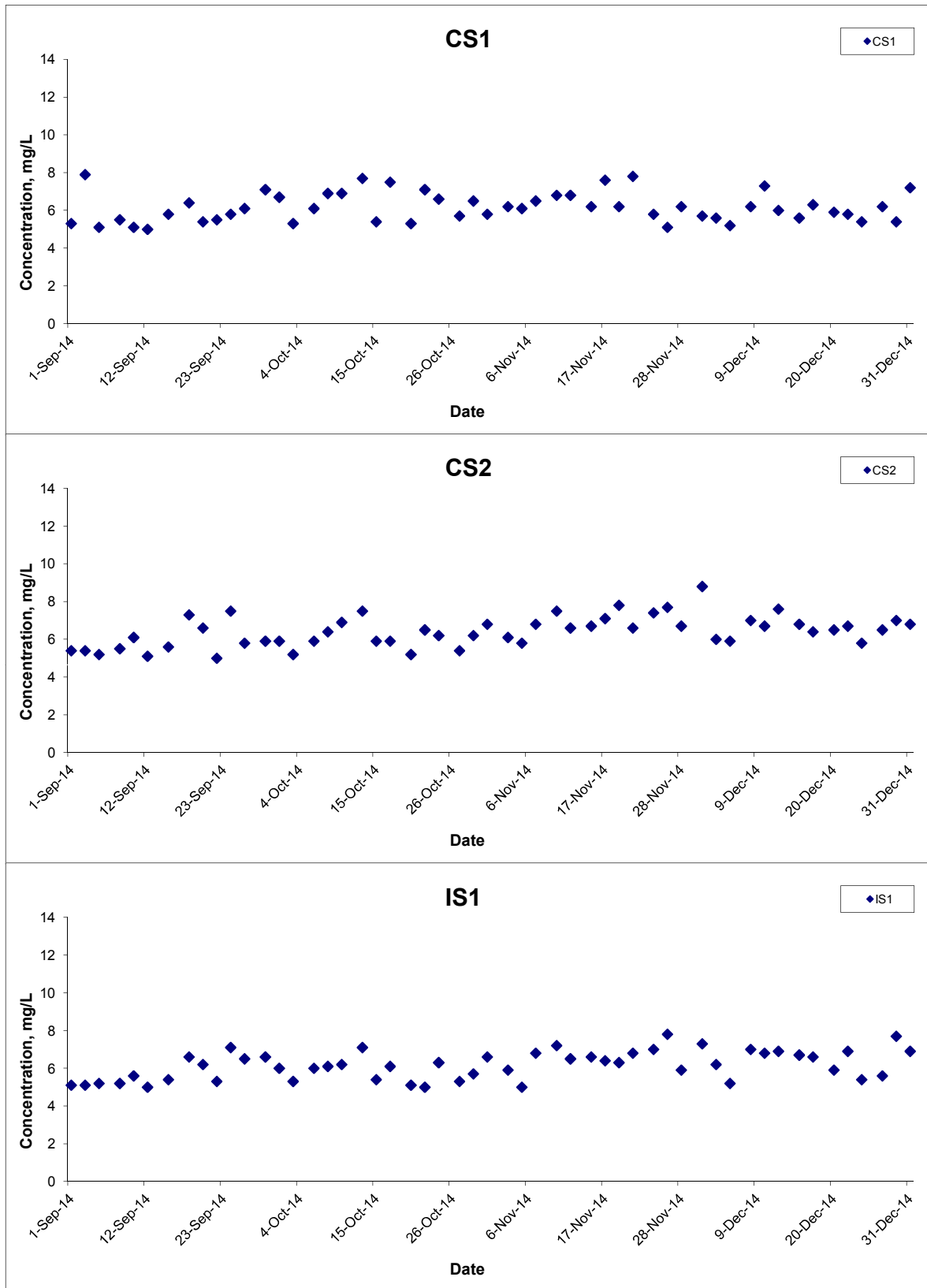
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



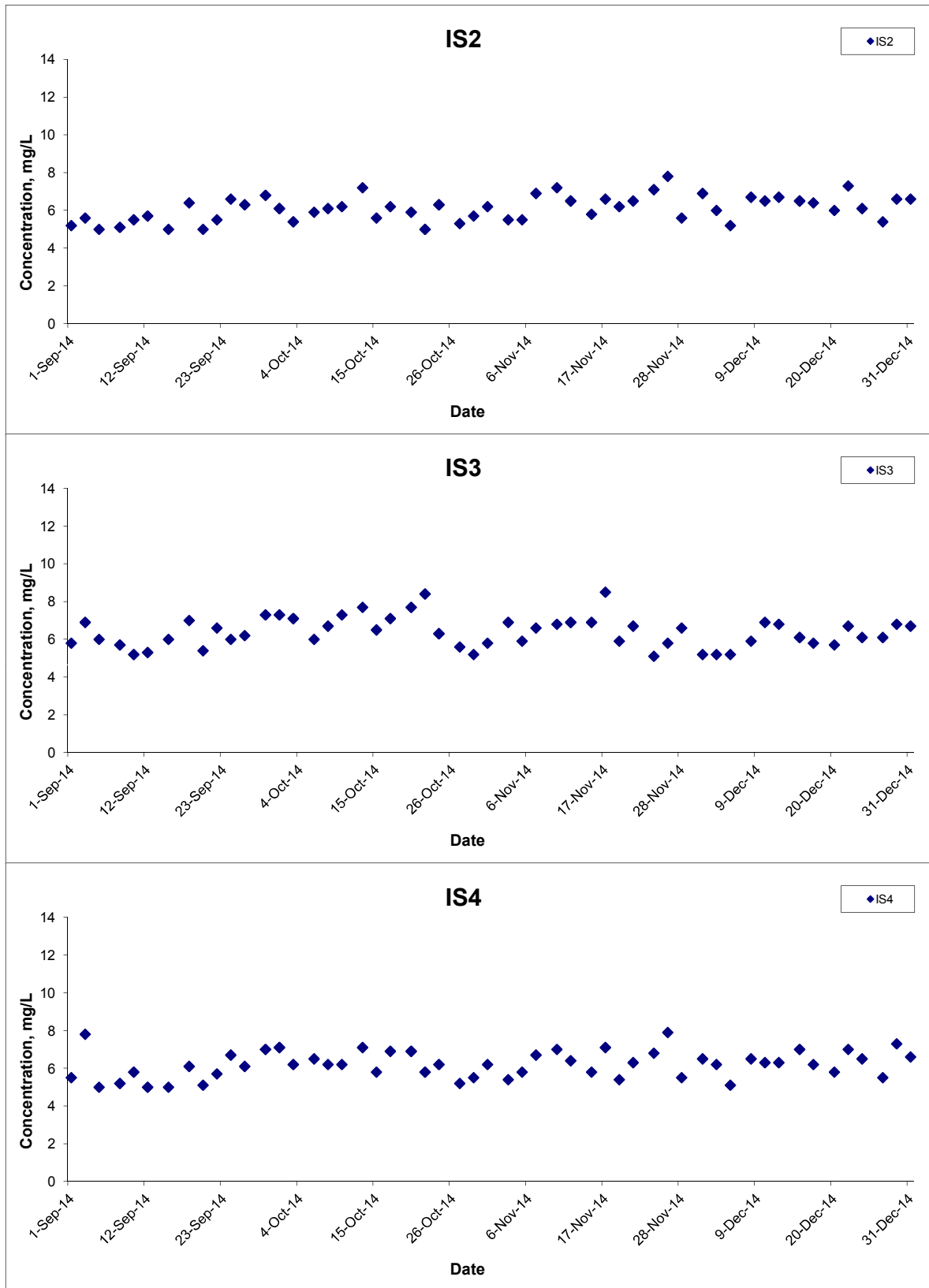
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



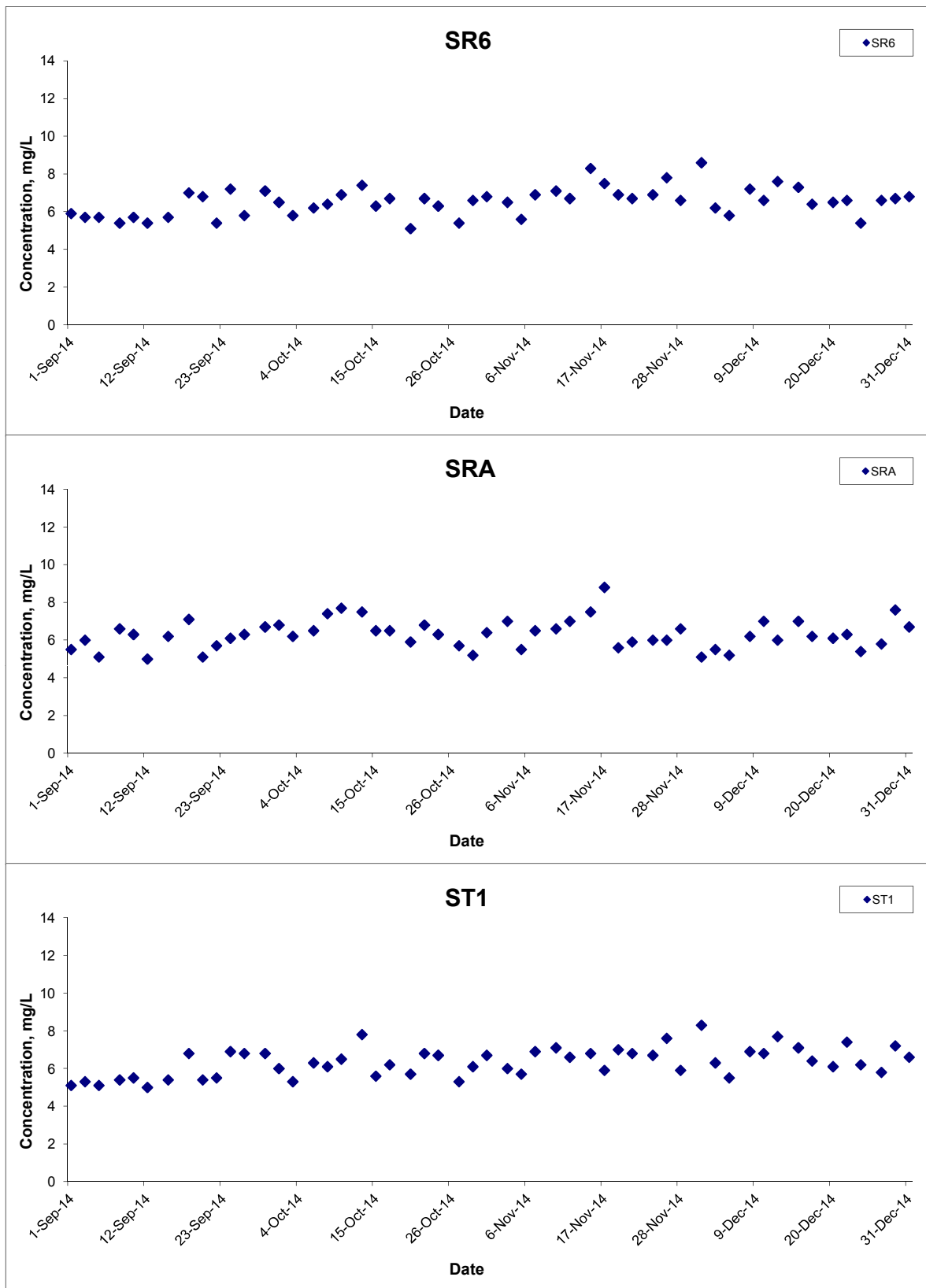
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



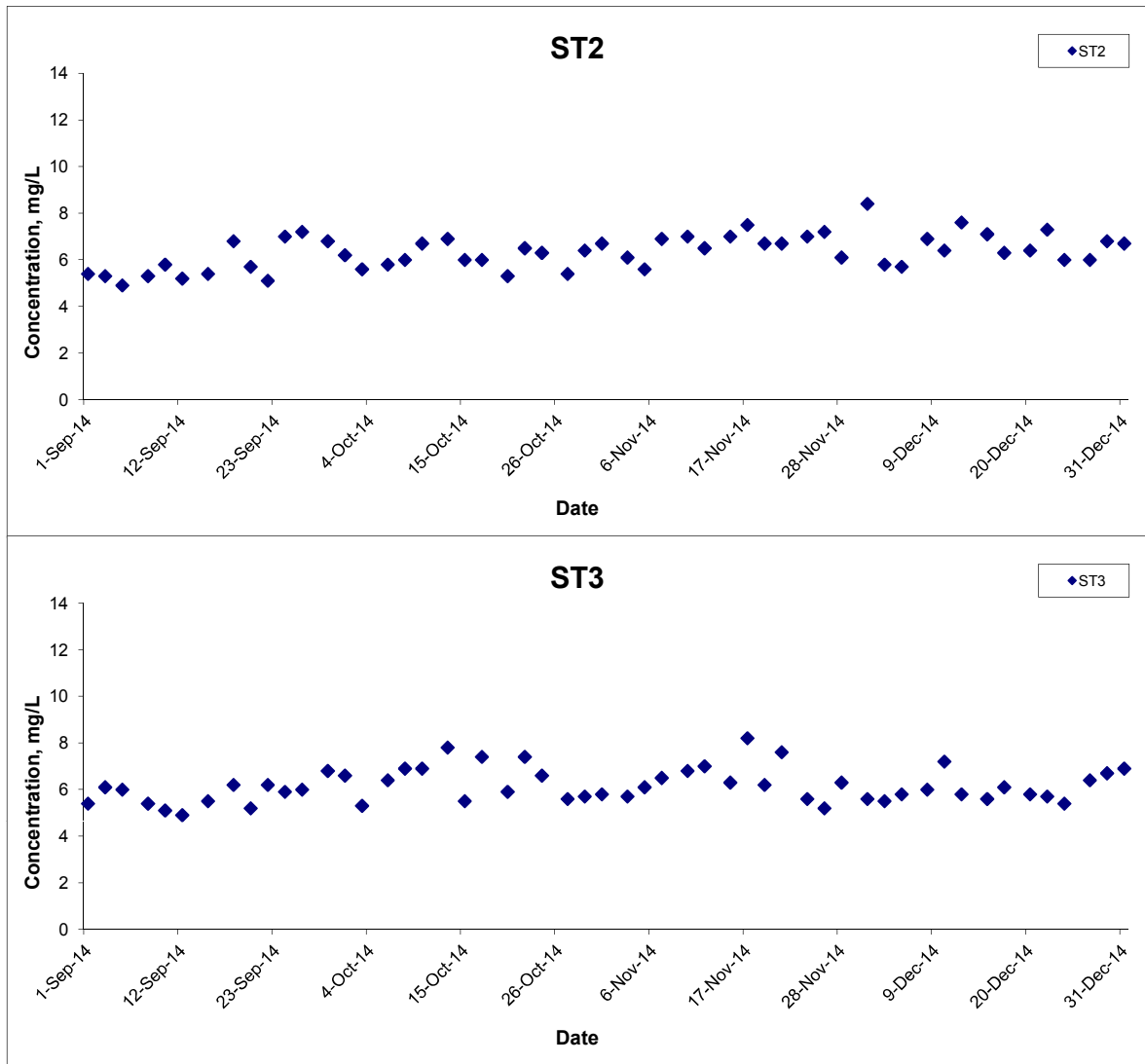
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



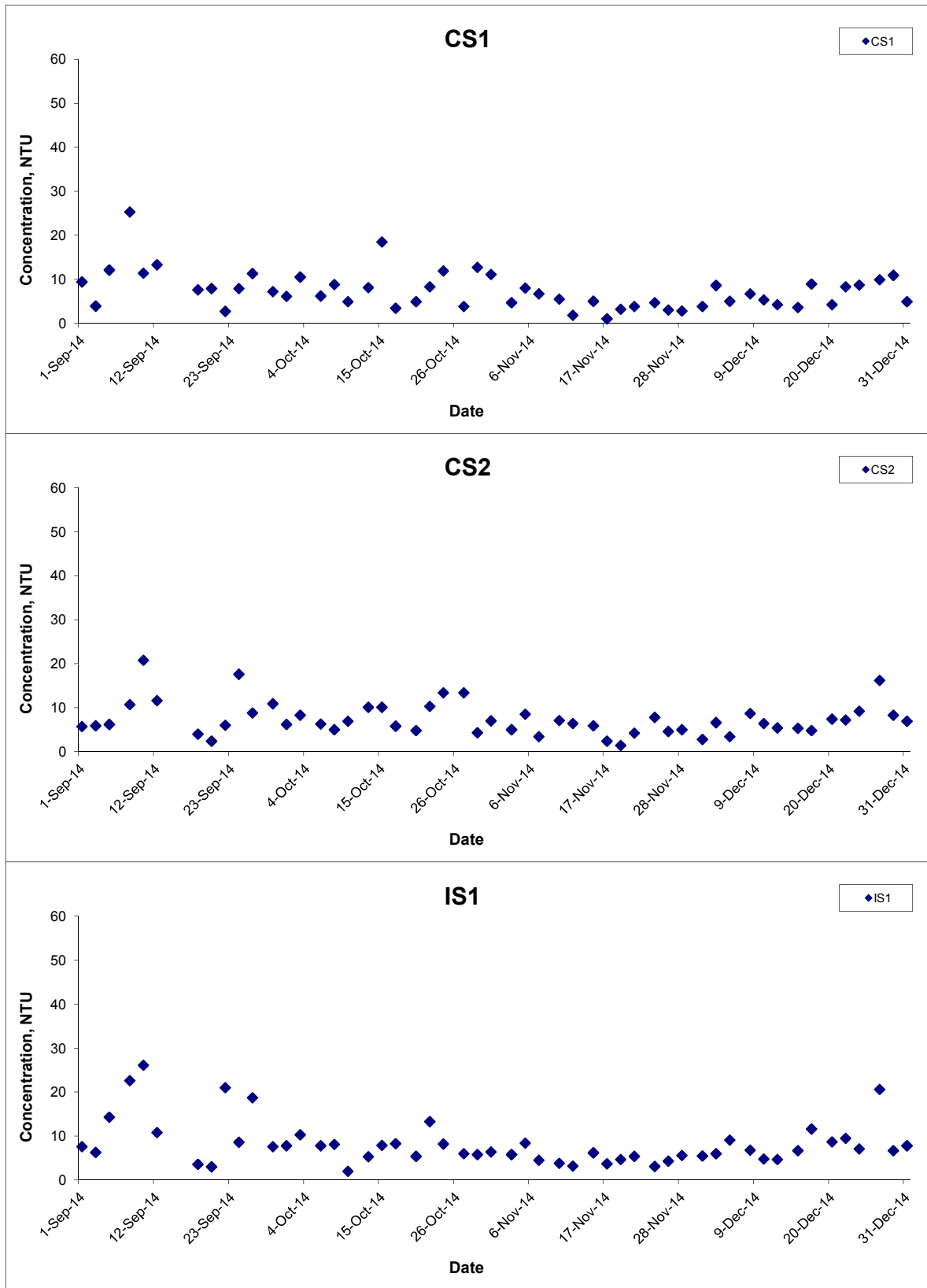
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
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Turbidity (Depth-averaged) at Mid-Ebb Tide



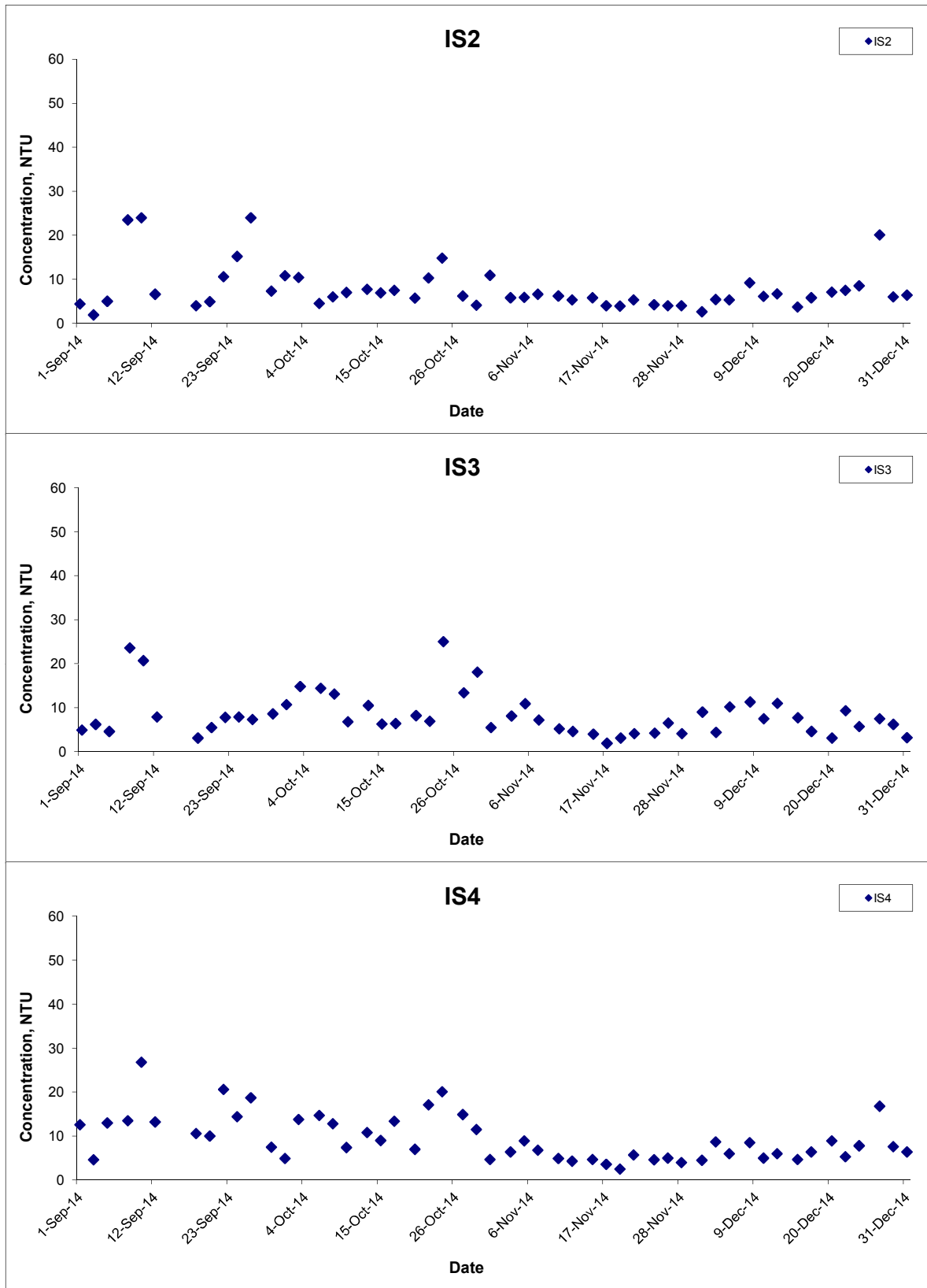
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
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Turbidity (Depth-averaged) at Mid-Ebb Tide



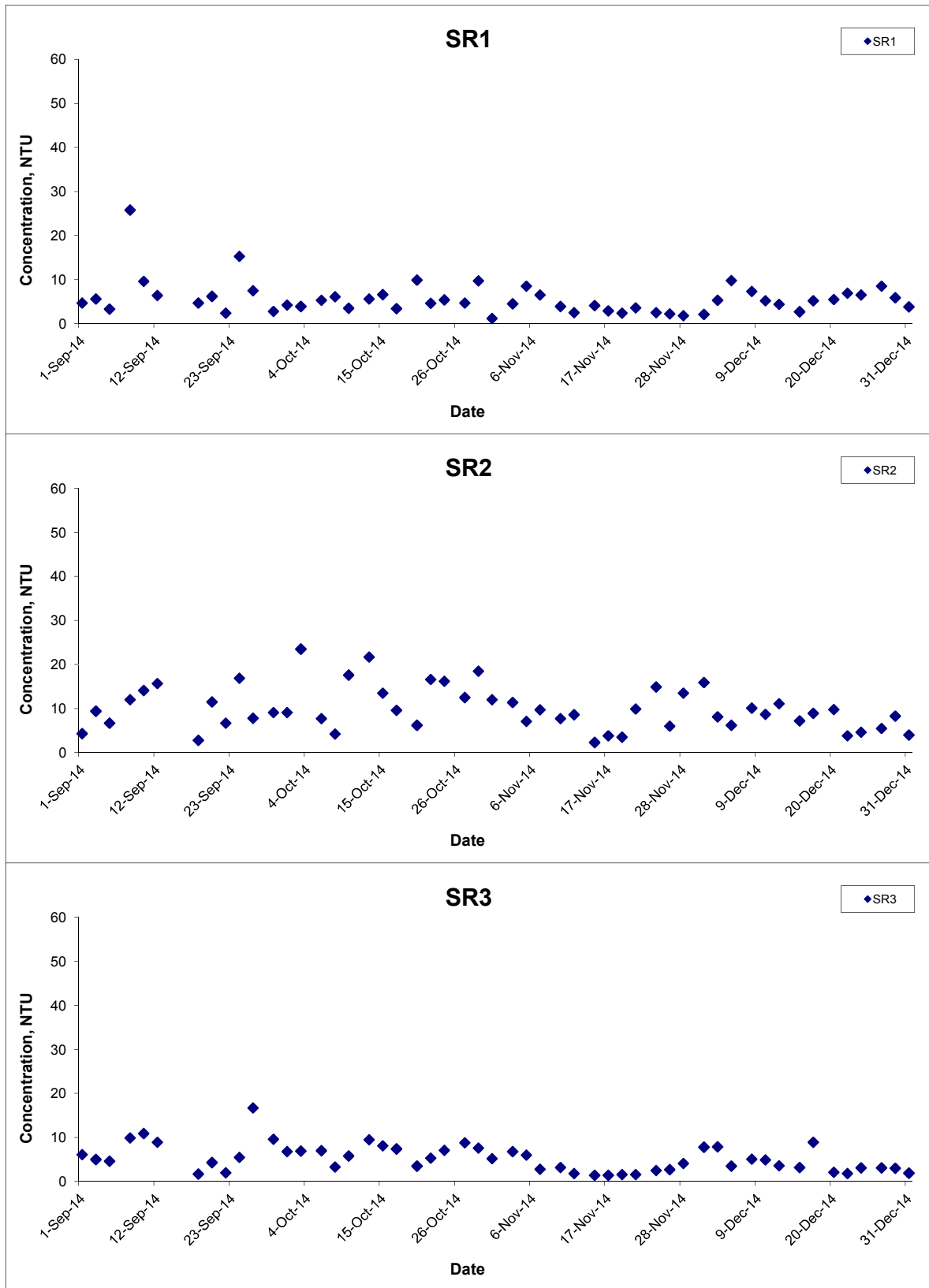
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Turbidity (Depth-averaged) at Mid-Ebb Tide



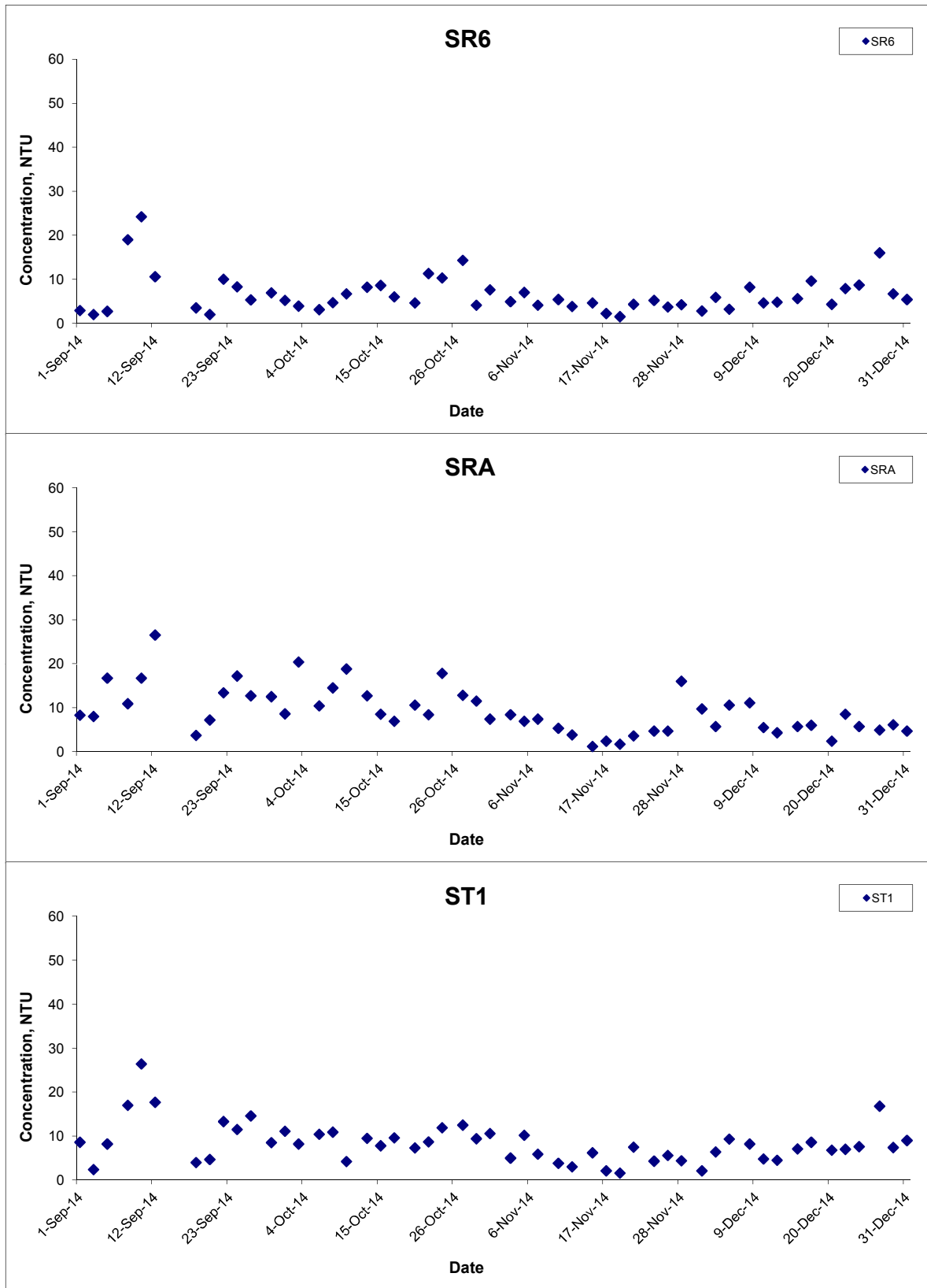
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
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Turbidity (Depth-averaged) at Mid-Ebb Tide



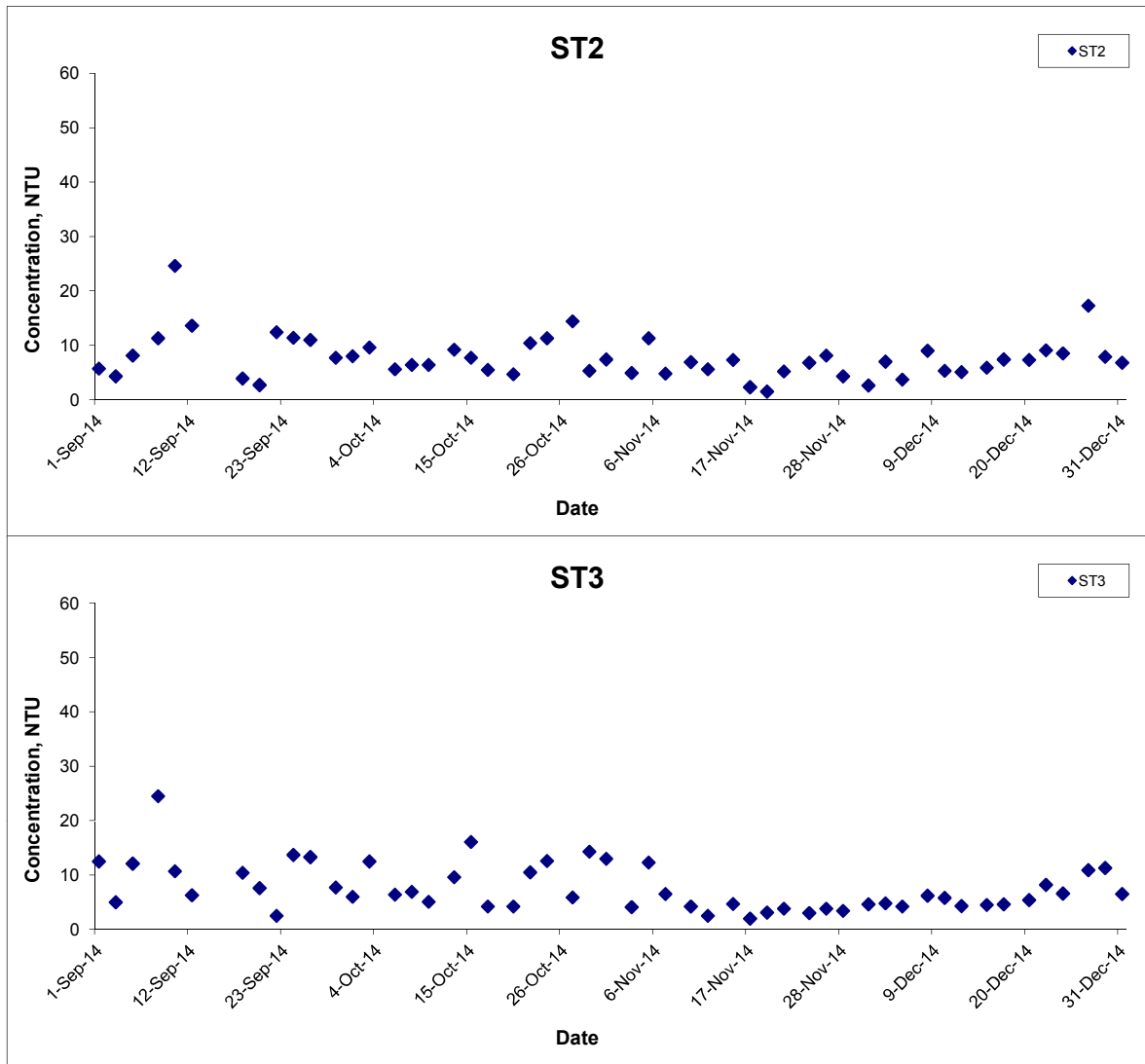
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
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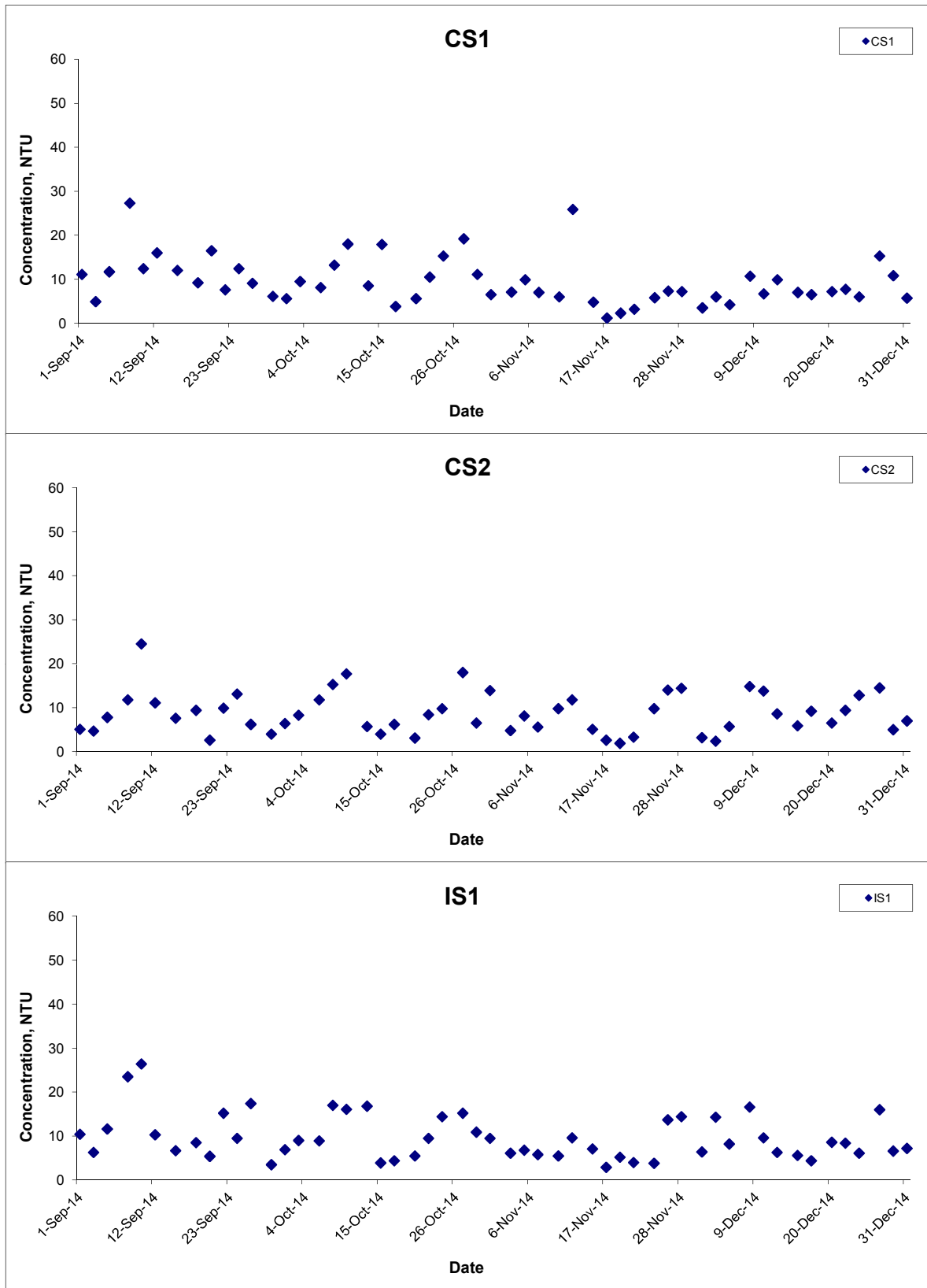


Turbidity (Depth-averaged) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill	Scale	N.T.S	Project No.	MA12014	CINOTECH
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Turbidity (Depth-averaged) at Mid-Flood Tide



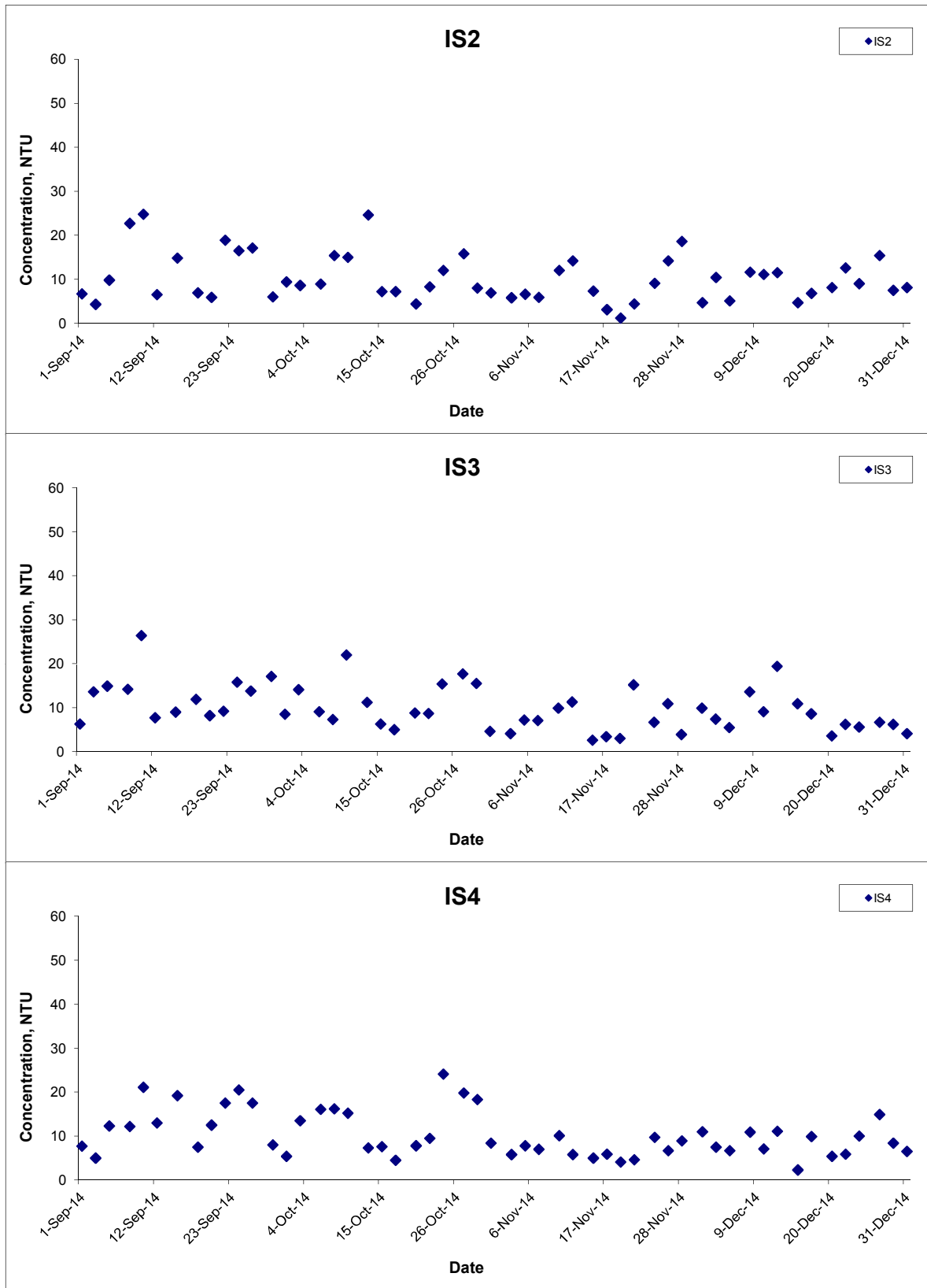
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
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Turbidity (Depth-averaged) at Mid-Flood Tide



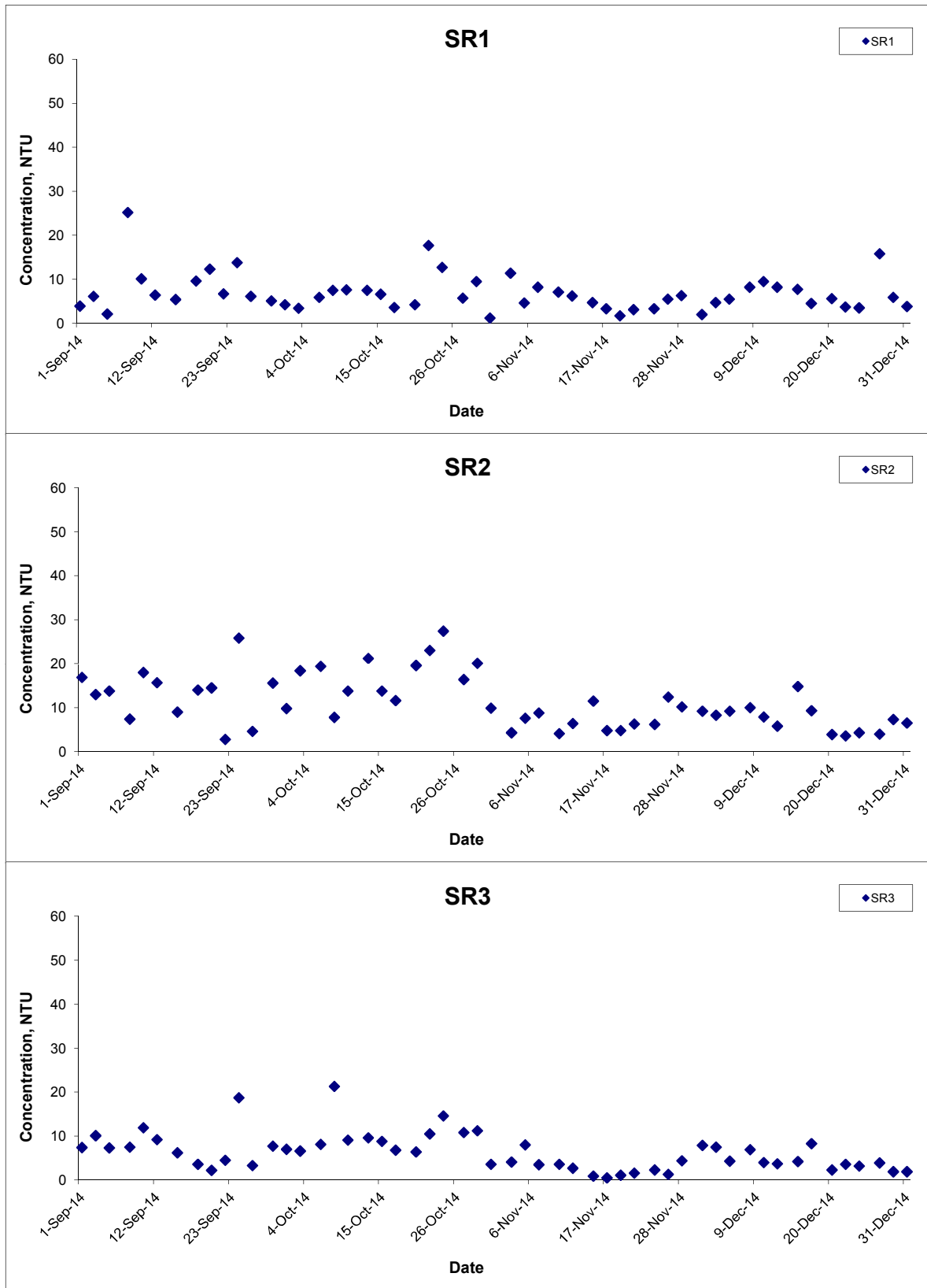
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Turbidity (Depth-averaged) at Mid-Flood Tide



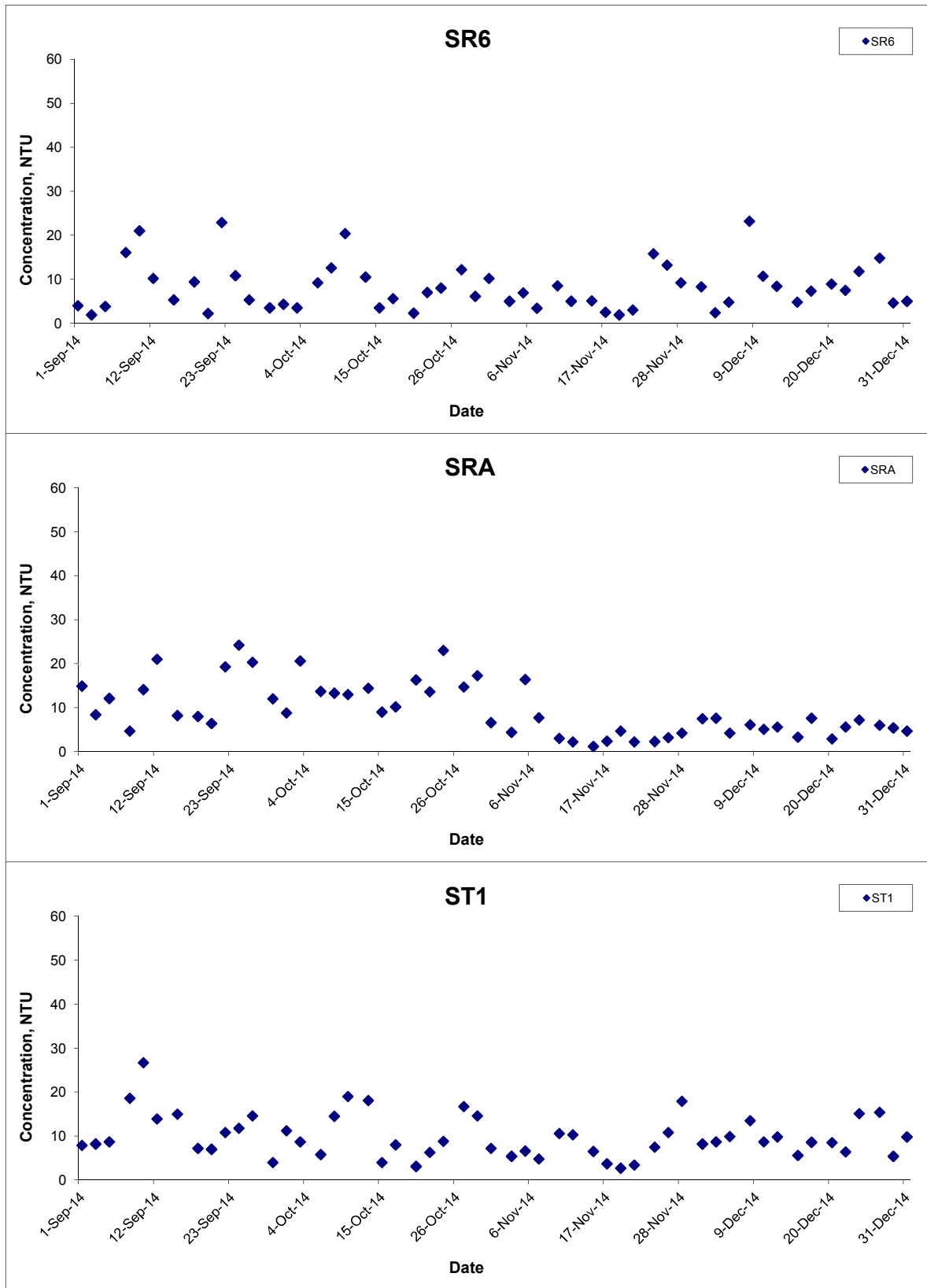
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Turbidity (Depth-averaged) at Mid-Flood Tide



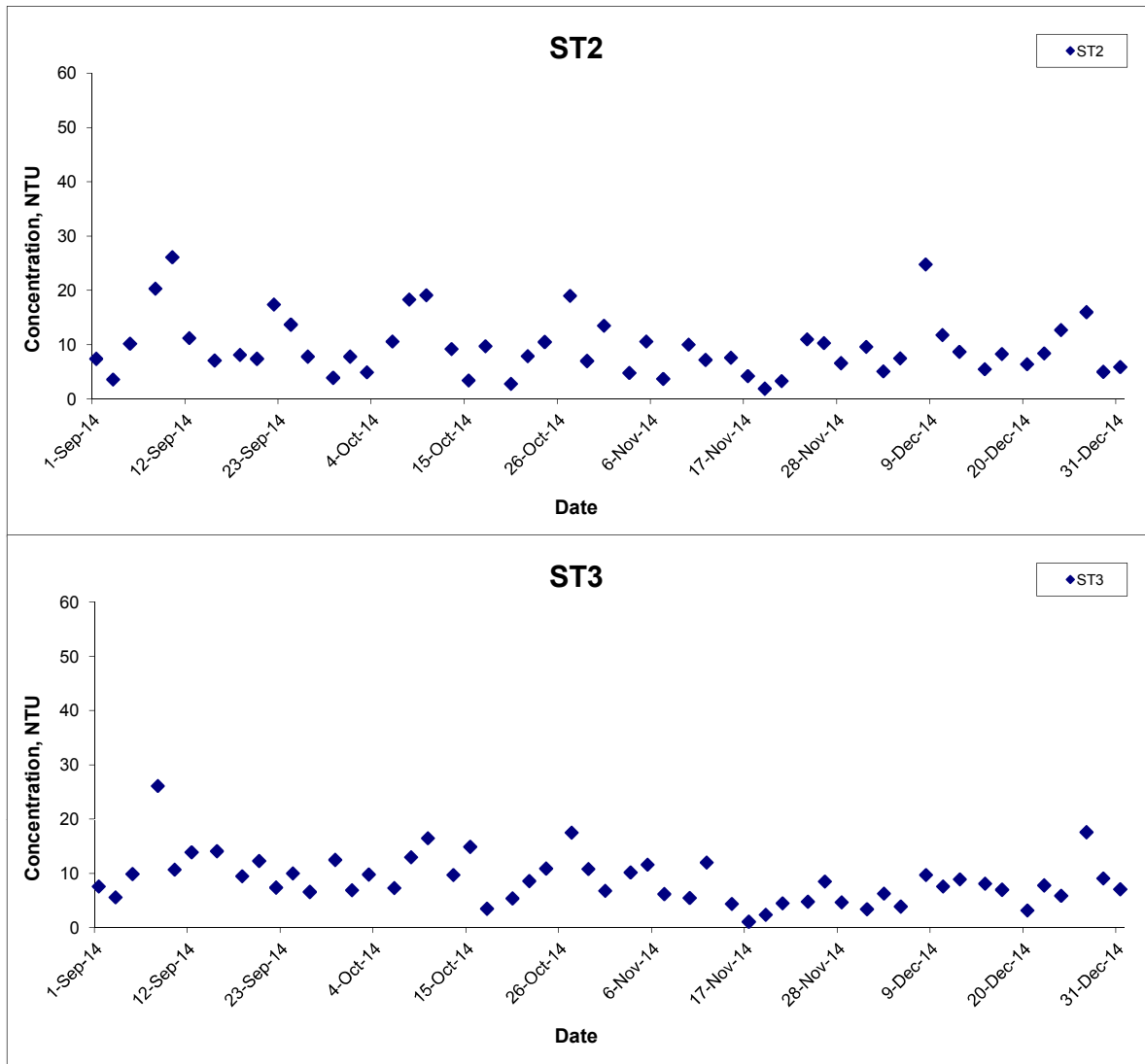
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Turbidity (Depth-averaged) at Mid-Flood Tide



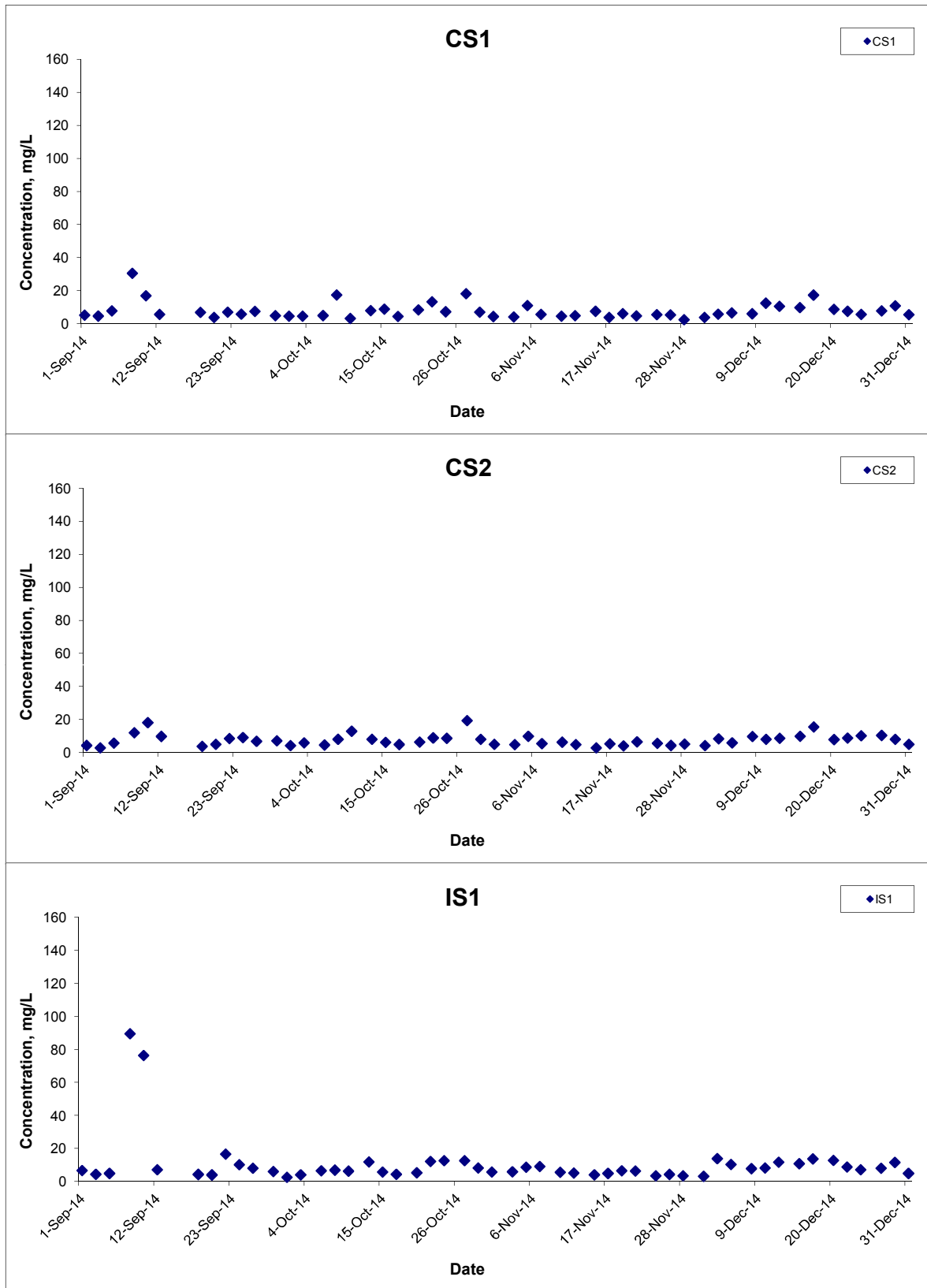
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



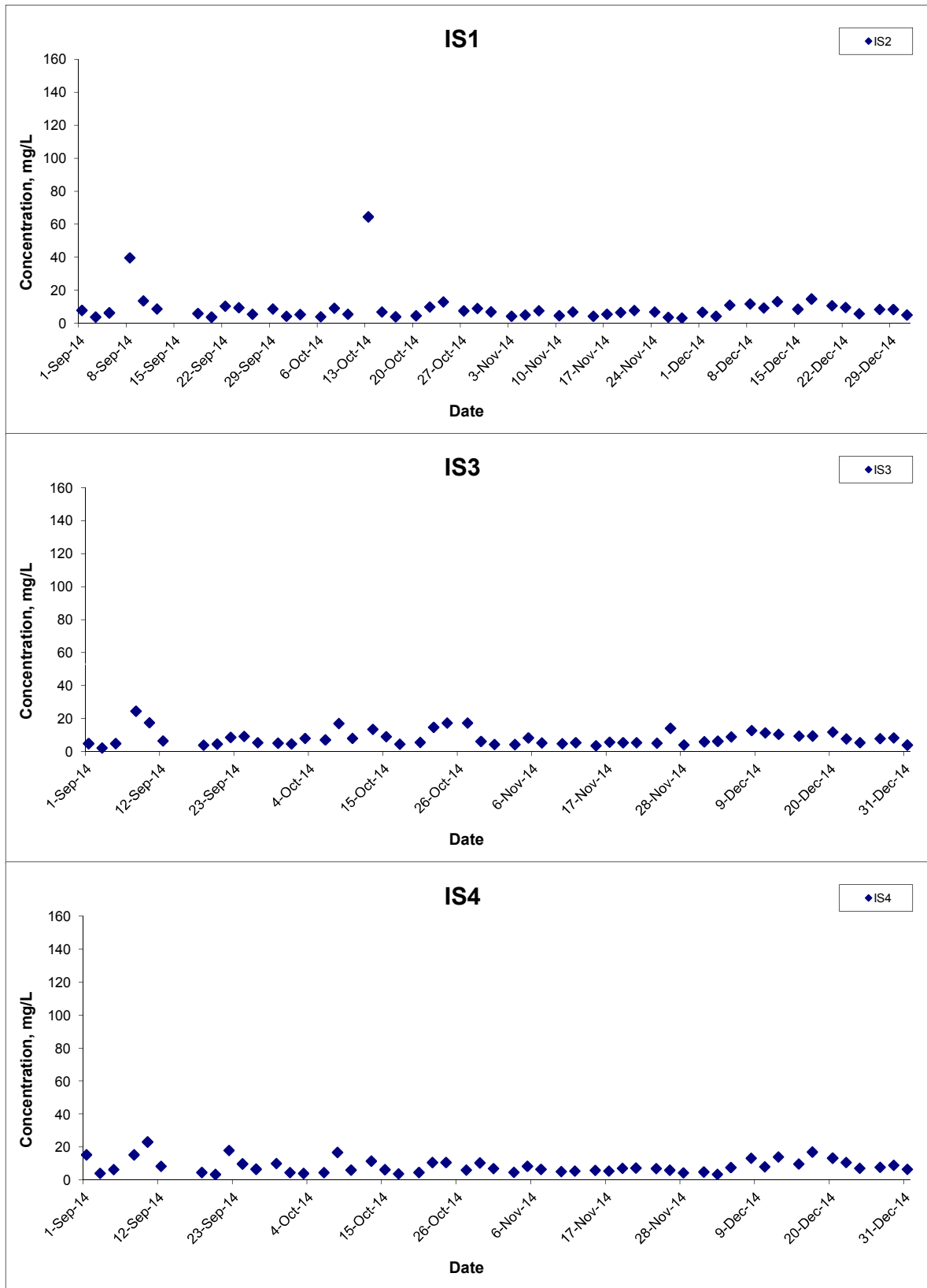
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 Graphical Presentation of Water Quality Monitoring
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



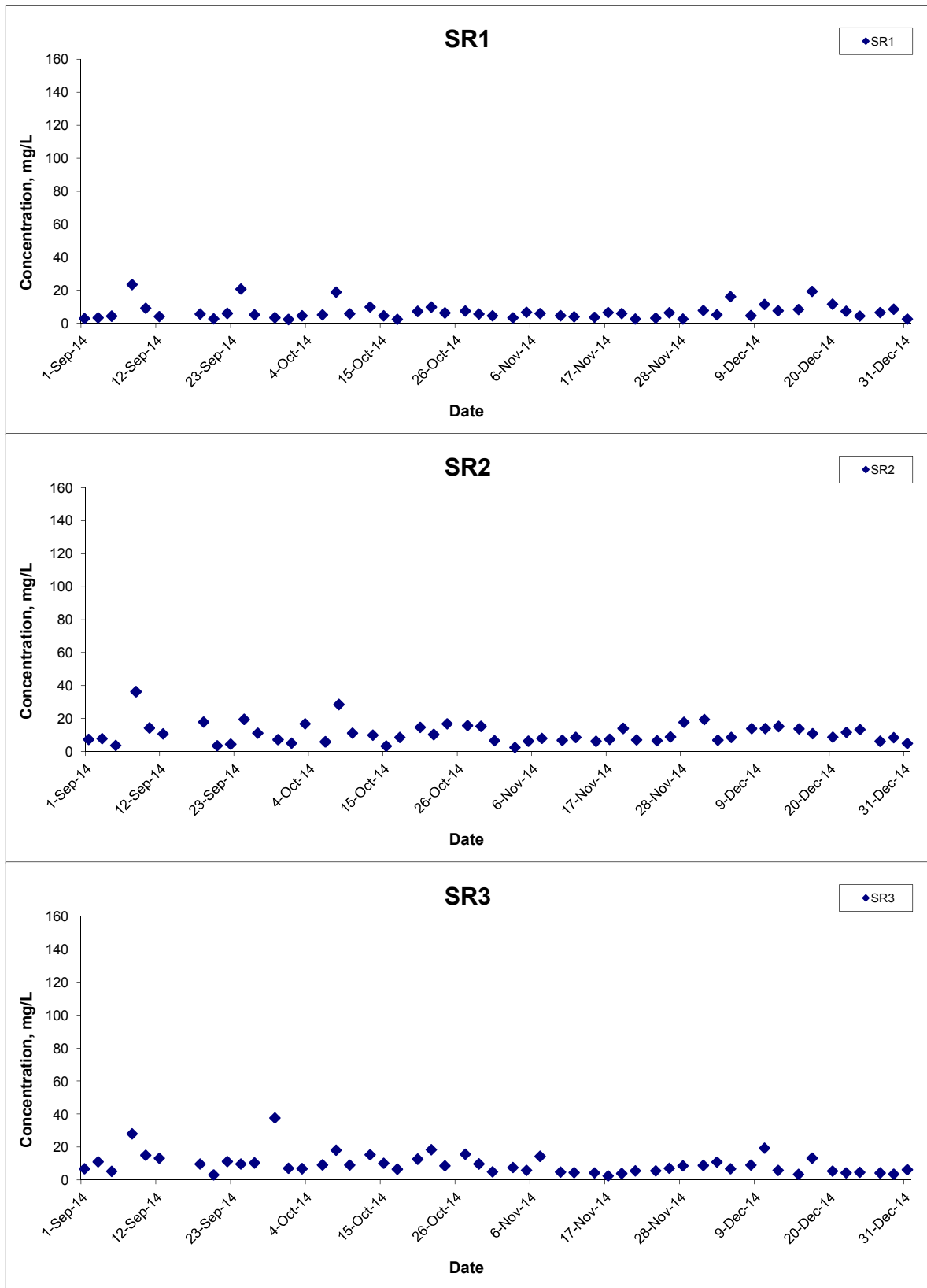
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



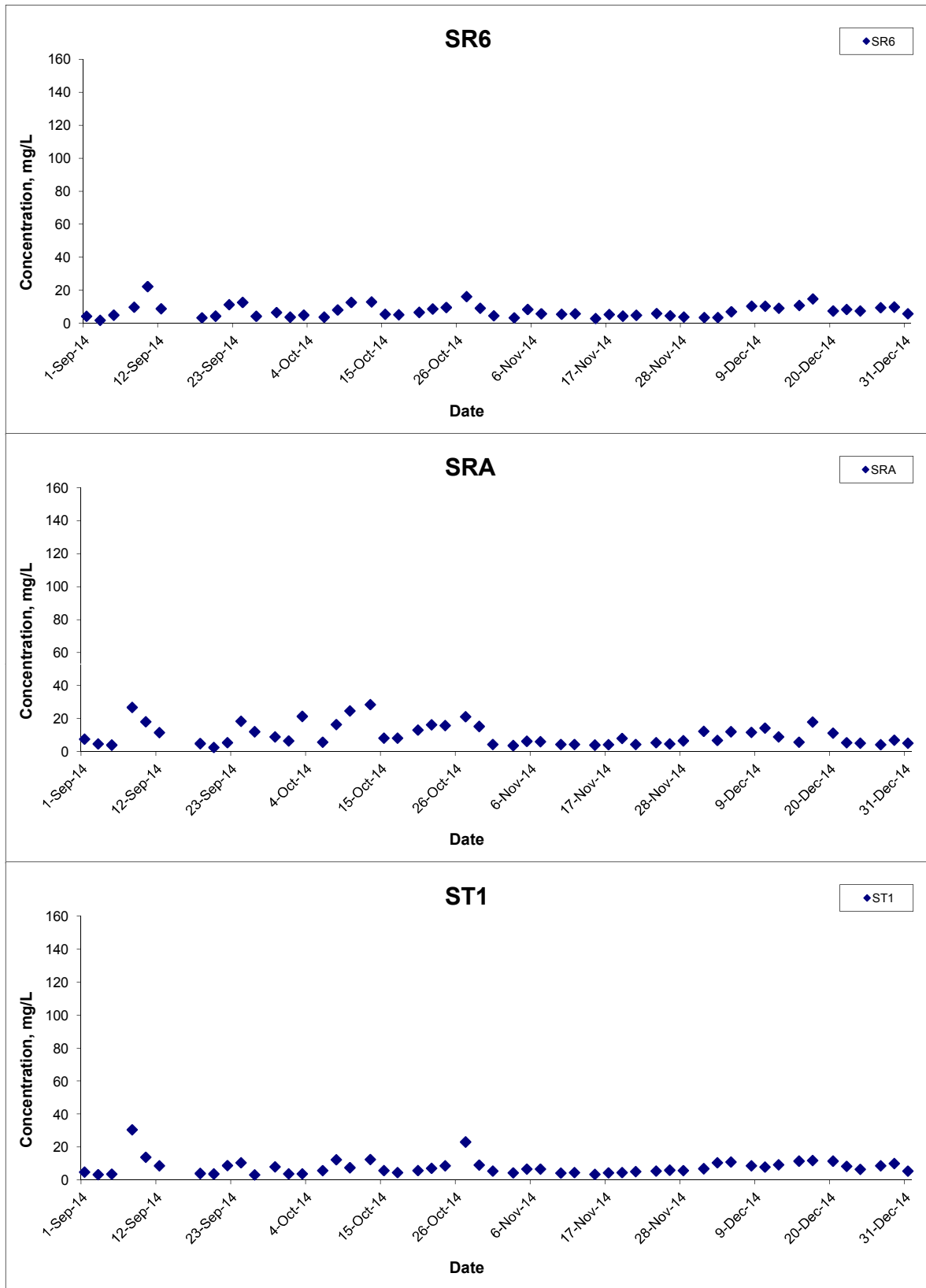
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



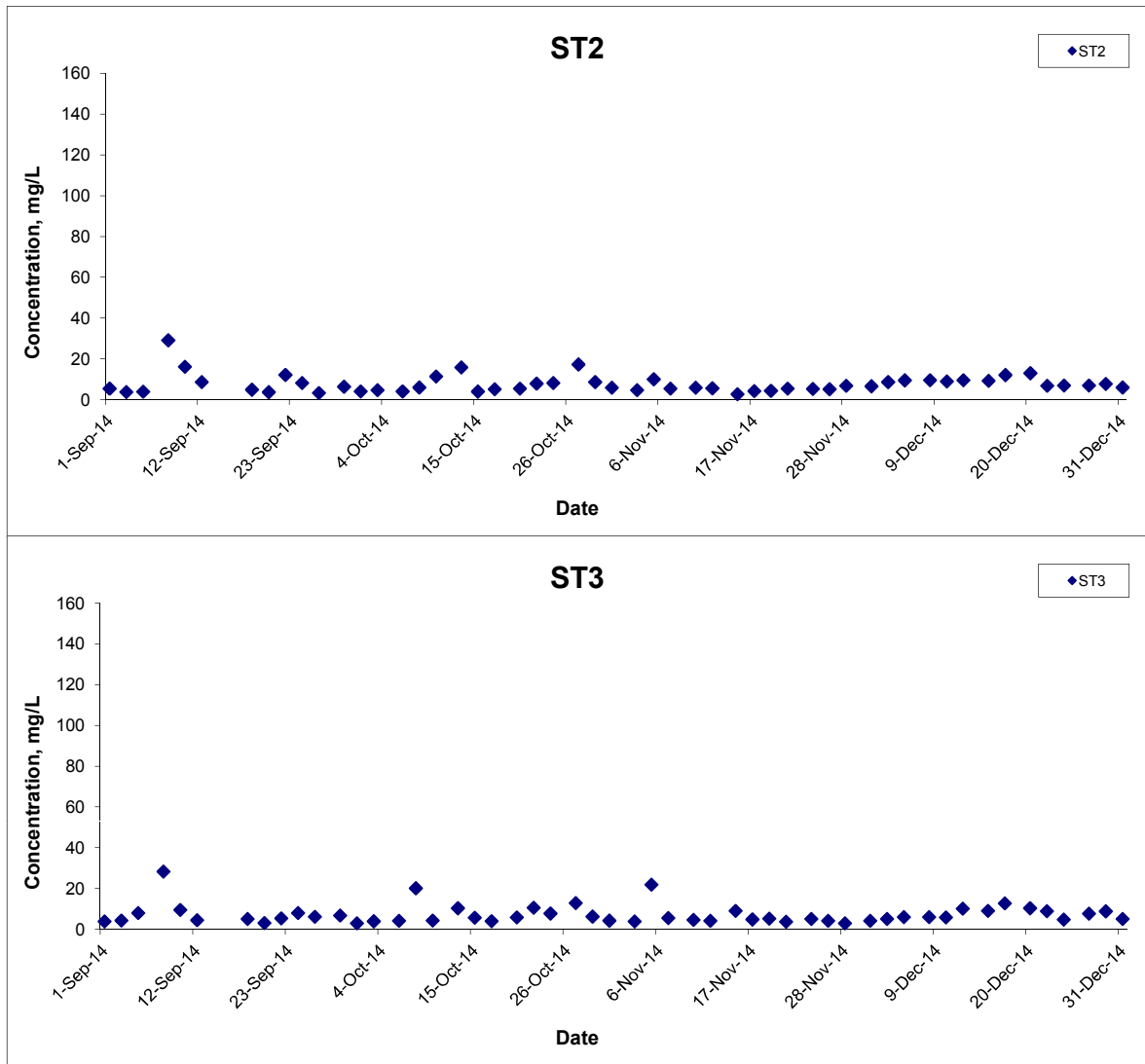
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Scale N.T.S
 Date Dec 14

Project No. MA12014
 Appendix H

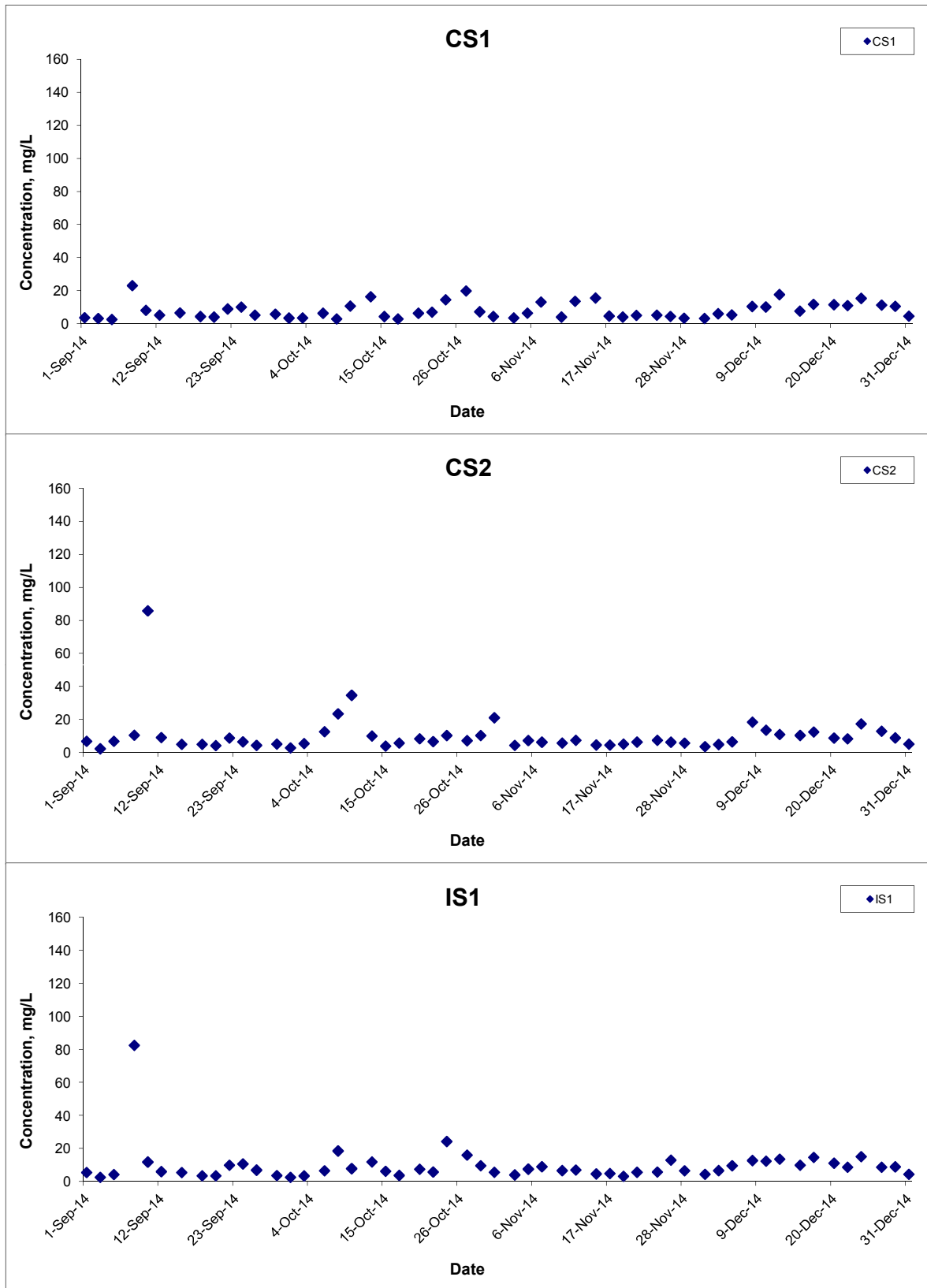


Suspended Solids (Depth-averaged) at Mid-Ebb Tide



Title	Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill	Scale	Project No.	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results	N.T.S	MA12014	
		Date	Appendix	
		Dec 14	H	

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



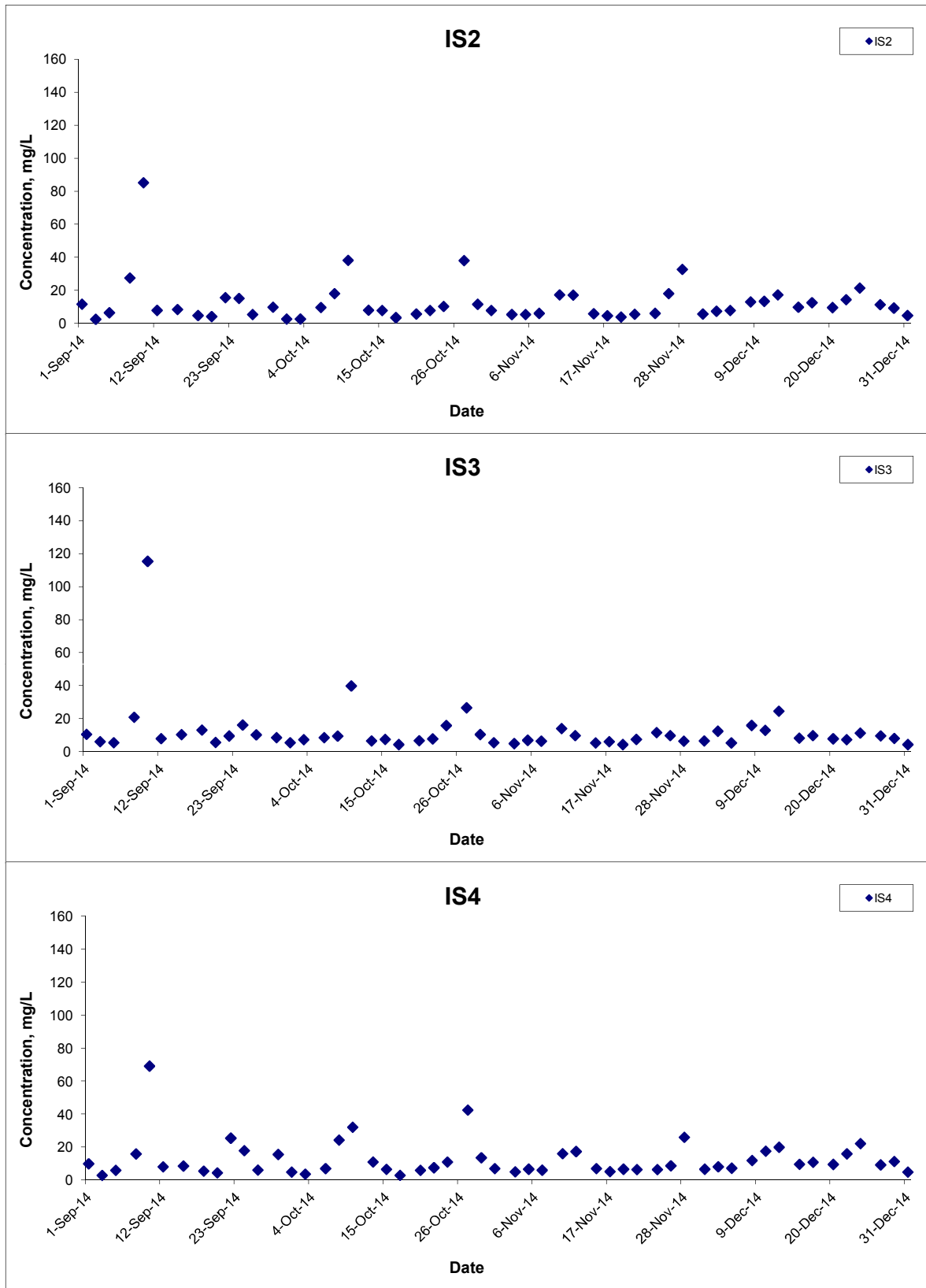
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

Scale N.T.S
 Date Dec 14

Project No. MA12014
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



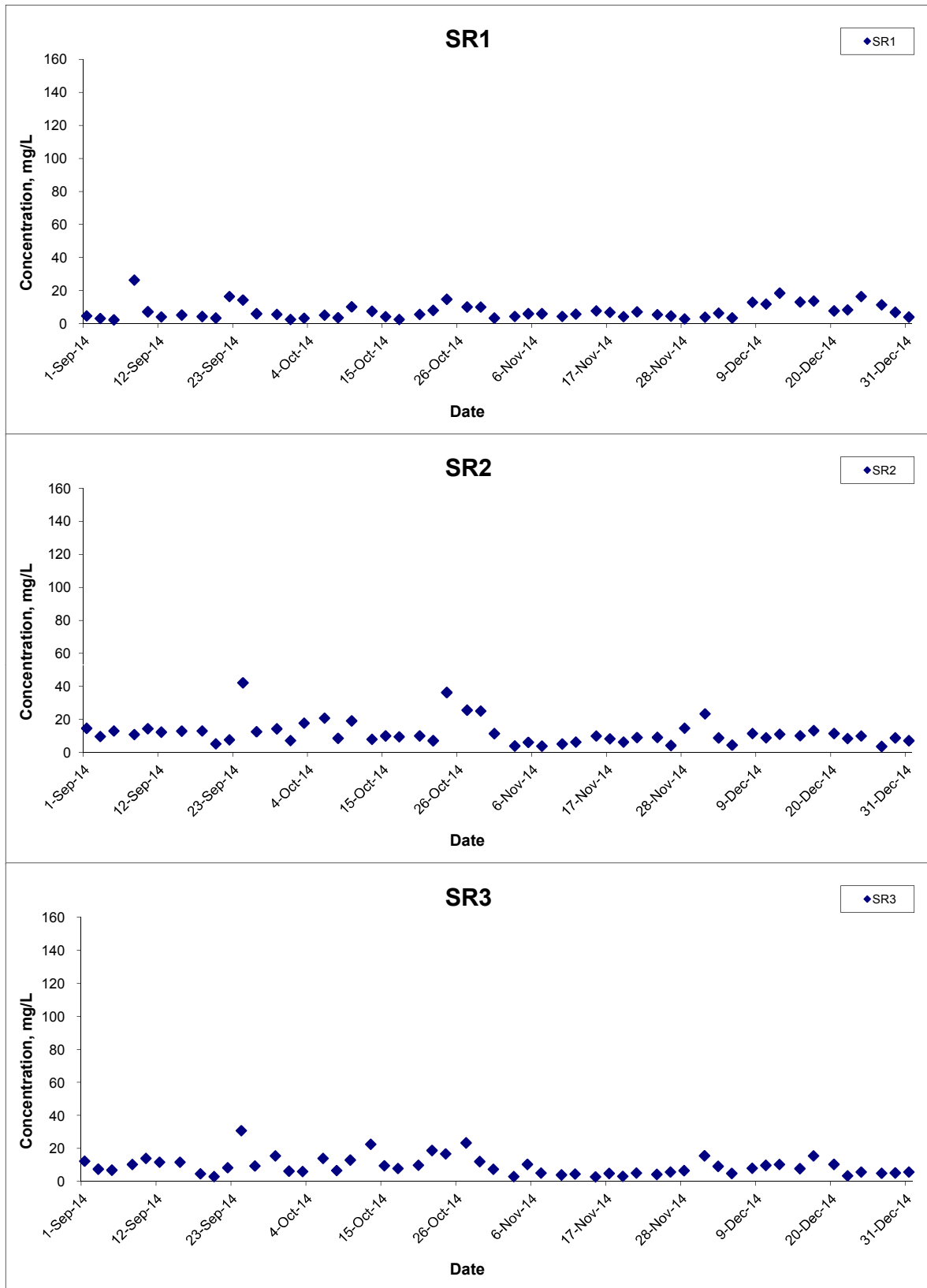
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 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

Scale N.T.S
 Date Dec 14

Project No. MA12014
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



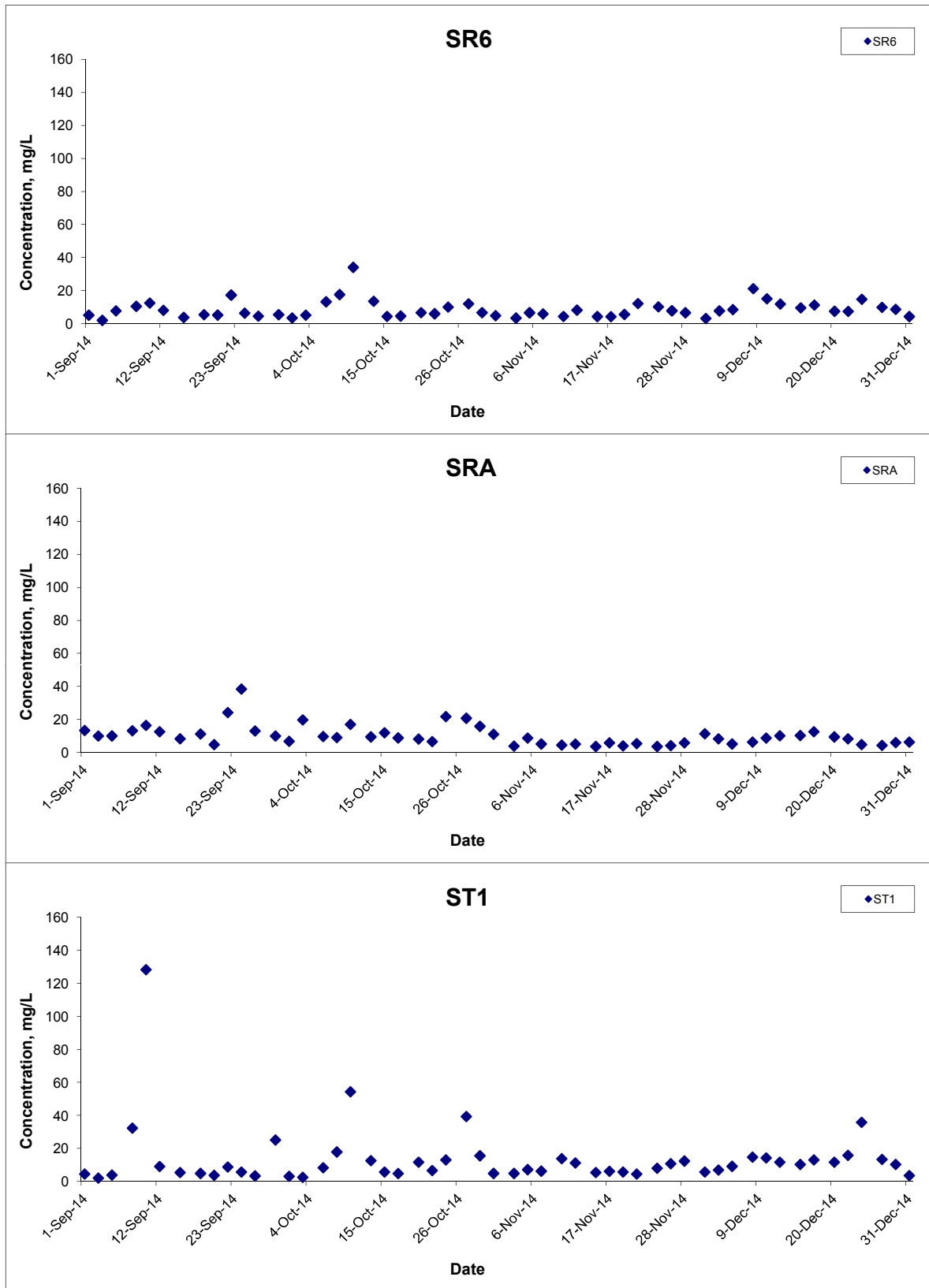
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 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

Scale N.T.S
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Project No. MA12014
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



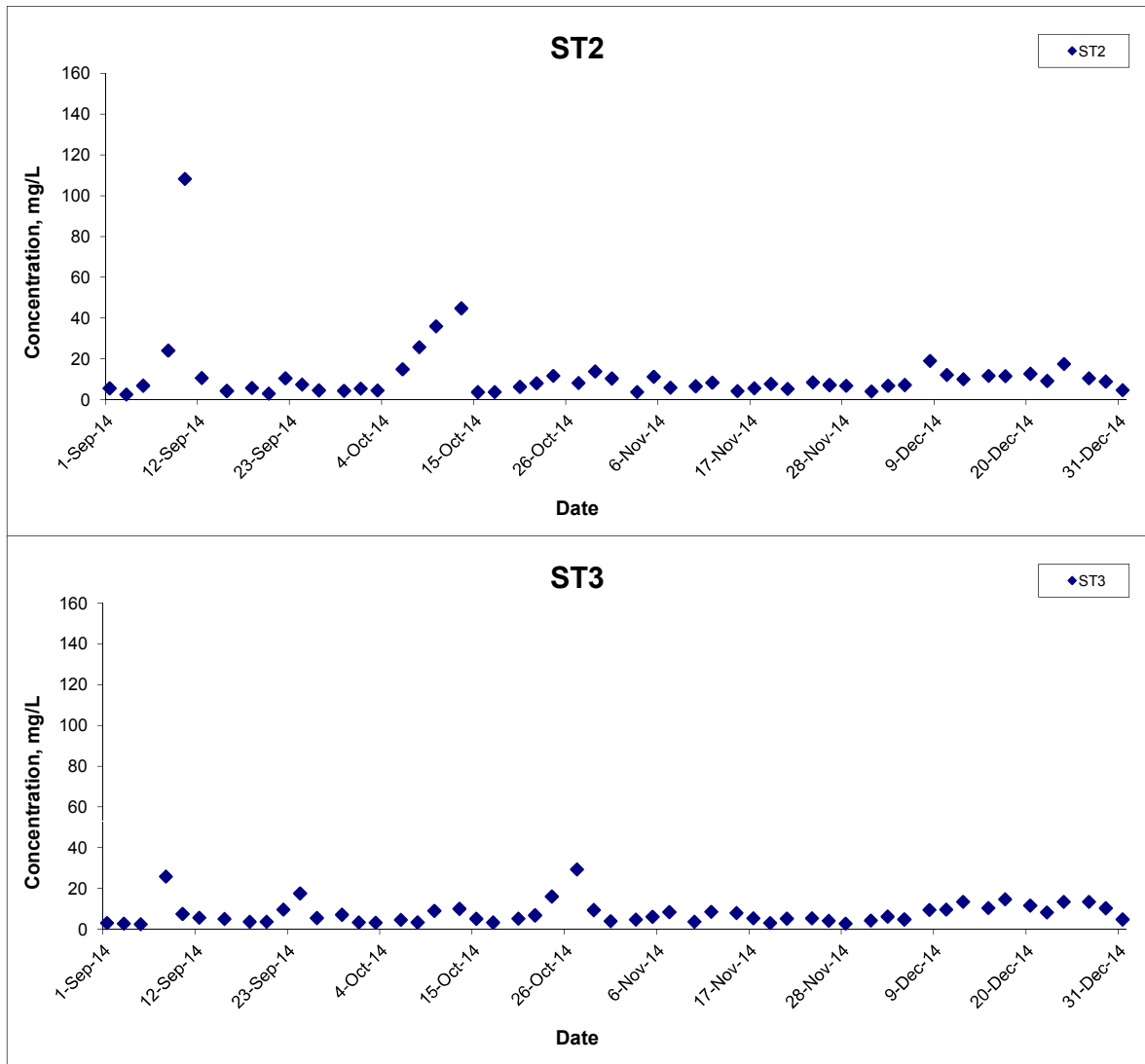
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

Scale N.T.S
 Date Dec 14

Project No. MA12014
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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	Scale	N.T.S	Project No.	MA12014	CINOTECH
	Graphical Presentation of Water Quality Monitoring Results	Date	Dec 14	Appendix	H	

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

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

23rd Monthly Progress Report (December 2014)

Submitted by

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

27 December 2014

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 23rd monthly progress report under the HKLR09 construction phase dolphin monitoring programme, summarizing the results of the survey findings during the month of December 2014.

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 16 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung

2012). 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 December 2014, two complete sets of systematic line-transect vessel surveys were conducted on the 3rd and 10th, 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 66.37 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). Moreover, the total survey effort conducted on primary lines (the horizontal lines perpendicular to the coastlines) was 43.64 km, while the effort on secondary lines (the lines connecting the primary lines) was 22.73 km.
- 3.1.3. During the monitoring surveys in December 2014, nine groups of 58 Chinese White Dolphins were sighted. All except one sighting were made during on-effort search, and three of the eight on-effort sightings were made on primary lines (Appendix II). One of the dolphin groups was associated with an operating purse-seiner.
- 3.1.4. Distribution of the nine dolphin sightings made during December's surveys is shown in Figure 4. These sightings ranged from Tai O Peninsula in the north to Fan Lau in the south, with no particular concentration (Figure 4). All dolphin groups were not located in the proximity of the HKLR09 alignment (Figure 4).
- 3.1.5. During the December'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 December's surveys in West Lantau (WL)

		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
West	Set 1: December 3 rd	13.8	110.3
Lantau	Set 2: December 10 th	0.0	0.0

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

	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	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
West Lantau	6.9	12.1	55.0	66.3

3.1.6. The average group size of Chinese White Dolphins was 6.44 individuals per group during the December's surveys, which was much higher than the ones in previous months of monitoring surveys. The higher average was attributed by two large groups of 14 dolphins each as well as three medium groups of 5-7 dolphins sighted during this month of monitoring surveys.

3.2. Photo-identification Work

3.2.1. A total of 19 different individual Chinese White Dolphins were identified 24 times during the December's surveys, and five of these individuals was sighted more than once (Appendices III and IV).

3.2.2. Only one of the 24 individuals (WL137) was associated with her calf during her re-sighting in December's 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. December 2014 - February 2015) 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. 2012. Monitoring of marine mammals in Hong Kong waters – data collection: final report (2011-12). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department of Hong Kong SAR Government, 120 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.

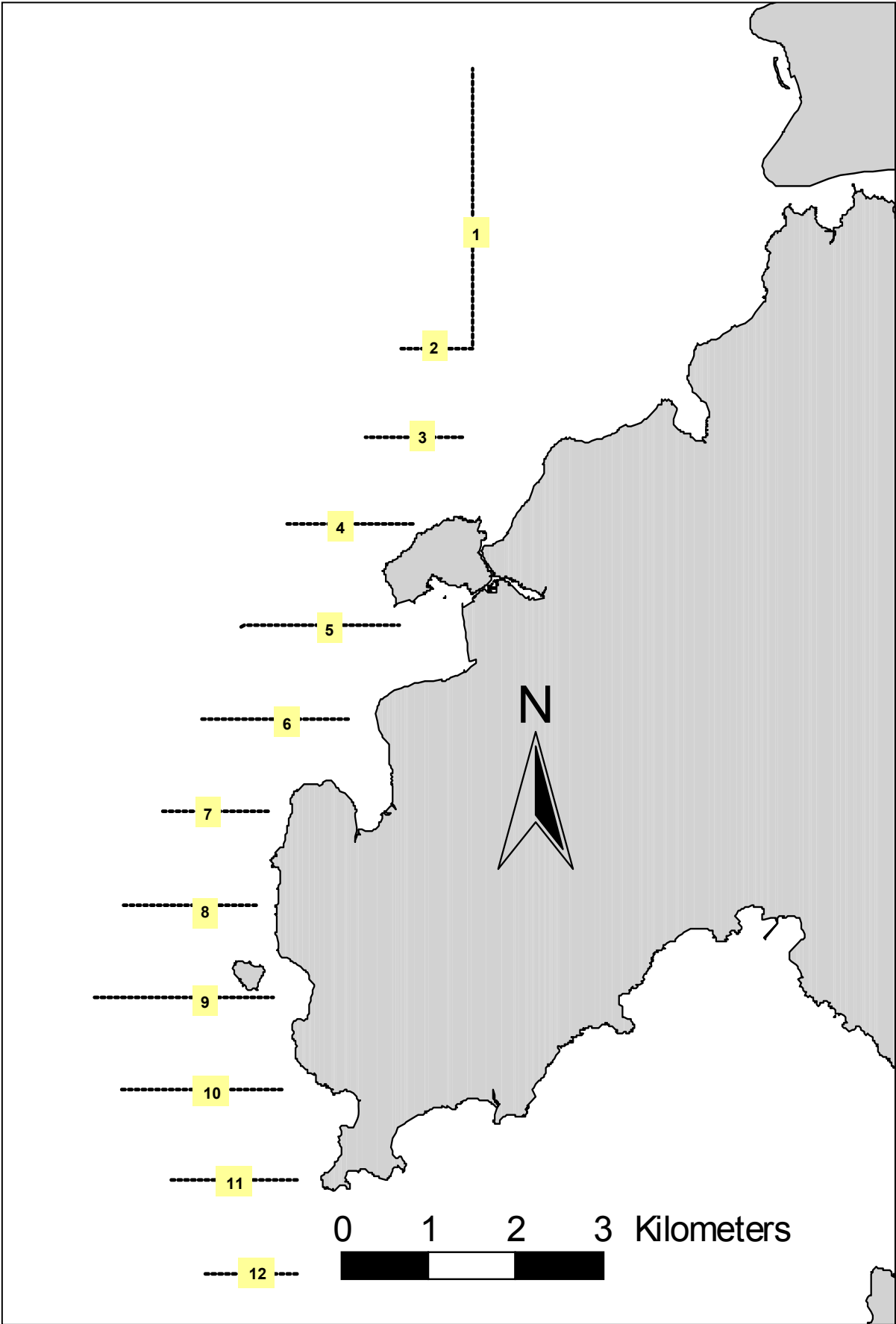


Figure 1. Transect Line Layout in West Lantau Survey Areas

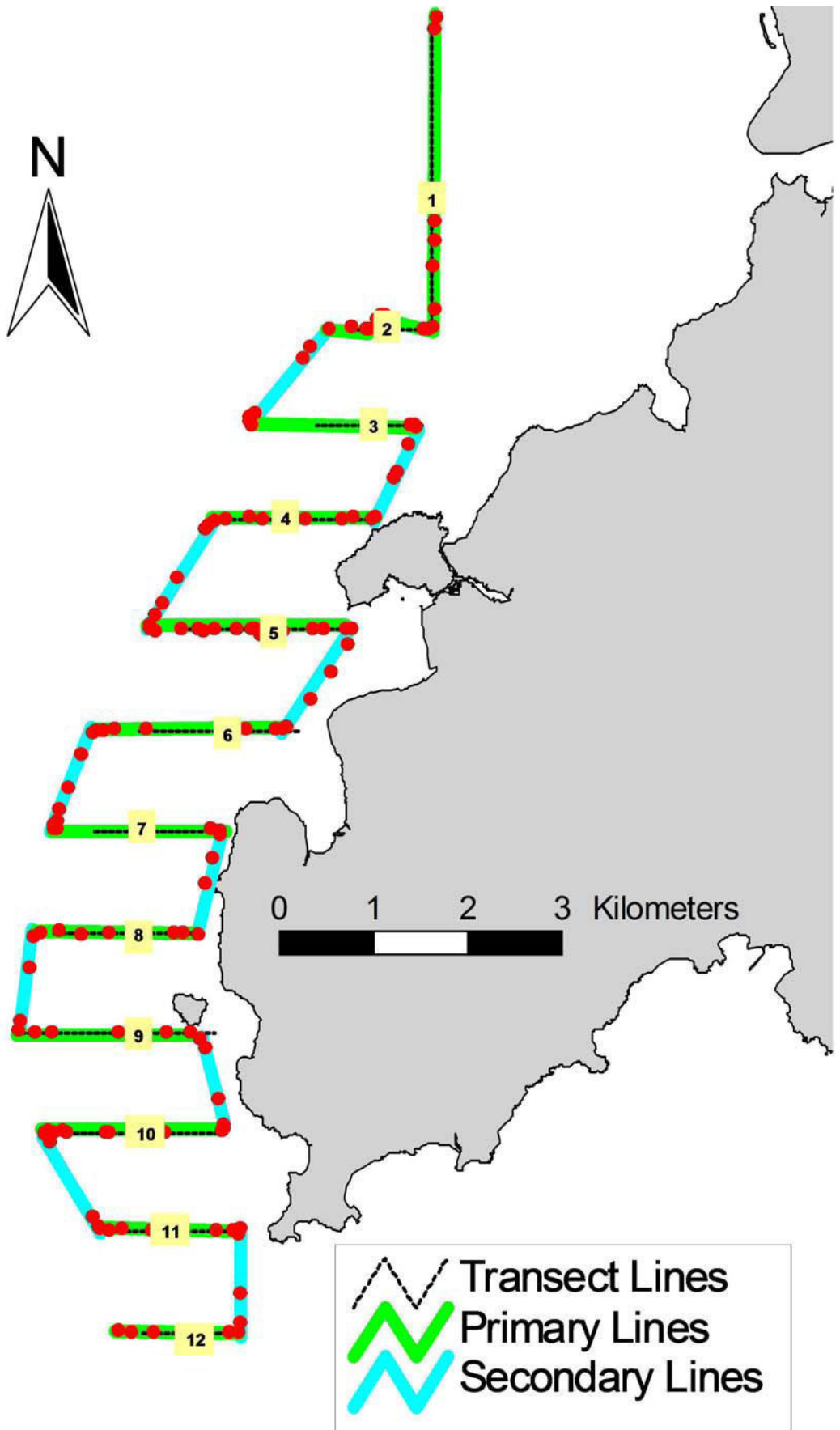


Figure 2. Survey Route on December 3rd, 2014 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

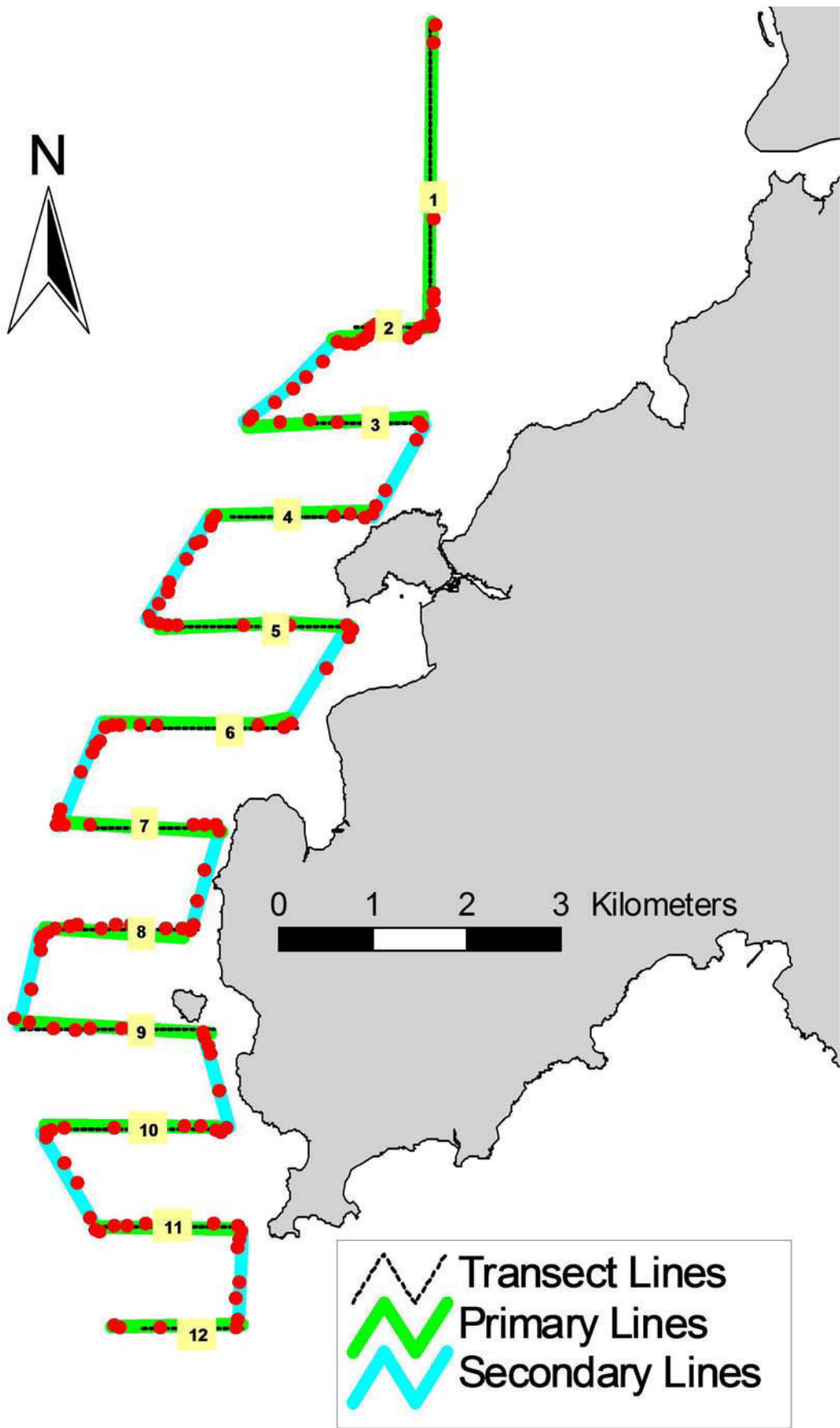


Figure 3. Survey Route on December 10th, 2014 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

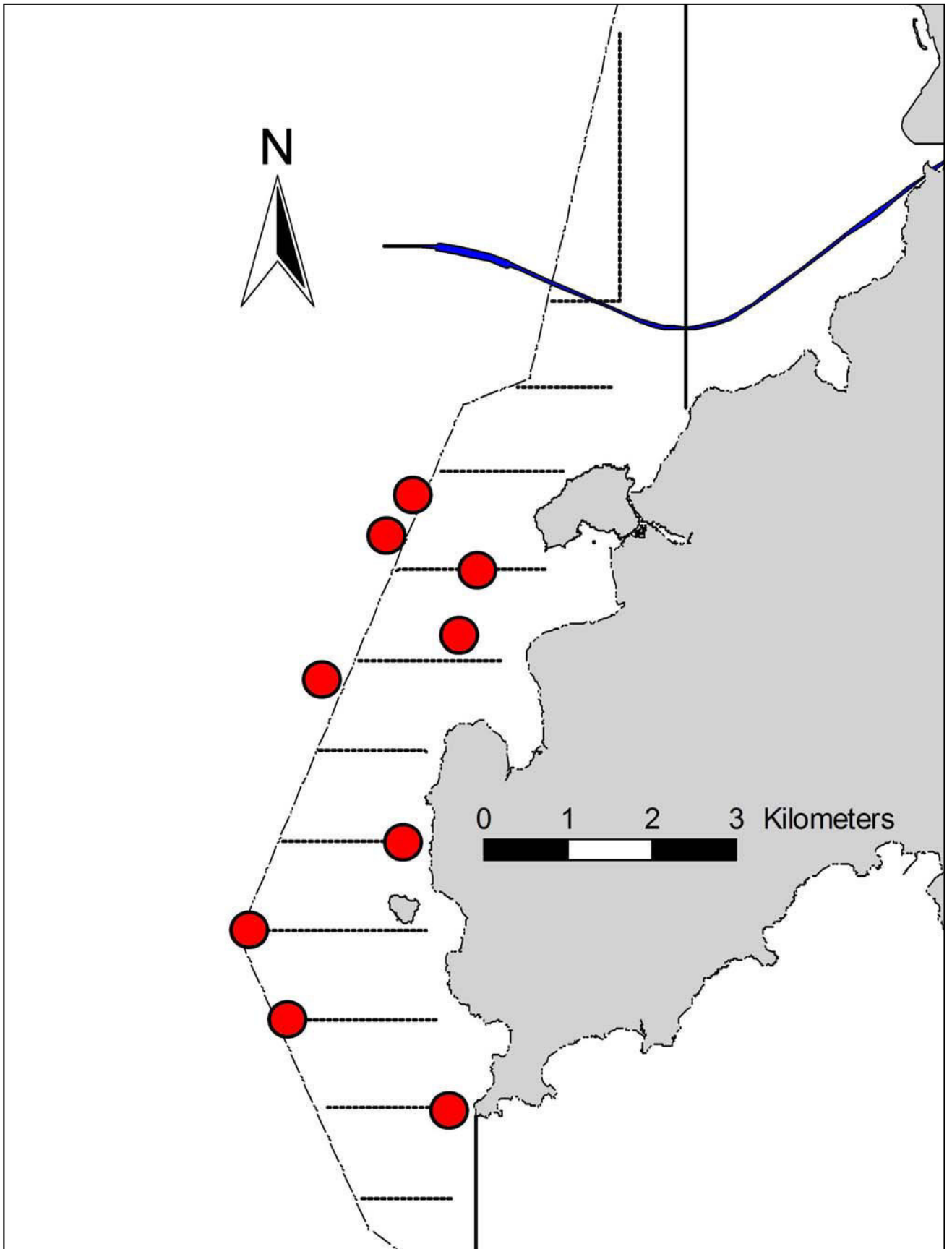


Figure 4. Distribution of Chinese White Dolphin Sighting during December 2014 HKLR09 Monitoring Surveys

Appendix I. HKLR09 Survey Effort Database (December 2014)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
3-Dec-14	W LANTAU	2	11.03	WINTER	STANDARD31516	HKLR	P
3-Dec-14	W LANTAU	3	10.72	WINTER	STANDARD31516	HKLR	P
3-Dec-14	W LANTAU	1	1.75	WINTER	STANDARD31516	HKLR	S
3-Dec-14	W LANTAU	2	4.65	WINTER	STANDARD31516	HKLR	S
3-Dec-14	W LANTAU	3	5.17	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	1	4.01	WINTER	STANDARD31516	HKLR	P
10-Dec-14	W LANTAU	2	13.09	WINTER	STANDARD31516	HKLR	P
10-Dec-14	W LANTAU	3	4.79	WINTER	STANDARD31516	HKLR	P
10-Dec-14	W LANTAU	0	0.30	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	1	1.81	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	2	7.15	WINTER	STANDARD31516	HKLR	S
10-Dec-14	W LANTAU	3	1.90	WINTER	STANDARD31516	HKLR	S

Appendix II. HKLR09 Chinese White Dolphin Sighting Database (December 2014)

(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
03-Dec-14	1	1045	5	W LANTAU	3	187	ON	HKLR	806440	801724	WINTER	NONE	S
03-Dec-14	2	1111	14	W LANTAU	3	67	ON	HKLR	807441	799809	WINTER	NONE	P
03-Dec-14	3	1204	7	W LANTAU	2	162	ON	HKLR	809431	801174	WINTER	NONE	P
03-Dec-14	4	1306	3	W LANTAU	2	236	ON	HKLR	812452	802057	WINTER	NONE	P
03-Dec-14	5	1327	14	W LANTAU	2	ND	OFF	HKLR	811722	801829	WINTER	PURSE SEINE	
10-Dec-14	1	1042	6	W LANTAU	0	77	ON	HKLR	813284	801286	WINTER	NONE	S
10-Dec-14	2	1056	4	W LANTAU	2	86	ON	HKLR	812842	800976	WINTER	NONE	S
10-Dec-14	3	1128	3	W LANTAU	3	21	ON	HKLR	811249	800209	WINTER	NONE	S
10-Dec-14	4	1205	2	W LANTAU	3	69	ON	HKLR	808438	799357	WINTER	NONE	S

Appendix III. Individual dolphins identified during HKLR09 monitoring surveys in December 2014

ID#	DATE	STG#	AREA
CH12	03/12/14	5	W LANTAU
NL49	03/12/14	4	W LANTAU
NL105	03/12/14	4	W LANTAU
NL156	03/12/14	4	W LANTAU
NL188	03/12/14	5	W LANTAU
NL206	03/12/14	5	W LANTAU
NL259	10/12/13	3	W LANTAU
NL285	03/12/14	2	W LANTAU
SL40	03/12/14	2	W LANTAU
	10/12/13	1	W LANTAU
WL42	03/12/14	5	W LANTAU
WL118	03/12/14	3	W LANTAU
WL128	03/12/14	5	W LANTAU
WL129	03/12/14	5	W LANTAU
WL137	03/12/14	1	W LANTAU
	10/12/13	1	W LANTAU
WL144	03/12/14	3	W LANTAU
WL168	03/12/14	4	W LANTAU
	03/12/14	5	W LANTAU
WL180	10/12/13	1	W LANTAU
WL210	03/12/14	2	W LANTAU
	03/12/14	5	W LANTAU
WL215	10/12/13	1	W LANTAU
	10/12/13	2	W LANTAU



WL137_20141203_1



NL285_20141203_2



SL40_20141203_2



WL210_20141203_2



WL118_20141203_3



WL144_20141203_3



NL49_20141203_4



NL105_20141203_4



NL156_20141203_4



SL40_20141210_1



WL137_20141210_1



WL180_20141210_1



WL215_20141210_1



WL215_20141210_2



NL259_20141210_3



Appendix IV. (cont'd)

APPENDIX J
WIND DATA

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
1-Dec-2014	00:00	2.1	ENE
1-Dec-2014	01:00	2	NE
1-Dec-2014	02:00	2.1	NNE
1-Dec-2014	03:00	1.9	NNE
1-Dec-2014	04:00	1.1	NNE
1-Dec-2014	05:00	1.2	E
1-Dec-2014	06:00	1.2	ESE
1-Dec-2014	07:00	1.6	ENE
1-Dec-2014	08:00	1.5	ENE
1-Dec-2014	09:00	1.9	NE
1-Dec-2014	10:00	2.3	NNE
1-Dec-2014	11:00	1.9	ENE
1-Dec-2014	12:00	2.4	E
1-Dec-2014	13:00	3	NNE
1-Dec-2014	14:00	2.5	NE
1-Dec-2014	15:00	3.1	NNE
1-Dec-2014	16:00	2.6	NNE
1-Dec-2014	17:00	3	NNE
1-Dec-2014	18:00	2.5	NNE
1-Dec-2014	19:00	2.3	NNE
1-Dec-2014	20:00	2	NE
1-Dec-2014	21:00	1.7	NNE
1-Dec-2014	22:00	2.7	NE
1-Dec-2014	23:00	2.4	NE
2-Dec-2014	00:00	2.4	NE
2-Dec-2014	01:00	2.1	NE
2-Dec-2014	02:00	2.1	NE
2-Dec-2014	03:00	1.6	ENE
2-Dec-2014	04:00	1.5	NE
2-Dec-2014	05:00	1.3	NE
2-Dec-2014	06:00	1.1	WNW
2-Dec-2014	07:00	1.2	NE
2-Dec-2014	08:00	1.6	NE
2-Dec-2014	09:00	2.1	ENE
2-Dec-2014	10:00	2.5	NNE
2-Dec-2014	11:00	2.5	ESE
2-Dec-2014	12:00	2.9	NE
2-Dec-2014	13:00	2.7	ESE
2-Dec-2014	14:00	2.7	SSE
2-Dec-2014	15:00	3.1	SSE
2-Dec-2014	16:00	2.2	ESE
2-Dec-2014	17:00	2.3	ENE
2-Dec-2014	18:00	2.2	ENE
2-Dec-2014	19:00	1.5	ENE
2-Dec-2014	20:00	1.8	NE
2-Dec-2014	21:00	1.9	ENE
2-Dec-2014	22:00	1.7	NE
2-Dec-2014	23:00	2.2	NNE
3-Dec-2014	00:00	2.4	SE
3-Dec-2014	01:00	2.4	NE
3-Dec-2014	02:00	2	SSE
3-Dec-2014	03:00	1.6	ENE
3-Dec-2014	04:00	1.6	ENE
3-Dec-2014	05:00	1.5	NNE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
3-Dec-2014	06:00	1.1	E
3-Dec-2014	07:00	1.3	NE
3-Dec-2014	08:00	1.7	E
3-Dec-2014	09:00	2.3	ENE
3-Dec-2014	10:00	2.5	E
3-Dec-2014	11:00	2.2	SE
3-Dec-2014	12:00	2.7	ESE
3-Dec-2014	13:00	2.7	ENE
3-Dec-2014	14:00	2.4	SSE
3-Dec-2014	15:00	2.5	ENE
3-Dec-2014	16:00	2.5	E
3-Dec-2014	17:00	3	SSE
3-Dec-2014	18:00	2.4	ENE
3-Dec-2014	19:00	1.9	NE
3-Dec-2014	20:00	1.9	ENE
3-Dec-2014	21:00	2.3	SSE
3-Dec-2014	22:00	2.1	NNE
3-Dec-2014	23:00	2.3	NNE
4-Dec-2014	00:00	2.5	NNE
4-Dec-2014	01:00	2.9	ENE
4-Dec-2014	02:00	2.9	SW
4-Dec-2014	03:00	2.3	WNW
4-Dec-2014	04:00	2.1	E
4-Dec-2014	05:00	2.1	ENE
4-Dec-2014	06:00	2.1	N
4-Dec-2014	07:00	1.8	NE
4-Dec-2014	08:00	1.9	NNE
4-Dec-2014	09:00	1.9	ENE
4-Dec-2014	10:00	2.2	ENE
4-Dec-2014	11:00	2.6	N
4-Dec-2014	12:00	2.5	ENE
4-Dec-2014	13:00	2.5	ENE
4-Dec-2014	14:00	2.5	ENE
4-Dec-2014	15:00	3	NNE
4-Dec-2014	16:00	2.7	ESE
4-Dec-2014	17:00	2.3	NNE
4-Dec-2014	18:00	2	ESE
4-Dec-2014	19:00	1.6	ENE
4-Dec-2014	20:00	1.8	E
4-Dec-2014	21:00	2.1	ESE
4-Dec-2014	22:00	2.5	NNE
4-Dec-2014	23:00	2.2	NE
5-Dec-2014	00:00	2	NNE
5-Dec-2014	01:00	2.1	NNE
5-Dec-2014	02:00	1.9	NNE
5-Dec-2014	03:00	1.4	NNE
5-Dec-2014	04:00	1.6	NNE
5-Dec-2014	05:00	1.5	ENE
5-Dec-2014	06:00	1.2	NE
5-Dec-2014	07:00	1.3	SW
5-Dec-2014	08:00	1.6	ENE
5-Dec-2014	09:00	2.4	NE
5-Dec-2014	10:00	2.5	N
5-Dec-2014	11:00	2.3	N

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
5-Dec-2014	12:00	2.7	NNE
5-Dec-2014	13:00	3	ENE
5-Dec-2014	14:00	2.7	NE
5-Dec-2014	15:00	2.6	SSW
5-Dec-2014	16:00	2.4	SW
5-Dec-2014	17:00	2.4	SW
5-Dec-2014	18:00	1.8	ESE
5-Dec-2014	19:00	1.7	ESE
5-Dec-2014	20:00	1.5	W
5-Dec-2014	21:00	1.5	ENE
5-Dec-2014	22:00	1.7	ENE
5-Dec-2014	23:00	1.6	WSW
6-Dec-2014	00:00	1.1	W
6-Dec-2014	01:00	1.2	ENE
6-Dec-2014	02:00	1.4	ESE
6-Dec-2014	03:00	1.5	NE
6-Dec-2014	04:00	1.3	ESE
6-Dec-2014	05:00	1.3	NE
6-Dec-2014	06:00	1.5	ENE
6-Dec-2014	07:00	1.3	ENE
6-Dec-2014	08:00	1.8	ENE
6-Dec-2014	09:00	1.8	E
6-Dec-2014	10:00	2.5	E
6-Dec-2014	11:00	2.9	E
6-Dec-2014	12:00	2.8	E
6-Dec-2014	13:00	2.8	ENE
6-Dec-2014	14:00	2.5	ENE
6-Dec-2014	15:00	2.8	ENE
6-Dec-2014	16:00	2.3	ENE
6-Dec-2014	17:00	2.2	ENE
6-Dec-2014	18:00	2	WSW
6-Dec-2014	19:00	2.1	SE
6-Dec-2014	20:00	2	SE
6-Dec-2014	21:00	1.6	NE
6-Dec-2014	22:00	1.4	ENE
6-Dec-2014	23:00	1.1	WNW
7-Dec-2014	00:00	0.8	WNW
7-Dec-2014	01:00	1.1	WNW
7-Dec-2014	02:00	1	SW
7-Dec-2014	03:00	1.1	S
7-Dec-2014	04:00	1.1	NNE
7-Dec-2014	05:00	1	SE
7-Dec-2014	06:00	1.2	ENE
7-Dec-2014	07:00	0.9	ENE
7-Dec-2014	08:00	1.1	ESE
7-Dec-2014	09:00	1.1	SSW
7-Dec-2014	10:00	1.3	S
7-Dec-2014	11:00	1.3	ENE
7-Dec-2014	12:00	1.9	SE
7-Dec-2014	13:00	1.8	SSW
7-Dec-2014	14:00	1.6	ENE
7-Dec-2014	15:00	1.6	NE
7-Dec-2014	16:00	1.9	ENE
7-Dec-2014	17:00	1.8	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
7-Dec-2014	18:00	1.6	ENE
7-Dec-2014	19:00	1.4	W
7-Dec-2014	20:00	0.9	W
7-Dec-2014	21:00	0.8	S
7-Dec-2014	22:00	0.7	S
7-Dec-2014	23:00	0.9	S
8-Dec-2014	00:00	1	W
8-Dec-2014	01:00	0.9	ENE
8-Dec-2014	02:00	0.9	NNE
8-Dec-2014	03:00	1.1	SSE
8-Dec-2014	04:00	1	SE
8-Dec-2014	05:00	1	N
8-Dec-2014	06:00	0.9	N
8-Dec-2014	07:00	1.2	N
8-Dec-2014	08:00	1.8	N
8-Dec-2014	09:00	2.1	N
8-Dec-2014	10:00	1.9	NNE
8-Dec-2014	11:00	2.1	NNE
8-Dec-2014	12:00	2.1	ENE
8-Dec-2014	13:00	2.2	ENE
8-Dec-2014	14:00	3	NE
8-Dec-2014	15:00	2.8	ENE
8-Dec-2014	16:00	2.4	ENE
8-Dec-2014	17:00	2	ENE
8-Dec-2014	18:00	2	NE
8-Dec-2014	19:00	1.6	ENE
8-Dec-2014	20:00	1.3	NE
8-Dec-2014	21:00	1.3	ENE
8-Dec-2014	22:00	1.2	ENE
8-Dec-2014	23:00	1.5	ENE
9-Dec-2014	00:00	1.3	E
9-Dec-2014	01:00	1.2	NNE
9-Dec-2014	02:00	1.2	NNE
9-Dec-2014	03:00	1.1	NNE
9-Dec-2014	04:00	1.4	NNE
9-Dec-2014	05:00	1.4	NNE
9-Dec-2014	06:00	1.1	ENE
9-Dec-2014	07:00	1.1	NE
9-Dec-2014	08:00	1.1	NE
9-Dec-2014	09:00	1.4	NNE
9-Dec-2014	10:00	1.8	NE
9-Dec-2014	11:00	1.9	NNE
9-Dec-2014	12:00	1.9	NNE
9-Dec-2014	13:00	1.7	NE
9-Dec-2014	14:00	1.6	NE
9-Dec-2014	15:00	1.7	NE
9-Dec-2014	16:00	1.8	NE
9-Dec-2014	17:00	1.3	NE
9-Dec-2014	18:00	1.2	N
9-Dec-2014	19:00	0.9	NE
9-Dec-2014	20:00	0.7	NE
9-Dec-2014	21:00	0.8	NNE
9-Dec-2014	22:00	0.7	NE
9-Dec-2014	23:00	0.5	NE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
10-Dec-2014	00:00	0.6	N
10-Dec-2014	01:00	0.8	NNE
10-Dec-2014	02:00	0.6	N
10-Dec-2014	03:00	0.9	ESE
10-Dec-2014	04:00	0.8	ESE
10-Dec-2014	05:00	0.7	ESE
10-Dec-2014	06:00	0.5	NE
10-Dec-2014	07:00	0.7	NE
10-Dec-2014	08:00	1.1	ENE
10-Dec-2014	09:00	1.5	SW
10-Dec-2014	10:00	2.2	SW
10-Dec-2014	11:00	2.8	NE
10-Dec-2014	12:00	2.9	NE
10-Dec-2014	13:00	3	NE
10-Dec-2014	14:00	3.1	E
10-Dec-2014	15:00	2.6	E
10-Dec-2014	16:00	2.6	SE
10-Dec-2014	17:00	2.9	ESE
10-Dec-2014	18:00	2.4	NE
10-Dec-2014	19:00	2.1	NNE
10-Dec-2014	20:00	1.9	E
10-Dec-2014	21:00	1.9	E
10-Dec-2014	22:00	2	ENE
10-Dec-2014	23:00	1.9	NE
11-Dec-2014	00:00	2	E
11-Dec-2014	01:00	2.1	E
11-Dec-2014	02:00	2	NE
11-Dec-2014	03:00	2	NE
11-Dec-2014	04:00	1.6	SE
11-Dec-2014	05:00	1.6	SE
11-Dec-2014	06:00	1.9	ESE
11-Dec-2014	07:00	1.7	NE
11-Dec-2014	08:00	1.7	NNE
11-Dec-2014	09:00	2	E
11-Dec-2014	10:00	2.3	SE
11-Dec-2014	11:00	2.4	ESE
11-Dec-2014	12:00	2.5	NE
11-Dec-2014	13:00	2.2	E
11-Dec-2014	14:00	2.2	SE
11-Dec-2014	15:00	2.1	ESE
11-Dec-2014	16:00	2.1	ESE
11-Dec-2014	17:00	2.3	SSE
11-Dec-2014	18:00	1.7	NNE
11-Dec-2014	19:00	1.7	NNE
11-Dec-2014	20:00	1.7	ENE
11-Dec-2014	21:00	1.8	NE
11-Dec-2014	22:00	1.8	NE
11-Dec-2014	23:00	1.7	SSE
12-Dec-2014	00:00	1.9	SSE
12-Dec-2014	01:00	1.4	NE
12-Dec-2014	02:00	1.6	N
12-Dec-2014	03:00	1.5	NE
12-Dec-2014	04:00	1.8	WNW
12-Dec-2014	05:00	1.5	NNW

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
12-Dec-2014	06:00	1.5	SSW
12-Dec-2014	07:00	1.5	SSE
12-Dec-2014	08:00	1.6	SE
12-Dec-2014	09:00	2.1	ESE
12-Dec-2014	10:00	1.8	NNE
12-Dec-2014	11:00	2.5	SE
12-Dec-2014	12:00	2.5	E
12-Dec-2014	13:00	2.3	ENE
12-Dec-2014	14:00	2.3	E
12-Dec-2014	15:00	2.2	ESE
12-Dec-2014	16:00	2.4	SE
12-Dec-2014	17:00	2.4	SE
12-Dec-2014	18:00	2	SW
12-Dec-2014	19:00	2	NE
12-Dec-2014	20:00	1.7	NE
12-Dec-2014	21:00	1.9	ENE
12-Dec-2014	22:00	2.2	N
12-Dec-2014	23:00	2	NE
13-Dec-2014	00:00	1.7	SE
13-Dec-2014	01:00	1.5	ESE
13-Dec-2014	02:00	1.4	NE
13-Dec-2014	03:00	1.6	ENE
13-Dec-2014	04:00	1.5	NE
13-Dec-2014	05:00	1.3	NE
13-Dec-2014	06:00	1.1	SE
13-Dec-2014	07:00	1.1	NE
13-Dec-2014	08:00	1.8	SW
13-Dec-2014	09:00	2.6	WNW
13-Dec-2014	10:00	2.6	NNE
13-Dec-2014	11:00	2.8	E
13-Dec-2014	12:00	2.7	NE
13-Dec-2014	13:00	2.6	ENE
13-Dec-2014	14:00	2.7	E
13-Dec-2014	15:00	2.4	ENE
13-Dec-2014	16:00	2.5	SE
13-Dec-2014	17:00	2.5	SW
13-Dec-2014	18:00	2.1	ESE
13-Dec-2014	19:00	1.6	NE
13-Dec-2014	20:00	1	NE
13-Dec-2014	21:00	0.8	NE
13-Dec-2014	22:00	0.8	NNE
13-Dec-2014	23:00	0.8	NE
14-Dec-2014	00:00	0.9	ENE
14-Dec-2014	01:00	1.2	ENE
14-Dec-2014	02:00	1.2	ENE
14-Dec-2014	03:00	1.1	SSW
14-Dec-2014	04:00	1.3	ENE
14-Dec-2014	05:00	1.4	NNE
14-Dec-2014	06:00	1.2	NNE
14-Dec-2014	07:00	1.3	NNE
14-Dec-2014	08:00	1.7	NE
14-Dec-2014	09:00	2.3	N
14-Dec-2014	10:00	2.1	NE
14-Dec-2014	11:00	2.4	ESE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
14-Dec-2014	12:00	2.4	ESE
14-Dec-2014	13:00	2.6	E
14-Dec-2014	14:00	2.2	NE
14-Dec-2014	15:00	2	NE
14-Dec-2014	16:00	2.2	NE
14-Dec-2014	17:00	2.1	NE
14-Dec-2014	18:00	1.8	NNE
14-Dec-2014	19:00	1.7	E
14-Dec-2014	20:00	1.5	E
14-Dec-2014	21:00	1.6	ENE
14-Dec-2014	22:00	1.7	ESE
14-Dec-2014	23:00	1.4	SE
15-Dec-2014	00:00	1.2	WNW
15-Dec-2014	01:00	1.2	ENE
15-Dec-2014	02:00	1.2	SE
15-Dec-2014	03:00	1.6	SE
15-Dec-2014	04:00	1.5	SE
15-Dec-2014	05:00	1.4	NE
15-Dec-2014	06:00	1	SSE
15-Dec-2014	07:00	1.2	SE
15-Dec-2014	08:00	1.3	NE
15-Dec-2014	09:00	1.4	ESE
15-Dec-2014	10:00	1.9	SSE
15-Dec-2014	11:00	2	SSE
15-Dec-2014	12:00	1.9	NE
15-Dec-2014	13:00	1.9	ENE
15-Dec-2014	14:00	2	ESE
15-Dec-2014	15:00	2.2	ENE
15-Dec-2014	16:00	2	NNE
15-Dec-2014	17:00	1.8	E
15-Dec-2014	18:00	1.7	E
15-Dec-2014	19:00	1.3	NE
15-Dec-2014	20:00	1	NNE
15-Dec-2014	21:00	0.9	WSW
15-Dec-2014	22:00	0.9	WNW
15-Dec-2014	23:00	0.8	SSW
16-Dec-2014	00:00	1.3	W
16-Dec-2014	01:00	1	NE
16-Dec-2014	02:00	1.1	ENE
16-Dec-2014	03:00	1	ENE
16-Dec-2014	04:00	1.3	ENE
16-Dec-2014	05:00	1.2	E
16-Dec-2014	06:00	1	NE
16-Dec-2014	07:00	1.3	NNW
16-Dec-2014	08:00	1.1	ENE
16-Dec-2014	09:00	1.6	NE
16-Dec-2014	10:00	1.6	NE
16-Dec-2014	11:00	1.3	E
16-Dec-2014	12:00	1.9	SSW
16-Dec-2014	13:00	2	NNE
16-Dec-2014	14:00	2	N
16-Dec-2014	15:00	2.3	N
16-Dec-2014	16:00	2.1	N
16-Dec-2014	17:00	1.9	W

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
16-Dec-2014	18:00	1.8	NNW
16-Dec-2014	19:00	1.7	N
16-Dec-2014	20:00	1.4	W
16-Dec-2014	21:00	1.2	N
16-Dec-2014	22:00	1.3	N
16-Dec-2014	23:00	1	NW
17-Dec-2014	00:00	1.4	WNW
17-Dec-2014	01:00	1.3	WNW
17-Dec-2014	02:00	1.3	WNW
17-Dec-2014	03:00	1.2	W
17-Dec-2014	04:00	1.1	SW
17-Dec-2014	05:00	1.3	WSW
17-Dec-2014	06:00	1.3	SW
17-Dec-2014	07:00	1.3	SSW
17-Dec-2014	08:00	1.7	SSW
17-Dec-2014	09:00	2.1	N
17-Dec-2014	10:00	2.3	NNE
17-Dec-2014	11:00	2.4	NNE
17-Dec-2014	12:00	2.6	W
17-Dec-2014	13:00	3.1	W
17-Dec-2014	14:00	3.1	WSW
17-Dec-2014	15:00	3.1	N
17-Dec-2014	16:00	2.9	N
17-Dec-2014	17:00	2.3	N
17-Dec-2014	18:00	2.3	ESE
17-Dec-2014	19:00	2.1	ESE
17-Dec-2014	20:00	1.9	E
17-Dec-2014	21:00	1.7	ENE
17-Dec-2014	22:00	1.9	ENE
17-Dec-2014	23:00	1.5	ENE
18-Dec-2014	00:00	1.3	W
18-Dec-2014	01:00	1.4	SSW
18-Dec-2014	02:00	1.4	WSW
18-Dec-2014	03:00	1.6	WSW
18-Dec-2014	04:00	1.9	SW
18-Dec-2014	05:00	2.2	NE
18-Dec-2014	06:00	2	WSW
18-Dec-2014	07:00	2	SSE
18-Dec-2014	08:00	3	ESE
18-Dec-2014	09:00	3.8	ENE
18-Dec-2014	10:00	3.4	ESE
18-Dec-2014	11:00	3.8	SSE
18-Dec-2014	12:00	4.5	ENE
18-Dec-2014	13:00	4.5	NE
18-Dec-2014	14:00	4.2	E
18-Dec-2014	15:00	4.3	ESE
18-Dec-2014	16:00	4.2	WSW
18-Dec-2014	17:00	3.8	ESE
18-Dec-2014	18:00	3.7	ESE
18-Dec-2014	19:00	3.2	NE
18-Dec-2014	20:00	3.1	NNE
18-Dec-2014	21:00	2.7	ENE
18-Dec-2014	22:00	3.1	ENE
18-Dec-2014	23:00	3	ESE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
19-Dec-2014	00:00	3.2	SSE
19-Dec-2014	01:00	2.9	NE
19-Dec-2014	02:00	2.9	ENE
19-Dec-2014	03:00	3	NNE
19-Dec-2014	04:00	2.9	NNE
19-Dec-2014	05:00	2.9	N
19-Dec-2014	06:00	1.7	E
19-Dec-2014	07:00	2.2	ENE
19-Dec-2014	08:00	2.7	N
19-Dec-2014	09:00	3.3	NW
19-Dec-2014	10:00	3.2	NE
19-Dec-2014	11:00	2.9	ENE
19-Dec-2014	12:00	2.8	SSE
19-Dec-2014	13:00	2.6	SE
19-Dec-2014	14:00	2.4	WSW
19-Dec-2014	15:00	2.4	SW
19-Dec-2014	16:00	2.5	WSW
19-Dec-2014	17:00	2.2	W
19-Dec-2014	18:00	2	W
19-Dec-2014	19:00	1.6	W
19-Dec-2014	20:00	1.8	ENE
19-Dec-2014	21:00	2.2	SSW
19-Dec-2014	22:00	2.1	W
19-Dec-2014	23:00	1.9	W
20-Dec-2014	00:00	2.1	WNW
20-Dec-2014	01:00	2.3	W
20-Dec-2014	02:00	2.5	W
20-Dec-2014	03:00	2.1	W
20-Dec-2014	04:00	2	S
20-Dec-2014	05:00	2.2	SW
20-Dec-2014	06:00	2.2	W
20-Dec-2014	07:00	2	WSW
20-Dec-2014	08:00	1.5	WSW
20-Dec-2014	09:00	2	WSW
20-Dec-2014	10:00	2.7	WSW
20-Dec-2014	11:00	2.8	WSW
20-Dec-2014	12:00	2.9	SSE
20-Dec-2014	13:00	3	W
20-Dec-2014	14:00	3.2	W
20-Dec-2014	15:00	3	WNW
20-Dec-2014	16:00	2.9	NW
20-Dec-2014	17:00	2.7	E
20-Dec-2014	18:00	2.4	N
20-Dec-2014	19:00	2.4	ENE
20-Dec-2014	20:00	1.9	NE
20-Dec-2014	21:00	1.7	SW
20-Dec-2014	22:00	1.7	W
20-Dec-2014	23:00	1.8	SW
21-Dec-2014	00:00	1.4	W
21-Dec-2014	01:00	1.3	W
21-Dec-2014	02:00	1.2	WNW
21-Dec-2014	03:00	1.4	WNW
21-Dec-2014	04:00	1.2	WNW
21-Dec-2014	05:00	1.6	WNW

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
21-Dec-2014	06:00	1	WNW
21-Dec-2014	07:00	0.9	W
21-Dec-2014	08:00	1.1	W
21-Dec-2014	09:00	1.5	WNW
21-Dec-2014	10:00	1.3	SSW
21-Dec-2014	11:00	2.1	SSW
21-Dec-2014	12:00	2.1	SSW
21-Dec-2014	13:00	2.5	SW
21-Dec-2014	14:00	2.7	WNW
21-Dec-2014	15:00	2.5	NW
21-Dec-2014	16:00	2.1	WNW
21-Dec-2014	17:00	2.2	WNW
21-Dec-2014	18:00	1.8	NW
21-Dec-2014	19:00	1.6	ENE
21-Dec-2014	20:00	1.3	NNE
21-Dec-2014	21:00	2	NE
21-Dec-2014	22:00	1.1	E
21-Dec-2014	23:00	1.2	WNW
22-Dec-2014	00:00	1.2	NE
22-Dec-2014	01:00	1.2	N
22-Dec-2014	02:00	1	WNW
22-Dec-2014	03:00	1.1	WNW
22-Dec-2014	04:00	1.3	WNW
22-Dec-2014	05:00	1.1	WNW
22-Dec-2014	06:00	1.1	SSW
22-Dec-2014	07:00	1.4	W
22-Dec-2014	08:00	1.7	W
22-Dec-2014	09:00	1.8	W
22-Dec-2014	10:00	1.9	WSW
22-Dec-2014	11:00	2.1	WSW
22-Dec-2014	12:00	2.5	W
22-Dec-2014	13:00	2.2	SW
22-Dec-2014	14:00	2.3	N
22-Dec-2014	15:00	2	NNE
22-Dec-2014	16:00	1.6	N
22-Dec-2014	17:00	1.5	NNE
22-Dec-2014	18:00	1.6	N
22-Dec-2014	19:00	1.1	NE
22-Dec-2014	20:00	1.4	ENE
22-Dec-2014	21:00	1.3	SSW
22-Dec-2014	22:00	1.3	SW
22-Dec-2014	23:00	1.4	SW
23-Dec-2014	00:00	1.2	SW
23-Dec-2014	01:00	1.2	NW
23-Dec-2014	02:00	1.2	SE
23-Dec-2014	03:00	1.1	SE
23-Dec-2014	04:00	1	SSE
23-Dec-2014	05:00	1.1	SW
23-Dec-2014	06:00	0.9	SW
23-Dec-2014	07:00	0.9	SW
23-Dec-2014	08:00	1.4	SSW
23-Dec-2014	09:00	1.4	SW
23-Dec-2014	10:00	2.2	SW
23-Dec-2014	11:00	2.5	SSW

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
23-Dec-2014	12:00	2.4	SW
23-Dec-2014	13:00	2.5	SW
23-Dec-2014	14:00	2.4	W
23-Dec-2014	15:00	2.3	SW
23-Dec-2014	16:00	2.4	SW
23-Dec-2014	17:00	2.1	SW
23-Dec-2014	18:00	1.9	E
23-Dec-2014	19:00	1.8	ENE
23-Dec-2014	20:00	1.9	ENE
23-Dec-2014	21:00	1.7	ESE
23-Dec-2014	22:00	1.2	N
23-Dec-2014	23:00	1.3	WNW
24-Dec-2014	00:00	1.3	N
24-Dec-2014	01:00	1.5	N
24-Dec-2014	02:00	1.1	NE
24-Dec-2014	03:00	1.4	W
24-Dec-2014	04:00	1.8	E
24-Dec-2014	05:00	1.9	SW
24-Dec-2014	06:00	1.6	SSW
24-Dec-2014	07:00	1.4	SW
24-Dec-2014	08:00	1.5	ESE
24-Dec-2014	09:00	1.8	ESE
24-Dec-2014	10:00	2.3	ESE
24-Dec-2014	11:00	2.1	N
24-Dec-2014	12:00	2.5	N
24-Dec-2014	13:00	2.9	NE
24-Dec-2014	14:00	2.5	NNE
24-Dec-2014	15:00	2	ESE
24-Dec-2014	16:00	2.2	E
24-Dec-2014	17:00	1.7	ESE
24-Dec-2014	18:00	1.4	E
24-Dec-2014	19:00	1.2	N
24-Dec-2014	20:00	1.6	N
24-Dec-2014	21:00	1.3	SSW
24-Dec-2014	22:00	1.5	N
24-Dec-2014	23:00	1.2	NNE
25-Dec-2014	00:00	1.3	N
25-Dec-2014	01:00	1.4	WNW
25-Dec-2014	02:00	1.1	NNW
25-Dec-2014	03:00	1.3	WNW
25-Dec-2014	04:00	1	NNW
25-Dec-2014	05:00	0.9	NNW
25-Dec-2014	06:00	0.9	NE
25-Dec-2014	07:00	0.7	E
25-Dec-2014	08:00	1	SSW
25-Dec-2014	09:00	1.4	SSW
25-Dec-2014	10:00	1.8	SW
25-Dec-2014	11:00	1.7	NNE
25-Dec-2014	12:00	1.9	SW
25-Dec-2014	13:00	1.9	SW
25-Dec-2014	14:00	1.7	WSW
25-Dec-2014	15:00	2	ESE
25-Dec-2014	16:00	2	SW
25-Dec-2014	17:00	1.7	SW

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
25-Dec-2014	18:00	1.3	SW
25-Dec-2014	19:00	1.5	WSW
25-Dec-2014	20:00	1.6	WSW
25-Dec-2014	21:00	1.3	W
25-Dec-2014	22:00	1.6	W
25-Dec-2014	23:00	1.4	NNE
26-Dec-2014	00:00	1.7	NNE
26-Dec-2014	01:00	1.2	N
26-Dec-2014	02:00	1.3	W
26-Dec-2014	03:00	1.5	W
26-Dec-2014	04:00	1.3	W
26-Dec-2014	05:00	1.1	W
26-Dec-2014	06:00	1	SW
26-Dec-2014	07:00	1.2	NE
26-Dec-2014	08:00	1.5	WSW
26-Dec-2014	09:00	1.8	WSW
26-Dec-2014	10:00	2	W
26-Dec-2014	11:00	2.3	NNE
26-Dec-2014	12:00	2.8	NE
26-Dec-2014	13:00	2.9	NNE
26-Dec-2014	14:00	2.5	WSW
26-Dec-2014	15:00	2	SW
26-Dec-2014	16:00	2.4	NNE
26-Dec-2014	17:00	2.2	N
26-Dec-2014	18:00	2	NE
26-Dec-2014	19:00	1.7	ENE
26-Dec-2014	20:00	1.4	NNE
26-Dec-2014	21:00	1.3	NE
26-Dec-2014	22:00	1.3	NE
26-Dec-2014	23:00	1.6	NNE
27-Dec-2014	00:00	1.4	NE
27-Dec-2014	01:00	1.2	ENE
27-Dec-2014	02:00	1.5	NNE
27-Dec-2014	03:00	1.3	W
27-Dec-2014	04:00	1.2	W
27-Dec-2014	05:00	0.9	WSW
27-Dec-2014	06:00	0.7	W
27-Dec-2014	07:00	0.8	W
27-Dec-2014	08:00	0.9	WNW
27-Dec-2014	09:00	1.5	SSW
27-Dec-2014	10:00	1.7	WSW
27-Dec-2014	11:00	2.1	SW
27-Dec-2014	12:00	2.4	W
27-Dec-2014	13:00	2.5	ESE
27-Dec-2014	14:00	2.5	SE
27-Dec-2014	15:00	2.4	WSW
27-Dec-2014	16:00	2.1	NE
27-Dec-2014	17:00	2	NE
27-Dec-2014	18:00	1.8	NE
27-Dec-2014	19:00	1.5	NW
27-Dec-2014	20:00	1.2	WNW
27-Dec-2014	21:00	1.2	WNW
27-Dec-2014	22:00	1	S
27-Dec-2014	23:00	1	SE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
28-Dec-2014	00:00	1.1	SE
28-Dec-2014	01:00	1	S
28-Dec-2014	02:00	0.9	S
28-Dec-2014	03:00	0.8	SSW
28-Dec-2014	04:00	0.9	NE
28-Dec-2014	05:00	0.9	NNE
28-Dec-2014	06:00	0.7	E
28-Dec-2014	07:00	0.9	ENE
28-Dec-2014	08:00	1.2	NNE
28-Dec-2014	09:00	1.6	S
28-Dec-2014	10:00	1.6	SSE
28-Dec-2014	11:00	1.8	SE
28-Dec-2014	12:00	1.9	SSE
28-Dec-2014	13:00	2	SSE
28-Dec-2014	14:00	2.2	SSE
28-Dec-2014	15:00	2.4	SSE
28-Dec-2014	16:00	2.2	SSE
28-Dec-2014	17:00	2.2	SE
28-Dec-2014	18:00	1.5	ENE
28-Dec-2014	19:00	1.2	E
28-Dec-2014	20:00	0.8	E
28-Dec-2014	21:00	0.9	ESE
28-Dec-2014	22:00	1	NNE
28-Dec-2014	23:00	1	SSE
29-Dec-2014	00:00	1.1	E
29-Dec-2014	01:00	0.9	E
29-Dec-2014	02:00	1.1	E
29-Dec-2014	03:00	1.3	N
29-Dec-2014	04:00	0.9	N
29-Dec-2014	05:00	1	ENE
29-Dec-2014	06:00	0.8	ENE
29-Dec-2014	07:00	0.7	ENE
29-Dec-2014	08:00	1.1	NE
29-Dec-2014	09:00	1.4	ESE
29-Dec-2014	10:00	2.1	ESE
29-Dec-2014	11:00	1.9	NE
29-Dec-2014	12:00	1.9	NE
29-Dec-2014	13:00	1.9	NE
29-Dec-2014	14:00	1.9	NE
29-Dec-2014	15:00	1.9	NE
29-Dec-2014	16:00	1.9	E
29-Dec-2014	17:00	1.7	E
29-Dec-2014	18:00	1.3	E
29-Dec-2014	19:00	1.2	E
29-Dec-2014	20:00	1.1	NE
29-Dec-2014	21:00	1.2	SSE
29-Dec-2014	22:00	1.4	E
29-Dec-2014	23:00	1	SE
30-Dec-2014	00:00	1.2	N
30-Dec-2014	01:00	1.2	NE
30-Dec-2014	02:00	0.8	ENE
30-Dec-2014	03:00	1.1	ENE
30-Dec-2014	04:00	1.2	SSE
30-Dec-2014	05:00	1.4	SSE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
30-Dec-2014	06:00	1.1	SSE
30-Dec-2014	07:00	1.2	SSE
30-Dec-2014	08:00	1.6	SSE
30-Dec-2014	09:00	2	NNE
30-Dec-2014	10:00	2.6	ENE
30-Dec-2014	11:00	3.4	ENE
30-Dec-2014	12:00	3.3	ESE
30-Dec-2014	13:00	2.9	SE
30-Dec-2014	14:00	3.1	SE
30-Dec-2014	15:00	3.1	SE
30-Dec-2014	16:00	2.6	ENE
30-Dec-2014	17:00	2.1	NE
30-Dec-2014	18:00	1.9	ENE
30-Dec-2014	19:00	1.7	ENE
30-Dec-2014	20:00	1.6	ENE
30-Dec-2014	21:00	1.3	ENE
30-Dec-2014	22:00	1.5	SE
30-Dec-2014	23:00	1.4	SE
31-Dec-2014	00:00	2	ENE
31-Dec-2014	01:00	2	ESE
31-Dec-2014	02:00	2.1	ENE
31-Dec-2014	03:00	2.1	SE
31-Dec-2014	04:00	2	SE
31-Dec-2014	05:00	1.8	NE
31-Dec-2014	06:00	2.1	W
31-Dec-2014	07:00	2	N
31-Dec-2014	08:00	2.3	NNE
31-Dec-2014	09:00	2.3	N
31-Dec-2014	10:00	2.5	NNE
31-Dec-2014	11:00	2.1	NW
31-Dec-2014	12:00	2.3	NE
31-Dec-2014	13:00	2.4	ENE
31-Dec-2014	14:00	2	SSE
31-Dec-2014	15:00	2.1	WSW
31-Dec-2014	16:00	2.1	W
31-Dec-2014	17:00	2.7	WSW
31-Dec-2014	18:00	2.3	SW
31-Dec-2014	19:00	2.3	SW
31-Dec-2014	20:00	2.1	SW
31-Dec-2014	21:00	2.4	SW
31-Dec-2014	22:00	2.4	SW
31-Dec-2014	23:00	2.2	SW

**APPENDIX K
EVENT ACTION PLANS**

Event / Action Plan for Air Quality

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

LIMIT LEVEL

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

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

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>

APPENDIX L
SUMMARY OF EXCEEDANCE

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

Environmental Monitoring	Parameter	No. of Exceedance		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
	24-hr TSP	0	0	0	0

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

(C) Exceedance Report for Water Quality

Environmental Monitoring	Parameter	No. of Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
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)	1	1	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: 12 December 2014

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)
IS3	Mid-flood	23.5	34.4	CS1	17.6	21.1	22.9	24.5	(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-Flood Tide

Station(s)	Suspended Solids (mg/L)	
	Min	Max
IS3	7.8	28.5

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. H.F. Chan

Title: Environmental Team Leader

Date: 7 January 2015

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: 24 December 2014

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)
ST1	Mid-flood	23.5	34.4	CS1	15.3	18.4	19.9	<u>35.8</u>	(2) and (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 – Sediment plume discharging to the monitoring stations from the area outside the site boundary 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. H.F. Chan

Title: Environmental Team Leader

Date: 7 January 2015

APPENDIX M
SITE AUDIT SUMMARY

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	141202
Date	2 December 2014 (Tuesday)
Time	9:15-11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141202-R01	<ul style="list-style-type: none">Properly erect sand bag bund to avoid discharging the wastewater to the sea at WA4	B16
	B. Ecology	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	D. Noise	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	G. Others	
	<ul style="list-style-type: none">Follow-up on previous site audit session (Ref. No. 141128), all environmental deficiencies were improved/rectified by contractor during the site inspection.	


	Name	Signature	Date
Recorded by	Ivy Tam		2 December 2014
Checked by	Dr. Priscilla Choy		2 December 2014

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
(2 December 2014)

	<p>Ref No: 141202-R01</p> <p>Impact: Water Quality (B16)</p> <p>Details: Properly erect sand bag bund to avoid discharging the wastewater to the sea at WA4.</p>
---	---

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>Ref No: 141128-R01</p> <p>Impact: Water Quality (B25)</p> <p>Details: To avoid the gap at the silt curtain at P71.</p> <p>Follow Up: The silt curtain was properly deployed.</p>
	<p>Ref No: 141128-R02</p> <p>Impact: Waste / Chemical Management (F1iii.)</p> <p>Details: Properly clear the general refuse at the edge of barge at P71.</p> <p>Follow Up: The general refuse was cleared.</p>
	<p>Ref No: 141128-R03</p> <p>Impact: Waste / Chemical Management (F9)</p> <p>Details: To plug the outlet of drip tray at P71.</p> <p>Follow Up: The drip tray was removed.</p>



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	141209
Date	9 December 2014 (Tuesday)
Time	9:45-11:20

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
141209-R01	• Properly clear the construction wastes at near the trees at P98 and P88.	C30
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
141209-R01	• Properly clear the construction wastes at near the trees at P98 and P88.	F4ii.
141209-R02	• Properly store the chemical containers at P95.	F3i.
141209-R03	• Clear the discarded chemical container as chemical waste at P92.	F2i. & ii.
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141202), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		9 December 2014
Checked by	Dr. Priscilla Choy		9 December 2014

Hong Kong-Zhuhai-Macao Bridge

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

Environmental Observations Identified during the Environmental Site Inspection
(9 December 2014)



P98



P88



Ref No: 141209-R01

Impact:

Ecology (C30)

Waste / Chemical Management (F4ii.)

Details:

Properly clear the construction wastes at near the trees at P98 and P88.

Ref No: 141209-R02

Impact:

Waste / Chemical Management (F3i.)

Details:

Properly store the chemical containers at P95.

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge

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



Ref No: 141209-R03

Impact:

Waste / Chemical Management (F2i. & ii.)

Details:

Clear the discarded chemical container as chemical waste at P92.

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: 141202-R01

Impact:
Water Quality (B16)

Details:
Properly erect sand bag bund to avoid discharging the wastewater to the sea at WA4.

Follow Up:
The sand bag bund was properly erected.

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	141216
Date	16 December 2014 (Tuesday)
Time	9:45-11:25



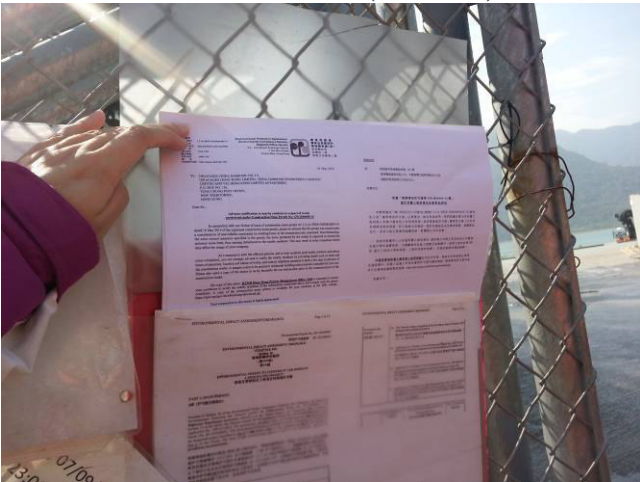
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141216-R04	• Properly deploy the silt curtain at P100.	B25
	B. Ecology	
141216-R03	• Clear the construction materials / wastes at near the trees and provide tree protection zone at near P113.	C30
	C. Air Quality	
141216-R01	• Provide water spray for the dry exposed area at Portion C more frequently.	D5, 6, 8, 14
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
141216-R02	• To display the Environmental Permit at the site exit near P106 (Portion C) and update the Construction Noise Permit at the site exit at Portion C (near Southeast Quay).	G1 and 5
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141209), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		16 December 2014
Checked by	Dr. Priscilla Choy		16 December 2014

Hong Kong-Zhuhai-Macao Bridge



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

Environmental Observations Identified during the Environmental Site Inspection
(16 December 2014)

	<p>Ref No: 141216-R01</p> <p>Impact: Air Quality (D5, 6, 8, 14)</p> <p>Details: Provide water spray for the dry exposed area at Portion C more frequently.</p>
 <p style="text-align: center;">Site exit near P106 (Portion C)</p>	<p>Ref No: 141216-R02</p> <p>Impact: Permits/Licences (G1 & 5)</p> <p>Details: To display the Environmental Permit at the site exit near P106 (Portion C) and update the Construction Noise Permit at the site exit at Portion C (near Southeast Quay).</p>
 <p style="text-align: center;">Site exit at Portion C (near Southeast Quay)</p>	

Hong Kong-Zhuhai-Macao Bridge

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

 A photograph showing a cluttered area with construction materials and debris. A large, light-colored cylindrical object, possibly a pipe or culvert section, lies on the ground. There are various pieces of wood, metal, and other waste scattered around. A tree with green leaves is visible on the left side of the frame.	<p>Ref No: 141216-R03</p> <p>Impact: Ecology (C30)</p> <p>Details: Clear the construction materials / wastes at near the trees and provide tree protection zone at near P113.</p>
 A photograph of a large body of water, likely a bay or harbor. A long, dark silt curtain is deployed across the water, extending from the left side towards the center. In the background, there are mountains and a cluster of high-rise buildings. The water surface is slightly rippled, and the sky is overcast.	<p>Ref No: 141216-R04</p> <p>Impact: Water Quality (B25)</p> <p>Details: Properly deploy the silt curtain at P100.</p>

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**



P98



P88

Ref No: 141209-R01

Impact:

Ecology (C30)

Waste / Chemical Management (F4ii.)

Details:

Properly clear the construction wastes at near the trees at P98 and P88.

Follow Up:

The construction wastes at near the trees were cleared.



Ref No: 141209-R02

Impact:

Waste / Chemical Management (F3i.)

Details:

Properly store the chemical containers at P95.

Follow Up:

The chemical containers were removed.

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge

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



Ref No: 141209-R03

Impact:

Waste / Chemical Management (F2i. & ii.)

Details:

Clear the discarded chemical container as chemical waste at P92.

Follow Up:

The discarded chemical container was 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	141223
Date	23 December 2014 (Tuesday)
Time	9:30-12:00




Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141223-R01	• Clear the concrete wastes at the platform at P25 and seal the gap to prevent the wastes falling into the sea.	B20
141223-R05	• Properly repair the damage silt curtain at P73.	B25
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
141223-R03	• Provide noise emission label for the air compressor at P25.	E8
141223-R06	• To replace the damage acoustic material for the noise enclosure for generator at P73	E7
	E. Waste / Chemical Management	
141223-R02	• Clear the oil leakage and provide the drip tray for the container at P25.	F8 and F9
141223-R04	• Clear the oil spillage and provide spill kit at P73.	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141216), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		23 December 2014
Checked by	Dr. Priscilla Choy		23 December 2014

Hong Kong-Zhuhai-Macao Bridge

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

Environmental Observations Identified during the Environmental Site Inspection
(23 December 2014)

	<p>Ref No: 141223-R01</p> <p>Impact: Water Quality (B20)</p> <p>Details: Clear the concrete wastes at the platform at P25 and seal the gap to prevent the wastes falling into the sea.</p>
	<p>Ref No: 141223-R02</p> <p>Impact: Waste / Chemical Management (F8 and F9)</p> <p>Details: Clear the oil leakage and provide the drip tray for the container at P25.</p>
	<p>Ref No: 141223-R03</p> <p>Impact: Noise (E8)</p> <p>Details: Provide noise emission label for the air compressor at P25.</p>

Hong Kong-Zhuhai-Macao Bridge

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

 <p>2014/12/23</p>	<p>Ref No: 141223-R04</p> <p>Impact: Waste / Chemical Management (F8)</p> <p>Details: Clear the oil spillage and provide spill kit at P73.</p>
 <p>2014/12/23</p>	<p>Ref No: 141223-R05</p> <p>Impact: Water Quality (B25)</p> <p>Details: Properly repair the damage silt curtain at P73.</p>
 <p>2014/12/23</p>	<p>Ref No: 141223-R06</p> <p>Impact: Noise (E7)</p> <p>Details: To replace the damage acoustic material for the noise enclosure for generator at P73</p>

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>Ref No: 141216-R01</p> <p>Impact: Air Quality (D5, 6, 8, 14)</p> <p>Details: Provide water spray for the dry exposed area at Portion C more frequently.</p> <p>Follow Up: Water spray was provided for the dry exposed area.</p>
 <p data-bbox="309 1339 662 1368">Site exit near P106 (Portion C)</p>  <p data-bbox="229 1845 742 1872">Site exit at Portion C (near Southeast Quay)</p>	<p>Ref No: 141216-R02</p> <p>Impact: Permits/Licences (G1 & 5)</p> <p>Details: To display the Environmental Permit at the site exit near P106 (Portion C) and update the Construction Noise Permit at the site exit at Portion C (near Southeast Quay).</p> <p>Follow Up: The Environmental Permit and Construction Noise Permit were provided and updated respectively.</p>

Hong Kong-Zhuhai-Macao Bridge

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

	<p>Ref No: 141216-R03</p> <p>Impact: Ecology (C30)</p> <p>Details: Clear the construction materials / wastes at near the trees and provide tree protection zone at near P113.</p> <p>Follow Up: The construction materials / wastes at near the trees were cleared by the worker.</p>
	<p>Ref No: 141216-R04</p> <p>Impact: Water Quality (B25)</p> <p>Details: Properly deploy the silt curtain at P100.</p> <p>Follow Up: The damage silt curtain was repaired.</p>

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	141230
Date	30 December 2014 (Tuesday)
Time	9:00-11:50

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
141230-R04	• Properly check and maintain the generator to avoid heavy smoke at the barge near P53.	D19
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
141230-R01	• Provide drip tray for the oil containers at the barge near P48.	F9
141230-R02	• Clear the accumulated wastes and provide waste sorting at the barge near P48.	F1i, 1iii. & 4ii.
141230-R03	• Clear the sand which soaks up the oil around the generator as chemical waste at the barge near P48.	F2ii. & F8
141230-R05	• Clear the accumulated concrete debris and provide sufficient skip for temporary storage of concrete debris at P48.	F4ii. & F7
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141223), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		30 December 2014
Checked by	Dr. Priscilla Choy		30 December 2014

Hong Kong-Zhuhai-Macao Bridge

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

Environmental Observations Identified during the Environmental Site Inspection
(30 December 2014)

	<p>Ref No: 141230-R01</p> <p>Impact: Waste / Chemical Management (F9)</p> <p>Details: Provide drip tray for the oil containers at the barge near P48.</p>
	<p>Ref No: 141230-R02</p> <p>Impact: Waste / Chemical Management (F1i., 1iii. & 4ii.)</p> <p>Details: Clear the accumulated wastes and provide waste sorting at the barge near P48.</p>
	<p>Ref No: 141230-R03</p> <p>Impact: Waste / Chemical Management (F2ii. & F8)</p> <p>Details: Clear the sand which soaks up the oil around the generator as chemical waste at the barge near P48.</p>

Hong Kong-Zhuhai-Macao Bridge




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

	<p>Ref No: 141230-R04</p> <p>Impact: Air Quality (D19)</p> <p>Details: Properly check and maintain the generator to avoid heavy smoke at the barge near P53.</p>
	<p>Ref No: 141230-R05</p> <p>Impact: Waste / Chemical Management (F4ii. & F7)</p> <p>Details: Clear the accumulated concrete debris and provide sufficient skip for temporary storage of concrete debris at P48.</p>

Hong Kong-Zhuhai-Macao Bridge

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

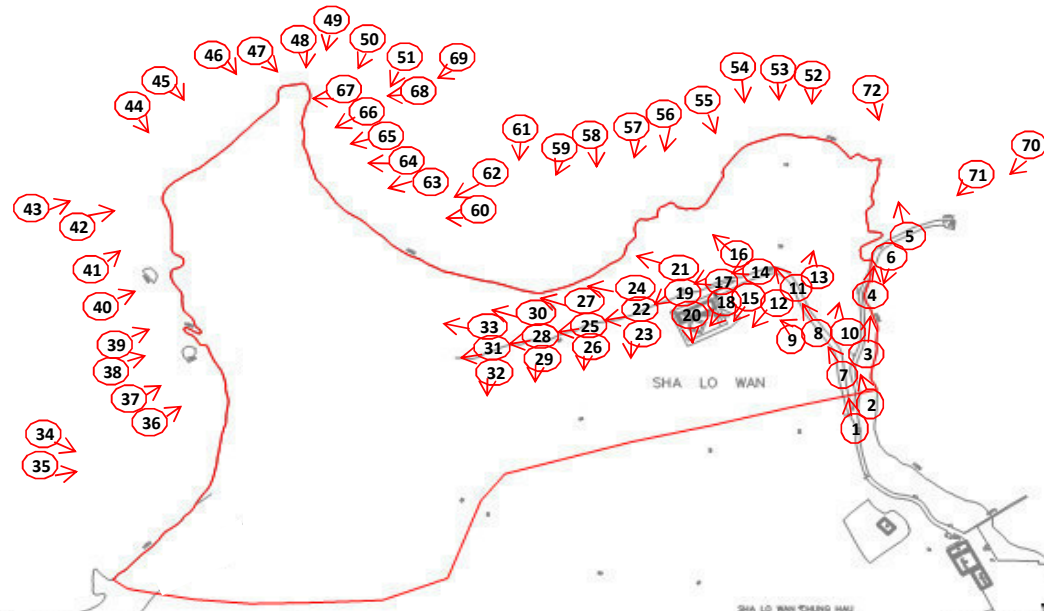
Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session

	<p>Ref No: 141223-R01</p> <p>Impact: Water Quality (B20)</p> <p>Details: Clear the concrete wastes at the platform at P25 and seal the gap to prevent the wastes falling into the sea.</p> <p>Follow Up: Concrete wastes have been cleared and the gap at the platform was sealed.</p>
	<p>Ref No: 141223-R02</p> <p>Impact: Waste / Chemical Management (F8 and F9)</p> <p>Details: Clear the oil leakage and provide the drip tray for the container at P25.</p> <p>Follow Up: Oil leakage was cleared and drip tray was provided.</p>
	<p>Ref No: 141223-R03</p> <p>Impact: Noise (E8)</p> <p>Details: Provide noise emission label for the air compressor at P25.</p> <p>Follow Up: Noise emission label was provided.</p>

Hong Kong-Zhuhai-Macao Bridge

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

	<p>Ref No: 141223-R04</p> <p>Impact: Waste / Chemical Management (F8)</p> <p>Details: Clear the oil spillage and provide spill kit at P73.</p> <p>Follow Up: The oil spillage was cleared by worker using spill kit.</p>
	<p>Ref No: 141223-R05</p> <p>Impact: Water Quality (B25)</p> <p>Details: Properly repair the damage silt curtain at P73.</p> <p>Follow Up: The damage silt curtain was repaired.</p>
	<p>Ref No: 141223-R06</p> <p>Impact: Noise (E7)</p> <p>Details: To replace the damage acoustic material for the noise enclosure for generator at P73.</p> <p>Follow Up: The damage acoustic material for the noise enclosure was repaired.</p>



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	December 2014	
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	Dec-14
		Project No.	MA12014	Appendix	M1



Photo 7



Photo 8



Photo 9



Photo 10

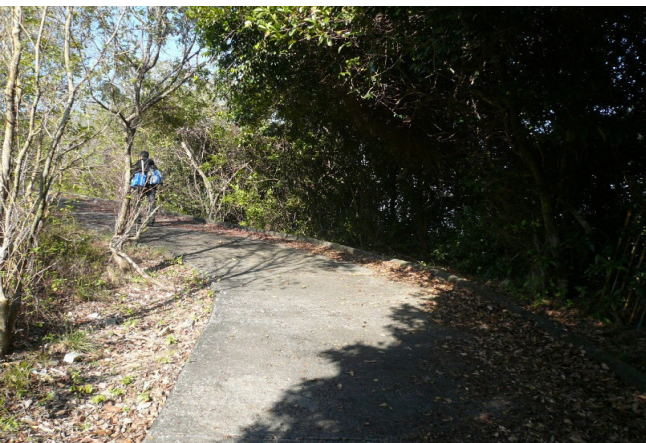


Photo 11



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	Dec-14
		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.	Dec-14
		Project No.	Appendix
		MA12014	M3



Photo 19



Photo 20

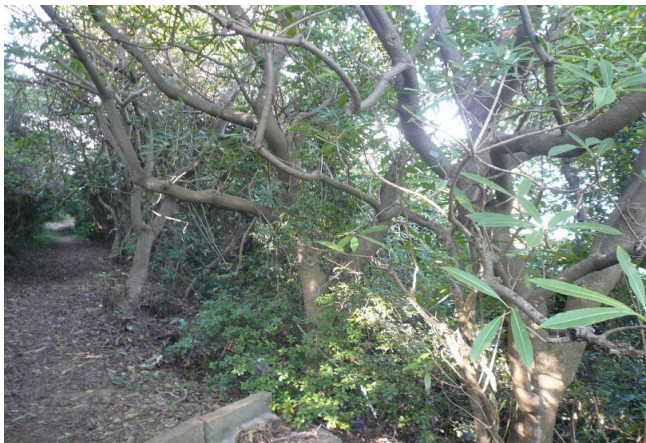


Photo 21



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	Dec-14
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	DATE
		Project No.	Appendix
		N.T.S.	Dec-14
		MA12014	M5



Photo 31



Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



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

Dec-14

Project No.

MA12014

Appendix

M6



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	DATE
		N.T.S.	Dec-14
		Project No.	Appendix
		MA12014	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	DATE
		N.T.S.	Dec-14
		Project No.	Appendix
		MA12014	M8



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53



Photo 54


	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.	Dec-14
		Project No.	Appendix
		MA12014	M9



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	DATE
		N.T.S.	Dec-14
		Project No.	Appendix
		MA12014	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	DATE
		N.T.S.	Dec-14
		Project No.	Appendix
		MA12014	M11



Photo 67



Photo 68



Photo 69




Photo 70



Photo 71



Photo 72

	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
		Project No.	Appendix
		N.T.S.	Dec-14
		MA12014	M12

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

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
Air Quality							
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"> • 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; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones. • 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; • 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; 	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"> • When there are open excavation and reinstatement works, hoarding 	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"> • 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; • 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; • 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; • 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; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • 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; 	<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"> 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; Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system; The materials which may generate airborne dusty emissions should be wetted by water spray system; All receiving hoppers should be enclosed on three sides up to 3m above unloading point; All conveyor transfer points should be totally enclosed; All access and route roads within the premises should be paved and wetted; and 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. 	<p>monitoring stations to ensure compliance with relevant criteria throughout the construction period.</p>		monitoring station		<p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</p> <p>^</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"> All road surface within the barging facilities will be paved; Dust enclosures will be provided for the loading ramp; Vehicles will be required to pass through designated wheels wash facilities; and Continuous water spray at the loading points. 	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>
Construction Noise (Air borne)							
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"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; 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; plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; mobile plant should be sited as far away from NSRs as possible and practicable; material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities. 	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 ²), 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	^
Waste Management (Construction Waste)							
S8.3.8	WM1	<p><u>Construction and Demolition Material</u></p> <p>The following mitigation measures should be implemented in handling the waste:</p> <ul style="list-style-type: none"> Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; Carry out on-site sorting; Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; Implement a trip-ticket system for each works contract to ensure that 	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&D materials are properly documented and verified; and</p> <ul style="list-style-type: none"> 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&D materials and to minimize their generation during the course of construction. In addition, disposal of the C&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 					<p style="text-align: center;">*</p> <p style="text-align: center;">^</p>
S8.3.9 - S8.3.11	WM2	<p><u>C&D Waste</u></p> <ul style="list-style-type: none"> Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&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. The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&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 	<p>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</p>	Contractor	All construction sites	Construction stage	<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
		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"> 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. 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. 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. 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 	Control the chemical waste and ensure proper storage, handling and disposal.	Contractor	All construction sites	Construction stage	<p>^</p> <p>^</p> <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
		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"> • 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. 	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"> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes. • 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. • 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. • 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, 	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"> • Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedure, including reduction, reuse and recycling of wastes. 					*
Water Quality (Construction Phase)							
S9.11.1 – S9.11.1.2	W1	<ul style="list-style-type: none"> • 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&A Manual. • Export for dredged spoils from NWWCZ avoiding exerting high demand on the disposal facilities in the NWWCZ and, hence, minimise potential cumulative impacts; • For the marine viaducts of HKLR, the bored piling will be undertaken within a metal casing; • where public fill is proposed for filling below -2.5mPD, the fine content in the public fill will be controlled to 25%; • single layer silt curtains will be applied around all works; • 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, 	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
		<p>taking account of the Contractor's proposed actual locations of his initial period of dredging work.</p> <ul style="list-style-type: none"> • silt curtain shall be fully maintained throughout the works. <p>In addition, dredging operations should be undertaken in such a manner as to minimise resuspension of sediments. Standard good dredging practice measures should, therefore, be implemented including the following requirements which should be written into the dredging contract.</p> <ul style="list-style-type: none"> • trailer suction hopper dredgers shall not allow mud to overflow; • use of Lean Material Overboard (LMOB) systems shall be prohibited; • mechanical grabs shall be designed and maintained to avoid spillage and should seal tightly while being lifted; • barges and hopper dredgers shall have tight fitting seals to their bottom openings to prevent leakage of material; • any pipe leakages shall be repaired quickly. Plant should not be operated with leaking pipes; • loading of barges and hoppers shall be controlled to prevent splashing of dredged material to the surrounding water. Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation; • excess material shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessel is moved; • adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action; 					<p style="text-align: center;">*</p> <p style="text-align: center;">N/A</p> <p style="text-align: center;">N/A</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"> • 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 • 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. 					<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"> • wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters; • 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; • 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; • silt removal facilities, channels and manholes shall be maintained and any deposited silt and grit shall be removed regularly, including 	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
		<ul style="list-style-type: none"> wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects; 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; the contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately; waste oil should be collected and stored for recycling or disposal, in accordance with the Waste Disposal Ordinance; 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 surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system. 					<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	^
Ecology (Construction Phase)							
S10.7	E1	<ul style="list-style-type: none"> Good site practices to avoid runoff entering woodland habitats in Scenic Hill 	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"> Reinstate works areas in Scenic Hill Avoid stream modification in Scenic Hill 	Frog in Scenic Hill				N/A ^
S10.7	E2	<ul style="list-style-type: none"> Use closed grab in dredging works. Install silt curtain during the construction. Limit dredging and works fronts. Good site practices Strict enforcement of no marine dumping. Site runoff control Spill response plan 	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^ ^
S10.7	E3	<ul style="list-style-type: none"> Reprovision of replacement Artificial Reefs (of the same volume as the existing ARs inside Marine Exclusion Zone) 	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"> Dolphin Exclusion Zone; Dolphin watching plan 	Minimize temporary marine habitat loss impact to dolphins	Contractor	Marine works	During marine works	^ ^
S10.7	E7	<ul style="list-style-type: none"> Decouple compressors and other equipment on working vessels Avoidance of percussive piling Marine underwater noise monitoring 	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"> Temporal suspension of drilling bored pile casing in rock during peak dolphin calving season in May and June 					N/A
S10.7	E8	<ul style="list-style-type: none"> Control vessel speed Skipper training. Predefined and regular routes for working vessels; avoid Brothers Islands. 	Minimise marine traffic disturbance on dolphins	Contractor	Marine traffic	During marine works	^ ^ ^
S10.10	E9	<ul style="list-style-type: none"> Dolphin vessel monitoring 	Minimise marine traffic disturbance on dolphins	Contractor	North Lantau and West Lantau	Prior to construction, during construction, and 1 year after operation	^
Fisheries							
S11.7	F1	<ul style="list-style-type: none"> Reprovision of replacement Artificial Reefs(of the same volume as the existing ARs inside Marine Exclusion Zone) 	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"> Reduce re-suspension of sediments Limit dredging and works fronts. Good site practices Strict enforcement of no marine dumping Spill response plan 	Minimise marine water quality impacts	Contractor	Seawall,	During construction	^ ^ ^ ^ ^
Landscape & Visual (Construction Phase)							
S14.3.3.3	LV2	Mitigate both Landscape and Visual Impacts <ul style="list-style-type: none"> G1. Grass-hydroseed bare soil surface and stock pile areas. 	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"> • G2. Add planting strip and automatic irrigation system if appropriate at some portions of bridge or footbridge to screen bridge and traffic. • 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. • G5. Vegetation reinstatement and upgrading to disturbed areas. • G6. Maximize new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed. • G7. Provide planting area around peripheral of and within HKLR for tree screening buffer effect. • G8. Plant salt tolerant native tree and shrubs etc along the planter strip at affected seawall. • 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). 					<p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p>
S14.3.3.3	LV3	<p><u>Mitigate Visual Impacts</u></p> <ul style="list-style-type: none"> • V1.Minimize time for construction activities during construction period. • 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. 					<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
EM&A							
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)

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



Appendix: C6 Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No.: HY/2011/09

Monthly Summary Waste Flow Table for 2014 (Year)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated ¹¹	Hard Rock and Large Broken Concrete ⁶	Reused in the Contract ^{8,9}	Reused in other Projects ^{5,8,9}	Disposed as Public Fill ⁷	Imported Fill ^{6,7,8,9}	Metals ¹²	Paper/ cardboard packaging	Plastics ³	Chemical Waste	Others, e.g. general refuse ^{8,9}
	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m ³)
Jan	2.592	0.000	0.124	0.449	2.020	0.000	0.000	0.272	0.000	0.000	0.169
Feb	3.843	0.000	0.000	2.373	1.470	0.000	0.000	0.756	0.000	0.000	0.117
Mar	2.376	0.000	0.000	0.000	2.376	0.000	0.189	0.764	0.000	0.595	0.260
Apr	7.401	0.000	0.052	2.210	2.129	3.010	0.030	1.150	0.000	0.000	0.189
May	18.789	0.000	0.169	6.938	2.110	9.572	0.025	1.056	0.000	0.000	0.221
Jun	21.904	0.000	0.000	10.666	0.962	10.276	0.033	0.948	0.000	0.000	0.195
Sub-Total	56.905	0.000	0.345	22.636	11.067	22.858	0.277	4.946	0.000	0.595	1.151
Jul	14.458	0.000	0.046	12.857	1.555	0.000	0.014	1.020	0.000	0.396	0.234
Aug	8.652	0.000	0.000	7.140	1.511	0.000	0.068	1.090	0.000	1.982	0.273
Sep	4.861	0.000	0.098	3.429	1.334	0.000	0.066	1.515	0.000	0.000	0.267
Oct	6.588	0.000	0.000	1.191	5.398	0.000	0.196	1.062	0.000	0.000	0.273
Nov	6.785	0.000	0.150	1.089	5.546	0.000	0.096	0.988	0.000	0.000	0.267
Dec	4.506	0.000	0.000	0.000	4.506	0.000	0.080	1.000	0.000	0.000	0.371
Total	102.755	0.000	0.638	48.342	30.917	22.858	0.798	11.621	0.000	2.973	2.835



Forecast of Total Quantities of C&D Materials to be Generated from the Contract ¹⁰

Total Quantity Generated ¹¹	Hard Rock and Large Broken Concrete ⁶	Reused in the Contract ^{8,9}	Reused in other Projects ^{5,8,9}	Disposed as Public Fill ⁷	Imported Fill ^{6,7,8,9}	Metals	Paper/ cardboard packaging	Plastics ³	Chemical Waste	Others, e.g. general refuse ^{8,9}
(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 m ³)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 m ³)
209.311	0.000	3.200	73.111	80.000	53.000	6.115	23.273	0.000	7.532	6.818

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 m³. (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) is 2.0 tonnes/m³.
- (7) According to the EIA Appendix 8B, the density of soil (bulked) is 1.8 tonnes/m³.
- (8) Assuming the loading quantities of a 30-tonne truck is 8.0m³.
- (9) Assuming the loading quantities of a 24-tonne truck is 6.5m³.
- (10) The forecast of C&D materials to be generated from the Contract is sourced from the works program in December 2014.
- (11) 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.
- (12) The density of metal is 7,850 kg/m³.

**APPENDIX P
COMPLAINT LOG**

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

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"> •To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and •To deploy professional personnel to supervise the works. 	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 April 2013 (Com-2013-04-001).	After receiving the complaint, additional site inspection was conducted at near Tung Chung New Development Pier on 30 May 2013 to investigate whether oil dumped was due to Contract No. HY/2011/09’s vessels. During the site	Closed

			<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>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"> • 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. • Provide training to the vessel skippers for prevention of pollution from ships. • 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. 	
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	<p>The complaint was received by EPD on 17th July 2013. According to the EPD’s letter, the complainant was concerned for the noise nuisance generated from the operation of concrete lorry mixers during evening and night-time period at Southeast Quay of Chek Lap Kok.</p>	<p>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.</p> <p>During the inspections, the Ro-Ro barge was observed anchored off Southeast Quay at Chek Lap Kok but no concrete</p>	Closed

				<p>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 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</p>	
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				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.	
Com-2013-11-001	Chek Lap Kok (CLK) South Road	16 November 2013	The complaint was received by project customer services on 16 th 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"> • Dust generation works was conducted by the other Contractor at South East Quay • Proper watering of haul road to avoid dust generation during vehicle / plant equipment movement. • Vehicle washing facilities provided at every site exit at CLK South Road and South Perimeter Road. • No dark smoke was observed emitting from the plant equipments. <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</p>	Closed

				suppression measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.	
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 rd 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 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"> Review and adjust the lighting directions of the barge, under safety consideration, to avoid potential 	Closed

				<p>visual impacts to residents in vicinities;</p> <ul style="list-style-type: none"> To ensure the equipment are maintaining in good operation condition; and 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. 	
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.	<p>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 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"> 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 	Closed

				<p>anticipated.</p> <p>2) No heavy smoke was observed emitting from plants / equipment during the site inspection on 21 January 2014.</p> <p>3) The vehicles and equipments were switched off while not in use.</p> <p>4) All plant and equipment were well maintained and in good operating condition.</p> <p>5) Air quality mitigation measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.</p>	
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	<p>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.</p> <p>In addition, spill kits are ready on site in order to dealing with spillage cases promptly.</p> <p>Nevertheless, DCVJV was also recommended the mitigation measures as below:</p> <ul style="list-style-type: none"> • Provide training for the workers regularly regarding the mitigation measures on waste / chemical management. • Provide sufficient chemical spillage kit (e.g. oil absorbent) to all vessels and 	Closed

				<p>working platform.</p> <ul style="list-style-type: none"> • Regular check the condition of vessels and plant equipments to ensure no leakage of oil. 	
Com-2014-03-002	Construction Noise in the vicinity of the waters outside Sha Lo Wan	11 March 2014	<p>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.</p>	<p>In accordance with an ad hoc site inspection on 18 March 2014, no construction works were conducted during the restricted hours. The 1st investigation report has been submitted to EPD on 21 March 2014 and the 2nd investigation report was submitted to EPD on 26 June 2014.</p> <p>The Contractor was advised to strictly 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"> · To space out noisy equipment and position it as far away as possible from the sensitive receivers; · To avoid concurrent uses of noisy equipment near the sensitive area; · To ensure the equipment are maintaining in good operation condition; · To turned off any idle equipment on site; 	Closed

				<p>and</p> <ul style="list-style-type: none"> · To enclose the noisy part of the machine by acoustic insulation material if feasible. · 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. · To delegate one Engineer for ensuring that all construction activities and PMEs used are in full compliance with the CNP 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.</p>	Closed

				<p>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> <ul style="list-style-type: none"> ➤ 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"> 1. Name and telephone number; 2. Date and time of discovery; 3. Location (as specific as possible); 4. Status of the stranded animal (i.e. alive, freshly dead, slightly decomposed, rotten, mummified); 5. Type and size of the stranded animal. ➤ 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. 	
Com-2014-05-001	At the shore of Sha	13 May 2014	The complaint was received by	After receiving the complaint from a Sha	Closed

	Lo Wan		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 - Zhuhai - Macao Bridge (HZMB) Project on 11 May 2014.	<p>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.</p> <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</p>	Complaint Investigation Report is under finalization

				complaint investigation report and this report is under finalization at this stage.	
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"> • To check for any accumulation of waste spoils (concrete and earth) on site. • To cover the wastes skip with waste spoils before removing from site. • To carry out inspection of pier(s) regularly to ensure the frontline staff loads inert materials to approved barge properly. • To clean the waste storage areas regularly and do not cause dust nuisance. 	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"> • To check for any accumulation of dusty materials at roro-barge. • To cover the stockpile of dusty materials before removing from site. 	Closed

				<ul style="list-style-type: none"> • To clean the surface of ro-ro barge regularly and do not cause dust and water quality nuisance. • 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. • 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. 	
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"> ➤ 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. 	Closed
Com-2014-11-002	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No.	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 had been poured out directly from	The worker should also pay special care to remove the concrete stains to minimize the water quality nuisance.	Closed

	HY/2011/09)		<p>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)</p>	<ul style="list-style-type: none"> ➤ Keep cleanliness of the surface of ro-ro-barge and do not cause water quality nuisance. ➤ 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. ➤ Keep all debris/ aggregate away from the edge of ro-ro barge to prevent them from falling into the sea. ➤ Provide sufficient skips for temporary storage of concrete residue/wastewater. ➤ To check for any accumulation of residual waste concrete at the waste skip on ro-ro-barge. ➤ 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. ➤ Provide absorptive materials to absorb the wastewater in case of accidental spillage of wastewater during washing concrete lorry mixers or other equipments. ➤ Assign trained staff to ensure proper management of environmental 	
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				<p>matters on each of the ro-ro barges in particular the handling of concrete residue/wastewater generated during operation.</p> <ul style="list-style-type: none"> ➤ 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-east side had disturbed the seabed causing an increase of turbidity in marine waters at around noon of 15 November 2014.	<p>Based on the information collected, the following conclusions were drawn:</p> <ol style="list-style-type: none"> 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 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 	Closed

				<p>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"> • The vessel skipper should pay special care about the movement of deep draught vessel to avoid seabed disturbance. (e.g. speed restrictions) • In case of sediment plume was found behind vessel, the vessel skipper 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) 	
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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: <ul style="list-style-type: none"> • 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 regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection. 	Closed
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	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.	Closed

			<p>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 be loading or unloading a boat at the pier. Noise was still going on right now at 20:04.”</p>	<p>The metal pipe was unloaded at non-designated area and no powered mechanical equipment was used for unloading works at WA6 during restricted hour.</p> <p>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:-</p> <ul style="list-style-type: none"> • To place wooden planks or rubber mats on ground for loading and unloading heavy or metal objects; and • To deploy professional personnel to supervise the works. 	
Com-2014-12-003	Along the shore from Yat Tung to Tai O	24 December 2014	<p>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>	<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</p>	Closed

				<p>below:</p> <ul style="list-style-type: none"> • 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 regularly regarding the water quality mitigation measures and waste management to increase their awareness of environmental protection. 	
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**APPENDIX Q
SUMMARY OF SUCCESSFUL
PROSECUTION**

Appendix Q - Summary of Successful Prosecution

Date of Successful Prosecution	Details of the Successful Prosecution	Status	Follow Up
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.