

Ref.: HYDHZMBEEM00_0_2689L.15

03 February 2015

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

By Fax (3767 5922) and By Post

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
Quarterly EM&A Report No.7 for September to November 2014 (Revision 1)**

Reference is made to the submission of Quarterly EM&A Report No.7 for September to November 2014 version 1.0 dated 29 January 2015 certified by the ET Leader provided to us via email on 29 January 2015.

Please be advised that we have no adverse comments on the captioned report.

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)
HyD – Mr. K Y Yung (By Fax: 3188 6614)
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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

Quarterly EM&A Report

September to November 2014

(Version 1.0)

Certified By 
Dr. H.F. Chan
Environmental Team Leader
(Date: 29 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 7th Quarterly 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 performed in the period between September and November 2014.

Environmental Monitoring and Audit Progress

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

Table I Summary Table for Monitoring Activities in the Reporting Period

Parameter(s)	Monitoring Date(s)
1-hr TSP Monitoring	3 rd , 8 th , 12 th , 18 th , 24 th and 30 th September 2014
24-hr TSP Monitoring	6 th , 10 th , 16 th , 22 nd and 28 th October 2014 3 rd , 7 th , 13 th , 19 th and 25 th November 2014
Noise Monitoring	4 th , 10 th , 19 th and 25 th September 2014 3 rd , 7 th , 13 th , 23 rd and 29 th October 2014 4 th , 10 th , 20 th and 26 th November 2014
Water Quality Monitoring	1 st , 3 rd , 5 th , 8 th , 10 th , 12 th , 15 th , 18 th , 20 th , 22 nd , 24 th , 26 th and 29 th September 2014 1 st , 3 rd , 6 th , 8 th , 10 th , 13 th , 15 th , 17 th , 20 th , 22 nd , 24 th , 27 th , 29 th and 31 st October 2014 3 rd , 5 th , 7 th , 10 th , 12 th , 15 th , 17 th , 19 th , 21 st , 24 th , 26 th and 28 th November 2014
Dolphin Monitoring (Line-transect Vessel Surveys)	10 th and 23 th September 2014 8 th and 22 nd October 2014 5 th and 17 th November 2014
Additional Land-based Dolphin Behaviour and Movement Monitoring	1 st and 5 th September 2014 20 th and 27 th October 2014 10 th and 24 th November 2014
Environmental Site Inspection	2 nd , 10 th , 17 th , 26 th and 30 th September 2014 7 th , 14 th , 21 st and 31 st October 2014 4 th , 11 th , 18 th and 28 th November 2014

Archaeological Site Inspection	30 th September 2014
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Breaches of Action and Limit Levels

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

Table II Summary Table for Events Recorded in the Reporting Period

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)	25	23	0	0
Dolphin Monitoring	Line-transect Vessel Surveys	0	0	0	0

4. Environmental monitoring works were performed in the reporting period and all monitoring results were checked and reviewed. The details of each exceedance were attached in the Monthly EM&A Reports.

Complaint Log

5. Summary of the environmental complaints of the reporting period is tabulated in **Table III**.

Table III Summary Table for Complaints Recorded in the Reporting Period

Complaint Log Ref.	Location	Received Date	Nature of Complaint
Com-2014-11-001	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	11 November 2014	Water Quality and Waste Management
Com-2014-11-002	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	18 November 2014	Water Quality and Waste Management
Com-2014-11-003	Floating Concrete Batching Plant (FCBP)	28 November 2014	Water Quality

Notification of Summons and Successful Prosecutions

6. One notification of summons and successful prosecution was received in the reporting period.

Reporting Changes

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

Future Key Issues

8. 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:**

- Piling works
- Mooring bits and silt curtain installation
- Installation of piling jackets
- Dismantling of piling jackets

- Pile excavation and casing installation
- Inter-face tests, full depth coring test and sonic test
- Grouting works

Kelly Method:

- Installation of temporary piles, platforms permanent casing
- Removal of piling platform and temporary pile extraction
- Pile excavation
- Inter-face tests, full depth coring test and sonic test
- Toe grouting works

Pile Cap Construction:

- Installation of precast cap shells
- Concreting
- Kingpost installation and associated steel welding works
- Concreting trimming

Works with Cofferdam:

- Installation of waling strut
- Installation of sheet pile
- Installation of temporary working platform
- Installation of shear pin
- Installation of bored pile casing
- Excavation works and casting of concrete plug
- Dewatering works and sealing works
- Additional welding

Column Construction:

- Lifting works
- Lift concreting
- Pier head works
- Pier head concreting
- Column insert installation, mobilization and temporary works

Deck Erection:

- Lifting frame fabrication in Dongguan
- Segment Unloading Frame (SUF) in Portion C
- Assembly of Launching Gantry 2 at River Trade Terminal
- Winches test
- Assembly and erection of Lifting Frame 2
- Erection of segment on pier

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

- Pile construction
- Pouring of column
- Pre-bored for sheet pile for cofferdam construction
- Seawall block coring and breaking

- formwork erection
- Blinding concrete for scaffolding works
- Dismantling of steel bracket system
- Erection of steel bracket system
- Cross road steel portal beams erection and corresponding falsework erection
- Steel girders and cross beams erection

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 7th Quarterly EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme in the period between September and November 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: **Environmental Monitoring and Audit Requirements** - summarises the monitoring parameters, monitoring frequency, monitoring locations, Action and Limit Levels, Event / Action Plans, site audit summary and environmental mitigation measures.

Section 4: **Environmental Monitoring Results** - summarises the environmental monitoring results in terms of air quality, noise, water quality, dolphin and waste management.

Section 5: **Environmental Non-conformance** - summarises any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting period.

Section 6: **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 and EP-352/2009/B) based on the Application No. VEP-409/2013 and VEP-411/2013 respectively. The environmental Permit (Permit No. EP-352/2009/C) was then issued on 5 September 2013.
- 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	Name	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 Period

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

September 2014:**Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)**

- (a) Pile construction is in progress at P81 to P83 and 4 piles were concreted in this reporting period.
- (b) Total 110 pours for column were completed with 13 pours in this reporting period; 33 columns was completed to top level (18 gridlines - P95 to P97 and P99 to P114).
- (c) P81 pile works commenced.
- (d) Pre-bored for sheet pile for cofferdam construction at P84 about 45% completed.
- (e) Seawall block coring and breaking at P82L was completed & P83L is in progress.
- (f) Portal P103 was concreted on 26 August 2014, dismantling of steel girders and brackets are in progress.
- (g) Portal P111 & P113 falsework dismantling was completed.
- (h) Portal P104 was concreted on 23 September 2014.
- (i) Portal P114 formwork erection is in progress.
- (j) Portal P108 side formwork erection is in progress.
- (k) Portal P107 and P106 cross road steel portal beams erection were completed and corresponding falsework erection is in progress.
- (l) Portal P102 steel bracket system erection was completed and corresponding falsework erection is in progress.
- (m) Portal P101 steel girders and cross beams erection is in progress.

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

- (a) Construction of the temporary platform for piling works at P68 was suspended since 10 June 2014 and the Contractor modified the platform followed the SO instruction.
- (b) Piling works at P69 was suspended on 12 July (9 out of 12 piles already completed).
- (c) Works started at P75: Mooring bits and silt curtain installation are in progress.
- (d) Piling jackets were installed at P20, P23 and P80.

- (e) Piling jackets were dismantled at P17, P62, P63 and P80.
- (f) Pile excavations and casing installation were in progress at P15, P17, P20, P24, P25, P31, P32, P67 and P80 with 26 nos. piles concreted in the reporting period.
- (g) Inter-face coring tests were carried out at P28, P29, P32, P58, P63 and P67.
- (h) Full depth coring test was carried at P27 and P63.
- (i) Sonic tests were carried out at P27, P28, P29, P32, P58, P63 and P67.
- (j) Grouting works were carried out at P29, P59, P62, P63 and P67.

Kelly Method:

- (k) Installation of temporary piles were carried out at P1.
- (l) Installation of platforms were carried out at P1.
- (m) Installation of permanent casing were carried out at P1 and P3.
- (n) Piling platform removal and temporary pile extraction were carried out at P11, P17b, P17c and P33.
- (o) Pile excavation by Kelly method are in progress at P2, P3, P12 and P21 with 11 piles concreted in the reporting period.
- (p) Inter-face core tests were carried out at P30.
- (q) Full depth coring was carried out at P16-R2 and P30-R1.
- (r) Sonic tests were carried out at P30.
- (s) Toe grouting works were carried out at P4 and P16.
- (t) Disposal: 3 trips of inert materials to HKBCF, 3 trips of Type I materials, 2 trips of Type II materials were disposed.

Pilecap Construction:

- (a) 10 precast cap shells were installed at P33, P34, P35, P61 and P64.
- (b) Stage 1 concreting was completed at P20R, P36, P50, P60, P66 and P65.
- (c) Stage 1 works is in progress at P19, P50, P60, P65 and P66.
- (d) Stage 2 concreting was completed at P20, P36, P37, P38 and P50.
- (e) Stage 2 works is in progress at P20, P36, P37, P38, P50 and P66.
- (f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P18, P33, P34, P35, P61 and P64.
- (g) Concrete trimming and advanced trimming (inside casing) works were carried out at P18, P33, P53, P62, P63 and P67.

(h) Submerged pilecap works with cofferdam:

- P70L: Installation 1st and 2nd layer of waling & strut completed.
- P70R: Installation of 1st layer of waling & strut completed. Installation of 2nd layer of waling & strut is in progress.
- P71L: Cofferdam work was completed. Formwork & top layers of reinforcement for pile cap is on-going.
- P71R: Due to high rockhead, concrete waling beam is required. Concrete pouring for 2nd layer of concrete waling beam was completed. Preparation works for the last layer pouring is in progress.
- P72L: Installation of waling strut at 2nd layer is substantially completed.
- P72R: 2 layers of waling & strut were completed. Excavation will be commenced.
- P73L: Concrete plug was poured. Installation of 3rd layer of waling & strut is in progress.
- P73R: Excavation is substantially completed, sheet pile cleaning by divers is in progress.
- P74L: Installation of 1st layer of waling & strut was completed.
- P74R: Re-driving sheet pile is in progress.
- P76: Installation of temporary working platform is in progress.
- P77: Installation of temporary working platform was completed.
- P78L: Installation of sheet pile was completed. Preparation works for installation of waling & strut is in progress.
- P78R: Installation of sheet pile was completed. Preparation work for installation of waling & strut is in progress.

In-situ Column Construction

- (a) 1st lift works in progress at P38, P39, P41, P42L, P48L, P49, P51 and P52.
- (b) 1st lift concrete was poured at P39, P41, P42L, P48L, P49, P51 and P52.
- (c) 2nd lift works in progress at P39, P41, P42L, P48, P51 and P52.
- (d) 2nd lift concreting was poured: P45 and P49.
- (e) Pier head works in progress at: P45 and P49.
- (f) Pier head concreting: Nil in this reporting period.

Precast Column Erection

- (g) Preparatory works have been completed for precast column erection at P43 and P44. The first batch of precast column delivery is in progress.

Deck Erection

(a) Works for segment erection:

- Off-site fabrication of the first 3 sets of Lifting Frames is substantially completed in Dongguan with delivery of all 6 sets of Lifting Frames 2 (LF2).
- Segment Unloading Frame (SUF) load test was completed.
- Assembly of Launching Gantry 2 (LG2) continues at River Trade Terminal (RTT). Winches have been tested.
- Launching Gantry 1 (LG1) assembly continues at Portion C with all components on site and erection commenced.
- Assembly and erection of LF2 continues with 2 frames having been erected at P109. One of the frames has been load tested. Other 2 frames are assembled at adjacent to P109 and 2 frames are assembled at WA4.
- The first 2 segments on P109L have been erected by LF2.
- 12 winches have been delivered to Hong Kong.
- Segments on Pier (SOP) erection at P47 has commenced.

Precast Segment

(a) Progress for mould assembly:

Type of Segment	Number of Segment	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)	3	2 CPA complete, CPB in progress
DT	1	Completed
E/EV	2	Under fabrication

- (b) 90 segments were cast in this reporting period.
- (c) Cumulative total 1057 segments cast.
- (d) The first 12 segments were loaded onto barges and delivered to Hong Kong.
- (e) Piling works have commenced for the precast yard extension for both additional moulds and segment storage.
- (f) Transportation of segments to a nearby secondary storage yard has commenced in Zhongshan.

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)
CPI	4	45
CP2	3	12
CP4	1	6

Ground Investigations

- 1 drill rig was mobilized to Pier 1 piling platform for additional holes.
- Predrilling works were carried out at P1 in this reporting period.
- 1 nos. of additional pre-drills was completed in this reporting period. Total 725 piles have completed predrills (including GI used as predrill).
- Total 115 gridline (100%) out of 115 were completed for pre-drilling. Additional predrills are required for the friction piles at P1 and P7 for SPT tests and these shall be carried out on the piling platforms.
- Total 113 gridlines for first issue of Founding Level Proposals were submitted. 1 no. was submitted in this reporting period.

October 2014:**Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)**

- (a) Pile construction is in progress at P81 to P82 and 4 piles were concreted in this reporting period.
- (b) Total 122 pours for column were completed with 12 pours in this reporting period; 44 columns was completed to top level (21 gridlines - P93 and P95 to P114).
- (c) Pre-bored for sheet pile for cofferdam construction at P84 was completed. Excavation and waling installation is in progress.
- (d) Pre-bored for sheet pile for cofferdam construction at P83R commenced.
- (e) Sewage diversion at P83 commenced.
- (f) Portal P103 was concreted on 26 August 2014. Dismantling of steel girders and brackets was completed.
- (g) Portal P111 & P113 falsework dismantling was completed. Dismantling of falsework is in progress.
- (h) Portal P114 was concreted on 28 October 2014.
- (i) Portal P108 was concreted on 25 October 2014.

- (j) Portal P107 and P106 erection of formwork is in progress.
- (k) Portal P102 erection of side formwork is in progress.
- (l) Portal P101 erection of side formwork is in progress.
- (m) Portal P97 erection of cross beams is in progress.
- (n) Portal P100 erection of falsework and girders is in progress.
- (o) Portal P99 foundation work for falsework supports is in progress.

Marine Viaduct (P0 to P80)

RCD Method:

- (a) Construction of the temporary platform for piling works at P68 was suspended since 10 June 2014. The Contractor removed the rockfill platform followed the SO instruction.
- (b) Piling works at P69 was suspended on 12 July 2014 (9 out of 12 piles already completed).
- (c) Remobilization for P75's works started on 25 September 2014. Excavation by grabbing and chiseling is in progress.
- (d) Piling jackets were installed at P5, P9, P10, P18 and P23.
- (e) Piling jackets were dismantled at P13, P15, P20, P25, P32, P63, P67 and P80.
- (f) Pile excavations and casing installation were in progress at P5, P9, P15, P18, P20, P23, P31 and P80 with 20 nos. piles concreted in the reporting period.
- (g) Inter-face coring tests were carried out at P31, P32, P55, P56, P79 and P80.
- (h) No Full depth coring test was carried during the reporting period.
- (i) Sonic tests were carried out at P28, P31, P32, P55, P56 and P80.
- (j) Grouting works were carried out at P14, P27, P28, P29, P32, P54, P58 and P67.

Kelly Method:

- (k) Installation of temporary piles were carried out at P2 and P7.
- (l) Installation of platforms were carried out at P7.
- (m) Installation of permanent casing were carried out at P7.
- (n) Piling platform removal and temporary pile extraction were carried out at P2 and P30.
- (o) Pile excavation by Kelly method are in progress at P1, P2, P3, P7 & P12 and 8 piles concreted in the reporting period.

- (p) All end bearing piles by Kelly Method has been completed.
- (q) Inter-face core tests were carried out at P21.
- (r) Full depth coring was carried out at P30-R1.
- (s) No sonic tests were carried out in this reporting period.
- (t) Toe grouting works were carried out at P4 and P16.

Disposal

- (a) 2 trips of inert materials & 1 trip of inert materials to TM38 & HKLR03 Project respectively, 3 trips of Type I materials & 1 trip of Type II materials were disposed to HK open sea mud pits. 3 trips of marine mud to Cross Border were disposed.

Pilecap Construction:

- (a) 6 precast cap shells were installed at P18, P62 & P63.
- (b) Stage 1 concreting was completed at P19, P33, P34, P35, P61 & P64.
- (c) Stage 1 works is in progress at P19, P33, P34, P35, P61, P62 & P64.
- (d) Stage 2 concreting was completed at P19, P60, P65 & P66.
- (e) Stage 2 works is in progress at P19, P34, P35, P60, P61, P64, P65 & P66.
- (f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P18, P29, P62, P63 & P67.
- (g) Concrete trimming and advanced trimming (inside casing) works were carried out at P17, P27, P28, P29, P59, P63 & P67.
- (h) Submerged pilecap works with cofferdam:
 - P70L: Excavation is in progress.
 - P70R: Excavation is in progress.
 - P71L: Concreting works of pile cap was completed on 6-Oct-14.
 - P71R: Additional concrete plug and 3rd layer of waling & strut were completed. Dewatering, cleaning and drainage works before casting of blinding layer is in progress.
 - P72L: Installation of waling strut at 2nd layer is substantially completed. Additional grouting works was carried out.
 - P72R: Excavation is substantially completed. Sheet pile cleaning by divers is in progress.
 - P73L: Installation of 3rd layer of waling & strut was completed. Dewatering, cleaning and drainage works before casting of blinding layer is in progress.

- P73R: Concrete Plug was casted on 10-Oct-14. Installation of 3rd layer of waling & strut was completed. Dewatering is in progress.
- P74L: Installation of 2nd layer of waling & strut in progress.
- P74R: Installation of shear pin was completed.
- P76L: Installation of temporary working platform was completed.
- P76R: Installation of sheet pile is in progress.
- P77L: Installation of sheet pile is in progress.
- P77R: Installation of sheet pile is in progress.
- P78L: Installation of 1st & 2nd waling & strut were completed.
- P78R: Installation of 1st & 2nd waling & strut were completed.

In-situ Column Construction

- (a) 1st lift works is in progress at P36, P37, P38 and P66.
- (b) 1st lift concrete was poured at P37 & P38.
- (c) 2nd lift works is in progress at P48-R, P51 and P52.
- (d) 2nd lift concreting was poured: P48-R, P51 and P52.
- (e) Pier head works is in progress at: P45, P48-R and P52.
- (f) Pier head concreting : Nil in this reporting period.

Precast Column Erection

- (g) The initial Precast Column sections have been installed and concreted on P43 and P44. The 2nd batch of precast column delivery is in progress.

In-situ Double Blade Column Construction

- (h) 1st lift works is in progress at P20 and P71.

Deck Erection

- (a) Setting up of Equipment:
 - Off-site fabrication of the first 3 sets of Lifting Frames is substantially completed in Dongguan with delivery of all 6 sets of Lifting Frames 2 (LF2), Steelwork for the 4th set of Lifting Frames is under fabrication with some deliveries having commenced.
 - Segment Unloading Frame (SUF) is fully operational;
 - Assembly of Launching Gantry 2 (LG2) continues at River Trade Terminal (RTT). Winches have been tested.
 - Launching Gantry 1 (LG1) assembly continues at Portion C with all components on site, Lower Cross Beam (LCB)'s erected and the first 50m section of truss erected.

- An accident occurred with the collapse of the 4th set of LF2 at Pier P109R on the morning of 19th October 2014. All works on LF2 at P109 have been suspended pending for Labour Department Investigation.
- A total of 10 segments have been erected on P109, 4 segments on P110 and 4 SOP segments on P47. Segments on Pier (SOP) segments for P46 are on site awaiting erection after completion of temporary works.

Precast Segment

- (a) Progress for mould assembly:

Type of Segment	Number of Segment	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)	3	2 CPA complete, CPB in progress
DT	1	Completed
E/EV	2	Under fabrication

- (b) 119 segments were cast in this reporting period.
- (c) Cumulative total 1176 segments cast.
- (d) 48 segments have been delivered to site.
- (e) Piling works have commenced for the precast yard extension for both additional moulds and segment storage.
- (f) Transportation of segments to off-yard storage at nearby area in Zhongshan has commenced.

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	50
CP2	Completed	12
CP4	2	8
CP5	0	2
CP1	5	50

Ground Investigations

- 4 drill rigs were mobilized for additional predrilling works at P2 (compensation pile), P7 (additional SPT's) and D18 (pile moved).
- 5 nos. of additional pre-drills were completed in this reporting period. All 725 piles have completed predrills (including GI used as predrill).
- Total 115 gridline (100%) out of 115 were completed for pre-drilling. Additional predrills are required for the friction piles at P1 and P7 for SPT tests and these shall be carried out on the piling platforms.
- Total 115 gridlines for first issue of Founding Level Proposals were submitted. 2 no. was submitted in this reporting period.

November 2014:**Land Viaduct (P85 to Abutment at SHT) & Marine Viaduct (P81 - P84)**

- (a) Pile construction is in progress at P82 to P83 and 4 piles were concreted in this reporting period.
- (b) Total 139 pours for column were completed with 17 pours in this reporting period; 51 columns were completed to top level (25 gridlines - P90 to P114).
- (c) P84L water plugging and rebar fixing are in progress, P84R excavation is in progress.
- (d) Pre-bored for sheet pile for cofferdam construction at P83R was completed.
- (e) Pre-bored for sheet pile for cofferdam construction at P81R commenced.
- (f) Sewage diversion at P83 is in progress.
- (g) P83L piling work commenced.
- (h) Portal P107 and P106 were concreted on 17 and 21 November 2014 respectively. Dismantling of side formwork is in progress.
- (i) Portal P104 dismantling of steel bracket system was completed.
- (j) Portal P108 dismantling of falsework and steel bracket system is in progress.
- (k) Portal P114 dismantling of formwork was completed, temporary supporting jacks and nailing to be installed before falsework removal.
- (l) Portal P102 steel fixing is in progress and will be concreted on 29 November 2014.
- (m) Portal P101 steel fixing is in progress.
- (n) Portal P97 formwork erection was completed and steel fixing will be commenced.
- (o) Portal P98 erection of steel bracket system is in progress.
- (p) Portal P100 erection of formwork is in progress.

- (q) Portal P99 erection of falsework and steel beam supports are in progress.
- (r) Portal P96 portal foundation work is in progress.

Marine Viaduct (P0 to P80)

RCD Method:

- (a) Construction of the temporary platform for piling works at P68 was suspended since 10 June 2014.
- (b) Piling works at P69 was suspended on 12 July 2014 (9 out of 12 piles already completed).
- (c) Remobilization for P75's works started on 25 September 2014. Excavation by backhoe on flat top barge is on going.
- (d) Piling jackets were installed at P8.
- (e) Piling jackets were dismantled at P23 and D20.
- (f) Pile excavations and casing installation are in progress at P5, P9, P10 and P23 with 13 nos. piles concreted in the reporting period.
- (g) Inter-face coring tests were carried out at P23, P24, P25, P26 and P79.
- (h) Full depth coring test was carried at P79.
- (i) Sonic tests were carried out at P22, P24, P25, P26 and P79.
- (j) Grouting works were carried out at P53 and P79.

Kelly Method:

- (k) Re-installation of platform was carried out at P2.
- (l) Installation of permanent casing was carried out at P2R1a.
- (m) Piling platform removal and temporary pile extraction were carried out at P16, P31 & P32.
- (n) Pile excavation by Kelly method is in progress at P1, & P7 and 9 piles concreted in the reporting period.
- (o) All end-bearing piles by Kelly Method have been completed.
- (p) Inter-face core tests were carried out at P12 & P21.
- (q) Full depth coring was carried out at P12-R3 & P30-R1.
- (r) Sonic tests were carried out at P2, P3, P12, P19-L & P21.
- (s) Toe grouting works were carried out at P2 & P3.

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	3	Inert Materials
TMCLK	2	Inert Materials
HK Open Sea Mud Pits	1	Type II Materials
Cross Boundary Disposal	5	Marine Mud

Pilecap Construction:

- (a) 10 precast cap shells were installed at P27, P28, P29, P63 & P67.
- (b) Stage 1 concreting was completed at P18, P29, P62, P63 & P67.
- (c) Stage 1 works is in progress at P18, P29, P62, P63, P67 & P68.
- (d) Stage 2 concreting was completed at P18L, P33, P34, P35, P61, P62 & P64.
- (e) Stage 2 works is in progress at P18L&R, P29, P33, P34, P35, P61, P62, P63 & P64.
- (f) Kingpost installation and associated steel welding works for precast shell installation are in progress at P17, P27, P28, P30, P32 & P59.
- (g) Concrete trimming and advanced trimming (inside casing) works were carried out at P14, P16, P17, P27, P28, P29, P30, P32, P53, P58, P59, P63, & P67.
- (h) Submerged pilecap works with cofferdam:

Pier Location	Side	Progress
P70	L	Excavation completed; Concrete plug was casted on 18-Nov-14
	R	Excavation, concrete plug and blinding layering completed; Trimming of pile head concrete in progress
P71	L	Concreting works of pile cap completed on 6-Oct-14
	R	Trimming of pile head concrete completed; Cleaning works before formwork and steel fixing works in progress
P72	L	Excavation works in progress
	R	Concrete plug completed; Dewatering for Installation of 3rd layer of waling in progress
P73	L	Installation of formwork and steel fixing for pile cap is in progress;
	R	Trimming of pile head concrete is in progress;
P74	L	Excavation works in progress
	R	Excavation works in progress
P76	L	Installation of sheet pile completed; Removal of temporary working platform in progress;
	R	Installation of sheet pile completed; Installation of shear pin to be started

Pier Location	Side	Progress
P77	L	Installation of 1st waling & strut in progress
	R	Installation of sheet pile completed. Removal of temporary working platform in progress;
P78	L	Excavation works is in progress
	R	Excavation works is in progress

In-situ Column Construction

- (a) 1st lift works is in progress at P34, P35, P36, P60, P65 & P66.
- (b) 1st lift concrete was poured at P35, P36, P60 & P65.
- (c) 2nd lift works is in progress : N/A.
- (d) 2nd lift concreting was poured: N/A.
- (e) Pier head works is in progress at: P45, P48-R, P49, P52, P60, P65 & P66.
- (f) Pier head concreting in progress at P45, P48-R & P52.

Precast Column Erection

- (g) P39 – Base unit (1 of 3) installed.
- (h) P40 – Base unit (1 of 3) installed.
- (i) P41 – All units installed.
- (j) P43 – All units installed.
- (k) P44 – All units installed and prestressed tendon installation completed.

In-situ Double Blade Column Construction

- (l) 1st lift works is in progress at P19.
- (m) 2nd lift works is in progress at P20.
- (n) 1st lift works is in progress at P71.

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 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-P110R has been removed
Launching Gantry 1 (LG1)	LG1 assembly continues at Portion C with all components on site; Lower Cross Beam (LCB)’s and elements 3 – 14 of the main trusses erected
Launching Gantry 2 (LG2)	Loading out of barges with LG2 components at River Trade Terminal (RTT) has commenced with assembly imminent at P47/P46

- A total of 22 segments have been erected to date with the P46 Segments on Pier (SOP) segments erected during the month.

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	2 CPA complete, 1 * CPB complete
DT	1	Completed
E/EV	2	Under fabrication

(b) 210 segments were cast in this reporting period.

(c) Cumulative total 1386 segments cast.

(d) 76 segments have been delivered to site (28 in this reporting period).

(e) Piling works were completed for the precast yard extension for both additional moulds and segment storage; Storage plinths are well underway.

(f) Transportation of segments to an off-yard storage yard at nearby area in Zhongshan continues.

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	6	56
CP2	Completed	12
CP3	2	2
CP4	Completed	8
CP5	2	4

Ground Investigations

- All ground investigation / predrilling holes were completed. No drill rig is on site for this purpose. The Contractor is working to complete the reporting.
- All Founding Level Proposals have been issued. The Contractor is working to close out comments and review as piling works proceeding on site.

Status of Environmental Licences, Notification and Permits

2.11 The valid environmental licenses and permits were attached in the Monthly EM&A Reports.

3 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

Monitoring Parameters and Monitoring Locations

3.1 The EM&A Manual designates locations for the ET to monitor environmental impacts in terms of air quality, noise, underwater noise, water quality and dolphin to the Contract. The monitoring locations are depicted in **Figures 3 to 6**. The details of monitoring requirements are presented in **Table 3.1**.

Table 3.1 Summary of Impact EM&A Requirements

Type of Monitoring	Parameter	Frequency	Location	Remarks
Air Quality	1-hr TSP	Three times / 6 days	AMS1 – Sha Lo Wan AMS4 – San Tau	While the highest dust impact was expected
	24-hr TSP	Once / 6 days		--
Noise	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)	Once per week	NMS1 – Sha Lo Wan NMS4 – San Tau	Daytime on normal weekdays (0700-1900 hrs)
Water Quality	<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) 	Impact monitoring: 3 days per week, at mid-flood and mid-ebb tides (within ± 1.75 hour of the predicted time) during the construction period of the Contract	IS1, IS2, IS3 IS4, CS1, CS2, SR1, SR2, SR3, SR6, ST1, ST2, ST3, SRA	<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.
Dolphin	Line-transect Methods	Twice per month	West Lantau	--

3.2 The wind speed and wind direction were recorded by the installed Wind Anemometer set at AMS4. The location is shown in **Figure 3**.

Monitoring Methodology and Calibration Details

3.3 Monitoring works/equipments were conducted/calibrated regularly in accordance with the EM&A Manual. Copies of calibration certificates are attached in the appendices of the Monthly EM&A Reports.

Environmental Quality Performance Limits (Action and Limit Levels)

3.4 The environmental quality performance limits, i.e. Action and Limit Levels were derived from the baseline monitoring results (except the Action and Limit Levels for underwater noise monitoring). Should the measured environmental quality parameters exceed the Action/Limit Levels, the respective action plans would be implemented. The Action/Limit Levels for each environmental parameter are given in **Table 3.2a-f**.

Table 3.2a 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 3.2b 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 3.2c 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 3.2d 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.

Table 3.2e Action and Limit Levels for Dolphin Line Transect Monitoring

	West Lantau
Action Level	STG < 60% of baseline & ANI <60% of baseline
Limit Level	STG < 45% of baseline & ANI <45% of baseline

Derived Value of Action Level (AL) and Limit Level (LL):

	West Lantau
Action Level	STG < 9.8 & ANI <36.3
Limit Level	STG < 7.4 & ANI <27.2

Remarks:

1. STG means quarterly encounter rate of number of dolphin sightings
2. ANI means quarterly encounter rate of total number of dolphins
3. Baseline value: 16.4 for ER (STG) and 60.5 for ER (ANI)

Event and Action Plan

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

Implementation Status of Environmental Mitigation Measures

- 3.6 Relevant mitigation measures as recommended in the EIA report have been stipulated in the EM&A Manual for the Contractor to implement. The implementation status of environmental mitigation measures (EMIS) is given in **Appendix H**.
- 3.7 Regular marine travel route for marine vessels were implemented properly in accordance with the submitted plan and relevant records were kept properly.
- 3.8 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.
- 3.9 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.
- 3.10 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.

Site Audit Summary

- 3.11 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 observations and recommendations made during the reporting period are summarized in **Appendix I**.
- 3.12 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. One inspection to the Sha Lo Wan (West) Archaeological Site was conducted in the reporting period (30th September 2014). No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed. The photographic records of the inspection to the Sha Lo Wan (West) Archaeological Site are shown in the Monthly EM&A Reports.

Status of Waste Management

- 3.13 The amount of wastes generated by the activities of the Contract during the reporting month is shown in **Appendix J**.

4 ENVIRONMENTAL MONITORING RESULTS

Air Quality Monitoring Results

4.1 The monitoring results for 1-hour TSP and 24-hour TSP are summarized in **Table 4.1 and 4.2** respectively. Graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendices B and C** respectively.

Table 4.1 Summary Table of 1-hour TSP Monitoring Results during the Reporting Period

Month	Monitoring Station	Concentration (µg/m ³)		Action Level, µg/m ³	Limit Level, µg/m ³
		Average	Range		
September 2014	AMS1	29	11 - 77	381	500
	AMS4	42	8 - 148	352	
October 2014	AMS1	80	18 – 202	381	
	AMS4	72	20 – 195	352	
November 2014	AMS1	62	25 – 160	381	
	AMS4	60	19 – 143	352	

Table 4.2 Summary Table of 24-hour TSP Monitoring Results during the Reporting Period

Month	Monitoring Station	Concentration (µg/m ³)		Action Level, µg/m ³	Limit Level, µg/m ³
		Average	Range		
September 2014	AMS1	45	19 – 74	170	260
	AMS4	46	18 - 68	171	
October 2014	AMS1	76	58 – 93	170	
	AMS4	80	65 – 103	171	
November 2014	AMS1	90	52 – 107	170	
	AMS4	79	44 – 100	171	

4.2 According to our field observations, the major dust source identified at the designated air quality monitoring stations in the reporting period are as follows:

Table 4.3 Observation at Dust Monitoring Stations

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

4.3 The wind data monitoring results were attached in the Monthly EM&A Reports

Noise Monitoring Results

- 4.4 The noise monitoring results are summarized in **Table 4.4**. Graphical presentations of noise monitoring are shown in **Appendix D**.

Table 4.4 Summary Table of Noise Monitoring Results during the Reporting Period

Month	Monitoring Station	Noise Level, $L_{eq(30min)}$ dB(A)		Limit Level
		Average	Range	
September 2014	NMS1	70	67 - 71	75 dB(A)
	NMS4	60	53 - 64	
October 2014	NMS1	70	64 - 72	
	NMS4	59	52 - 61	
November 2014	NMS1	69	68 - 70	
	NMS4	61	57 - 64	

Remark: +3dB(A) Façade correction included

- 4.5 According to our field observations, the major noise source identified at the designated noise monitoring stations in the reporting period 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

Water Quality Monitoring Results

- 4.6 The graphical presentation of water quality at the monitoring stations is shown in **Appendix E**.
- 4.7 Water quality impact sources during the water quality monitoring were the construction activities of the Contract, nearby construction activities by other parties and near by operating vessels by other parties.

Dolphin Monitoring (Line-transect Vessel Survey)*Summary of survey effort and dolphin sightings*

- 4.8 During the period of September to November 2014, six sets of systematic line-transect vessel surveys were conducted to cover all transect lines in WL survey area twice per month.
- 4.9 From these surveys, a total of 195.98 km of survey effort was collected, with 86.8% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). The total survey effort conducted

on primary lines was 128.90 km, while the effort on secondary lines was 67.08km. Survey effort conducted on primary and secondary lines were both considered as on-effort survey data. Summary table of the survey effort is shown in **Appendix I of Appendix F**.

- 4.10 During the six sets of monitoring surveys in September to November 2014, a total of 24 groups of 77 Chinese White Dolphins were sighted. All sightings were made during on-effort search. Sixteen on-effort sightings were made on primary lines, while the other on-effort sightings were made on secondary lines. Summary table of the dolphin sightings is shown in **Appendix II of Appendix F**.

Distribution

- 4.11 Distribution of dolphin sightings made during monitoring surveys in September to November is shown in **Figure 1 of Appendix F**. The dolphin groups were evenly distributed throughout the WL survey area, with no particular concentration of sightings. It appeared that dolphins occurred more often near the western territorial boundary than in inshore waters.
- 4.12 Sighting distribution of dolphins in the present quarter was similar to the one during the baseline period, with some subtle differences. There appeared to be fewer dolphins sighted near Tai O Peninsula, Kai Kung Shan and Fan Lau during the present monitoring quarter when compared to the dolphin distribution record in the baseline period.
- 4.13 None of the dolphin sightings was made close to the HKLR09 alignment in WL survey area during the present quarter (**Figure 1 of Appendix F**).

Encounter rate

- 4.14 During the three-month impact phase monitoring period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) from West Lantau survey area are shown in **Table 4.6**. The average encounter rates deduced from the six sets of surveys from September to November 2014 were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (**Table 4.7**).
- 4.15 In WL survey area, the average dolphin encounter rates (ER(STG) and ER(ANI)) in the present three-month study period were both higher than the ones recorded in the three-month baseline period (**Table 4.7**), indicating the dolphin usage during this impact

phase monitoring period in this survey area were more intensive when compared to the baseline phase.

Table 4.6 Dolphin encounter rates (sightings per 100 km of survey effort) during the impact monitoring period (September – November 2014)

Survey Area	Dolphin Monitoring	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 Lantau	Set 1 (10 September 2014)	9.4	56.7
	Set 2 (23 September 2014)	26.9	62.8
	Set 3 (8 October 2014)	9.2	64.7
	Set 4 (22 October 2014)	0.0	0.0
	Set 5 (5 November 2014)	17.8	35.7
	Set 6 (17 November 2014)	0.0	0.0

Table 4.7 Comparison of average dolphin encounter rates from impact monitoring period (September – November 2014) and baseline monitoring period (September-November 2011)

	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)	
	September-November 2014	September-November 2011	September-November 2014	September-November 2011
West Lantau	10.57 ± 10.45	16.43 ± 7.70	36.63 ± 30.19	60.50 ± 38.47

4.16 In WL survey area, the average dolphin encounter rates (ER(STG) and ER(ANI)) in the present three-month study period were much lower (reductions of 35.67% and 39.5% respectively) than the ones recorded in the three-month baseline period (**Table 4.7**), indicating a noticeable decline in dolphin usage of this survey area during the present construction period (**Table 4.7**). In fact, the present quarter recorded the lowest ER(STG) and ER(ANI) since the commencement of HKLR09 works in WL waters.

4.17 A one-way ANOVA was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. For the comparison between the baseline period and the present quarter

(seventh quarter of the impact phase), the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.294 and 0.259 respectively. Therefore, no significant difference in dolphin encounter rate was detected between the baseline period and the present quarter.

- 4.18 Another comparison was made between the baseline period and the cumulative quarters in the impact phase (i.e. first seven quarters of the impact phase), and the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.896 and 0.915 respectively. As a result, no significant difference was found in the dolphin encounter rates between the baseline period and the cumulative quarters in the impact phase.
- 4.19 To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in WL were 11.8 sightings and 40.6 dolphins per 100 km of survey effort respectively during the present quarter.

Group size

- 4.20 Group size of Chinese White Dolphins ranged from 1-13 individuals per group in WL survey area between September and November 2014. The average dolphin group sizes from these three months were compared with the one deduced from the baseline period in September to November 2011, as shown in **Table 4.8**. The average dolphin group size in the WL region during September to November 2014 was slightly higher than the ones recorded in the 3-month baseline period (**Table 4.8**). Half of the dolphin groups were composed of 1-3 dolphins, but there were also eight groups with more than 5 animals per group, and one group with over 10 animals.

Table 4.8 Comparison of average dolphin group sizes from impact monitoring period (September – November 2014) and baseline monitoring period (September-November 2011)

	Average Dolphin Group Size	
	September to November 2014	September to November 2011
West Lantau	3.88 ± 2.69 (n = 24)	3.63 ± 2.97 (n = 46)

- 4.21 Distribution of dolphins with the larger groups during September to November 2014 is shown in **Figure 3 of Appendix F**. These groups were scattered to the southwest of Tai O Peninsula, near the territorial border and near Fan Lau. This was quite different from the baseline period, when the larger dolphin groups mostly occurred to the northwest of Tai O Peninsula (near the bridge alignment) as well as near Kai Kung Shan and Peaked Hill (**Figure 3 of Appendix F**).

Habitat use

- 4.22 From September to November 2014, the most heavily utilized habitats by the dolphins were mainly found along the western territorial border off Tai O Peninsula, Peaked Hill and Fan Lau (**Figures 4a and 4b of Appendix F**). Conversely, their densities were much lower in the inshore waters. However, it should be noted that the amount of survey effort collected in each grid during the three-month period was fairly low (6 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern will be presented when more survey effort for each grid will be collected throughout the impact phase monitoring programme.
- 4.23 When compared with the habitat use pattern recorded during the baseline period, it appears that dolphin densities were more evenly spread during the baseline period than in the present impact phase monitoring period (**Figure 5 of Appendix F**). Moreover, dolphin densities appeared to be much lower around Tai O Peninsula, near Kai Kung Shan and Peaked Hill during the present quarter than in the baseline period.

Mother-calf pairs

- 4.24 During the three-month impact phase monitoring period, only one unspotted juvenile (UJ) was sighted in WL survey area. These young calves comprised 1.3% of all animals sighted, which was only a small fraction of the percentage recorded during the baseline monitoring period (6.6%).
- 4.25 The rare occurrence of the single mother-calf pair were located at the western territorial border off Kai Kung Shan, which was in stark contrast to the baseline period when calf occurrence was more frequent and concentrated near Tai O Peninsula (**Figure 6 of Appendix F**).

Activities and associations with fishing boats

- 4.26 A total of two dolphin sightings were associated with feeding activities off Kai Kung Shan and near Peaked Hill (**Figure 7 of Appendix F**), comprising of 8.3% of the total number of dolphin sightings. This percentage was much lower than the percentage recorded during the baseline period (13.0%). Only one of the 24 sightings were associated with socializing activity off Kai Kung Shan, while another group of two dolphins were engaged in traveling activity further north of the HKLR09 alignment during the present quarter (**Figure 7 of Appendix F**).
- 4.27 Apparently, the distribution of these activities during the present impact phase monitoring period was very different from the one during the baseline period, with the main concentration of these activities occurred between Tai O and Peaked Hill during the baseline period (**Figure 7 of Appendix F**).
- 4.28 During the three-month period, one of the dolphin groups was associated with an operating fishing vessel.

Summary of photo-identification works

- 4.29 From September to November 2014, over 2,500 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.
- 4.30 In total, 37 individuals sighted 40 times altogether were identified (see summary table in **Appendix III of Appendix F** and photographs of identified individuals in **Appendix IV of Appendix F**. The majority of identified individuals were sighted only once during the three-month period, but two individuals (NL259 and NL306) were sighted twice and thrice respectively.
- 4.31 During the three-month period, two recognizable females, WL72 and WL221, were accompanied with their calves during their re-sightings.

Individual range use

- 4.32 Ranging patterns of the 37 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in **Appendix V of Appendix F**.
- 4.33 Among these 37 individuals, 12 of them (EL01, NL49, NL103, NL150, NL259, NL260, NL279, NL300, NL302, WL04, WL05 and WL172) occurred primarily in North Lantau but ventured into West Lantau during the three-month period, while a few other individuals (e.g. NL230, NL269, SL42, WL199) split their time between North and West Lantau waters. The other individuals centered their range use primarily in West Lantau waters. (**Appendix V of Appendix F**)
- 4.34 For those that regularly occurred in North Lantau waters, they have extended their range use from there to West Lantau waters, which may have been a result of a range shift from North Lantau waters. Such range shifts should be continuously monitored in the upcoming quarters to determine whether these range shifts are consistent for North Lantau individuals and possibly related to the negative impacts of the HZMB-related construction activities.
- 4.35 On the other hand, for those that primarily used West Lantau waters as their home ranges, most of them utilized the southern part of their ranges but seldom in the northern part of West Lantau, especially near the HKLR09 alignment where they frequently occurred in the past. It is possible that their range use in West Lantau waters have been somewhat affected by the HKLR09 construction activities. It will be crucial to examine whether such shifts are temporary or permanent in nature, which may have been as a result of disturbance from the HKLR09-related works.

Conclusion

- 4.36 During this quarter of dolphin monitoring, no adverse impact from the activities of the HKLR09 construction project on Chinese White Dolphins was noticeable from general observations.
- 4.37 However, there is some apparent fine-scale change in dolphin occurrence as well as

diminished dolphin usage in West Lantau survey area. Moreover, many individual dolphins were mostly utilizing the southern part of their ranges but not in the northern portion where HKLR09 construction activities occur.

- 4.38 Therefore, the dolphin usage in WL region should be continuously monitored, to further examine whether it has been significantly affected by the on-going construction activities in relation to the HZMB works.

Additional Land-based Dolphin Behaviour and Movement Monitoring

- 4.39 Additional land-based dolphin behavior and movement monitoring were conducted in the reporting period. The progress of the monitoring is summarized in the **Table 4.9**.

Table 4.9 Progress Record of Additional Land-based Dolphin Behaviour and Movement Monitoring (September to November 2014)

Date	Time	Weather		Number of Staff	Number of Dolphin Sighting
		Beaufort	Visibility		
2014/9/1	09:15 - 14:45	2-3	1-1.5	3	7
2014/9/5	09:09 - 14:33	2	2.5	3	0
2014/10/20	09:16 - 14:39	2	2	3	1
2014/10/27	09:09 - 14:37	1-2	3	3	3
2014/11/10	09:05 - 14:30	2-3	2-3.5	3	2
2014/11/24	09:09 - 14:37	2	1	3	0

- 4.40 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.

Advice on the Solid and Liquid Waste Management Status

- 4.41 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.
- 4.42 The amount of wastes generated by the activities of the Contract during the reporting month is shown in **Appendix J**.

5 ENVIRONMENTAL NON-CONFORMANCE (EXCEEDANCES)

Summary of Exceedances

5.1 Summary of exceedance is provided in **Appendix K**. The details of the exceedances were attached in the Monthly EM&A Report.

Air Quality

5.2 For 1-hour TSP monitoring, no Action/Limit Level exceedance was recorded in the reporting period.

5.3 For 24-hr TSP monitoring, no Action/Limit Level exceedance was recorded in the reporting period.

Noise

5.4 No Action/Limit Level exceedance was recorded in the reporting period.

Water Quality

5.5 There are 25 Action Level exceedances and 23 Limit Level exceedances were recorded for suspended solids. No Action/Limit Level exceedance for turbidity were recorded in the reporting period.

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

- 1) No pollution discharge was observed from the site;
- 2) The sea conditions were rough. Localized plumes due to natural fluctuation were observed in the monitoring area;
- 3) Sediment plume due to natural fluctuation of shallow water and movement of vessel;
- 4) Sediment plume discharging to the monitoring stations from the area outside the site boundary;
- 5) Adverse water quality outside the site boundary;
- 6) The exceeded results were similar or within the ranges baseline monitoring results.
- 7) The major marine construction works (e.g. bored piling works) has not been commenced during the water quality monitoring in which exceedance was recorded;
- 8) No marine construction works were conducted in vicinity of monitoring station in which exceedance was recorded; and
- 9) Localized red tides have been sighted during water quality monitoring in which exceedances were recorded.

Dolphin Monitoring (Line-transect Vessel Survey)

5.7 No Action/Limit Level exceedance was recorded in the reporting period.

Summary of Environmental Complaint

5.8 Three environmental related complaints were received in the reporting period. The

Complaint Log is attached in **Appendix L**. All investigation reports for complaint of the Contract have been submitted to summarize the investigation results. The summary of environmental complaints is presented in **Table 5.1**.

Table 5.1 Summary of Environmental Complaints in the Reporting Period

Complaint Log Ref.	Location	Received Date	Nature of Complaint
Com-2014-11-001	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	11 November 2014	Water Quality and Waste Management
Com-2014-11-002	HZMB-HKLR – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09)	18 November 2014	Water Quality and Waste Management
Com-2014-11-003	Floating Concrete Batching Plant (FCBP)	28 November 2014	Water Quality

Summary of Notification of Summons and Successful Prosecution

- 5.9 There was one prosecution or notification of summons received since the Contract commencement. Summary of successful prosecution is attached in **Appendix M**.

6 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

- 6.1 This Quarterly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken in the period between September and November 2014 in accordance with EM&A Manual.
- 6.2 No Action/Limit Level exceedance was recorded for noise.
- 6.3 For 1-hour TSP monitoring, no Action/Limit Level exceedance was recorded in the reporting period.
- 6.4 For 24-hr TSP monitoring, no Action/Limit Level exceedance was recorded in the reporting period.
- 6.5 For water quality monitoring, there are 25 Action Level exceedances and 23 Limit Level exceedances were recorded for suspended solids. No Action/Limit Level exceedance was for turbidity were recorded in the reporting period.
- 6.6 According to the investigation, all exceedances are considered not due to the Contract.
- 6.7 During this quarter of dolphin monitoring, no adverse impact from the activities of the HKLR09 construction project on Chinese White Dolphins was noticeable from general observations.
- 6.8 Environmental site inspection was conducted on 2nd, 10th, 17th, 26th and 30th September 2014, 7th, 14th, 21st and 31st October 2014, 4th, 11th, 18th and 28th November 2014 by ET in the reporting month. All deficiencies identified during the site inspection have already rectified / improved during the follow-up audit session.
- 6.9 The inspection to the Sha Lo Wan (West) Archaeological Site was conducted on 30th September 2014. No access to Sha Lo Wan (West) Archaeological site for works areas and storage of construction equipment was observed.
- 6.10 There were three environmental complaints, one notification of summons and successful prosecution received in the reporting period.
- 6.11 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

- 6.12 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.

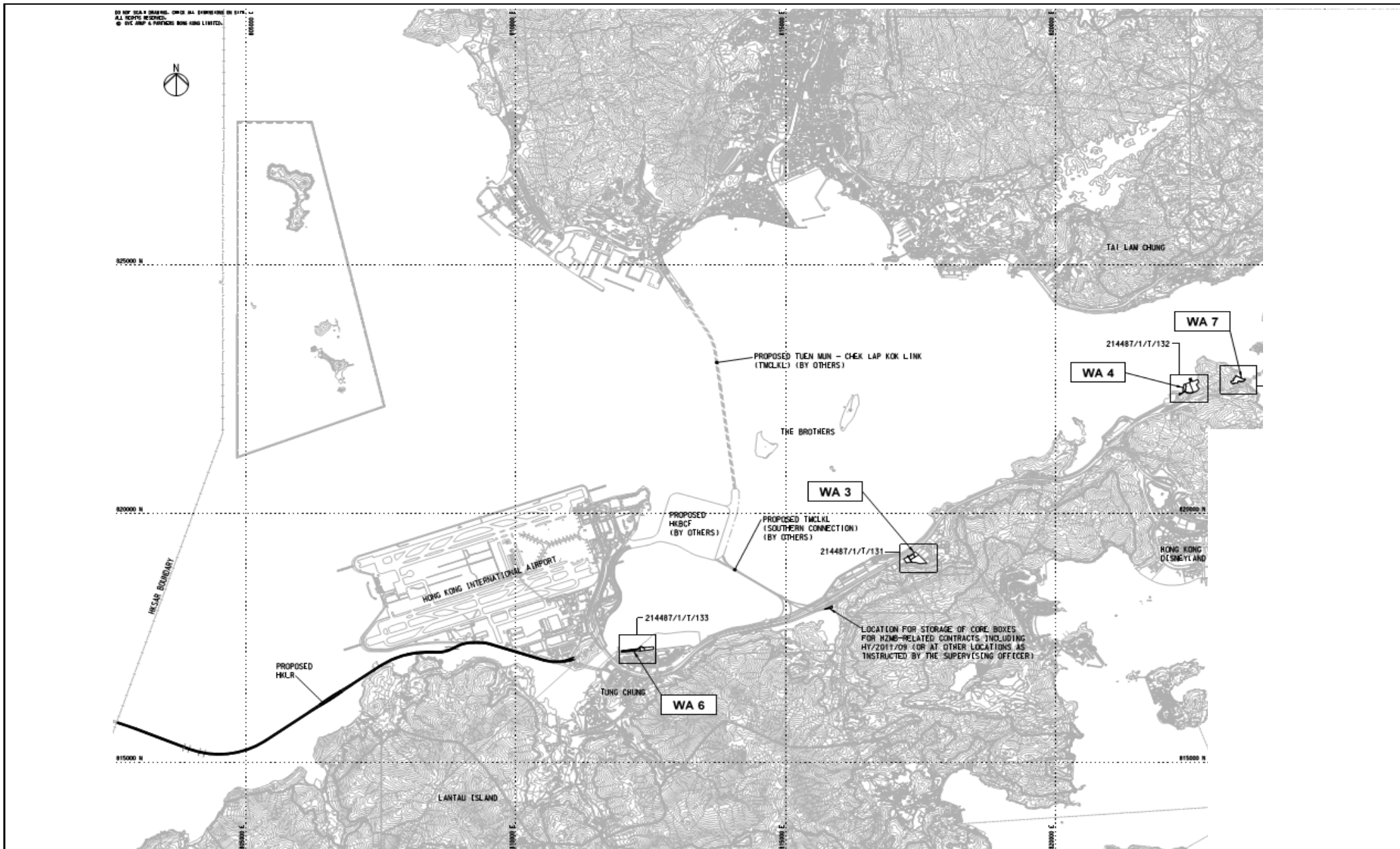
Ecology Impact

- 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.

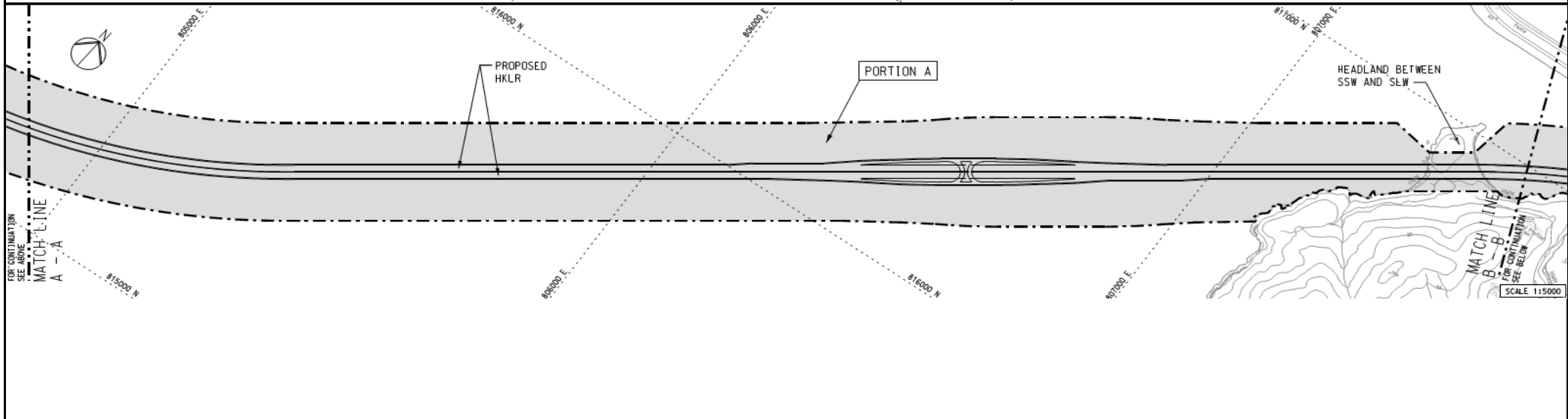
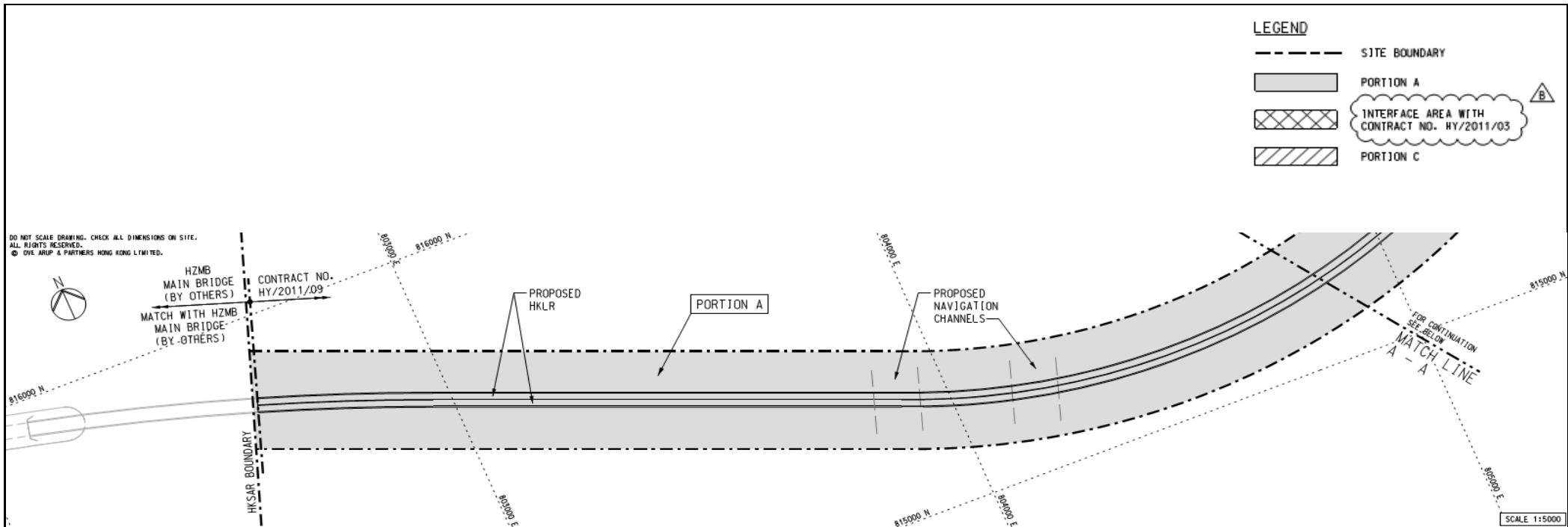
Waste/Chemical Management

- 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.

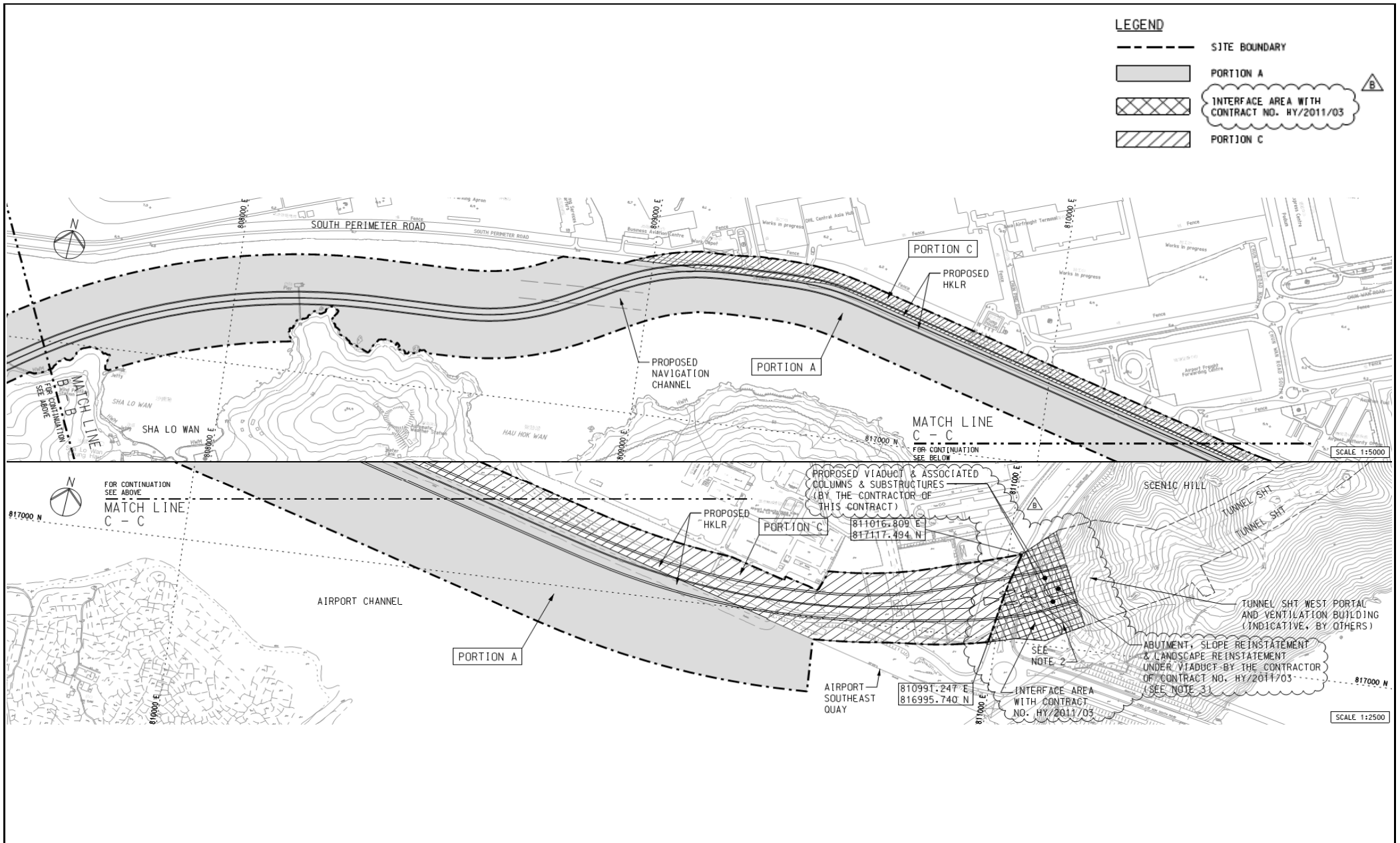
FIGURE(S)



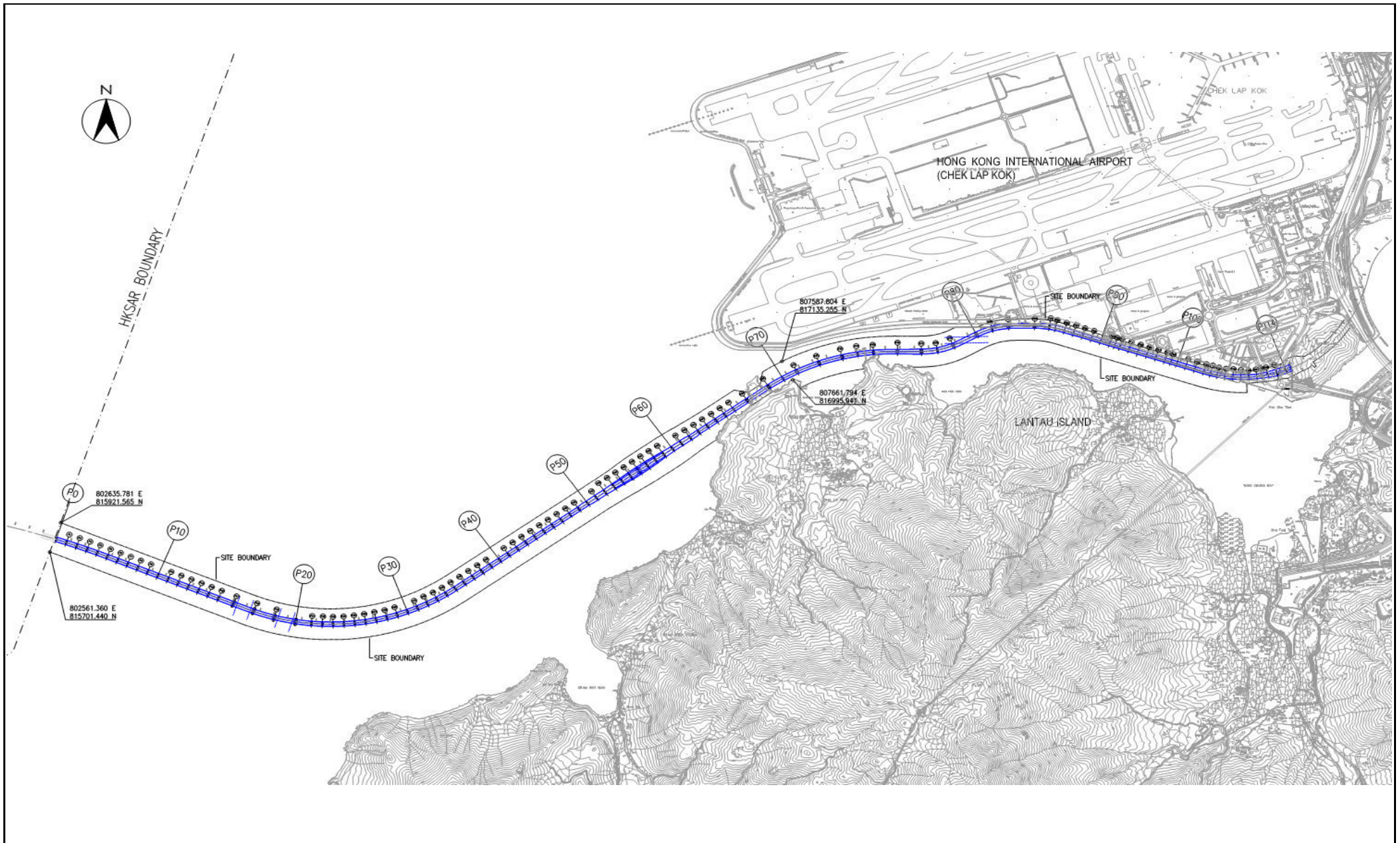
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	Date	Feb-13	Figure	1a		



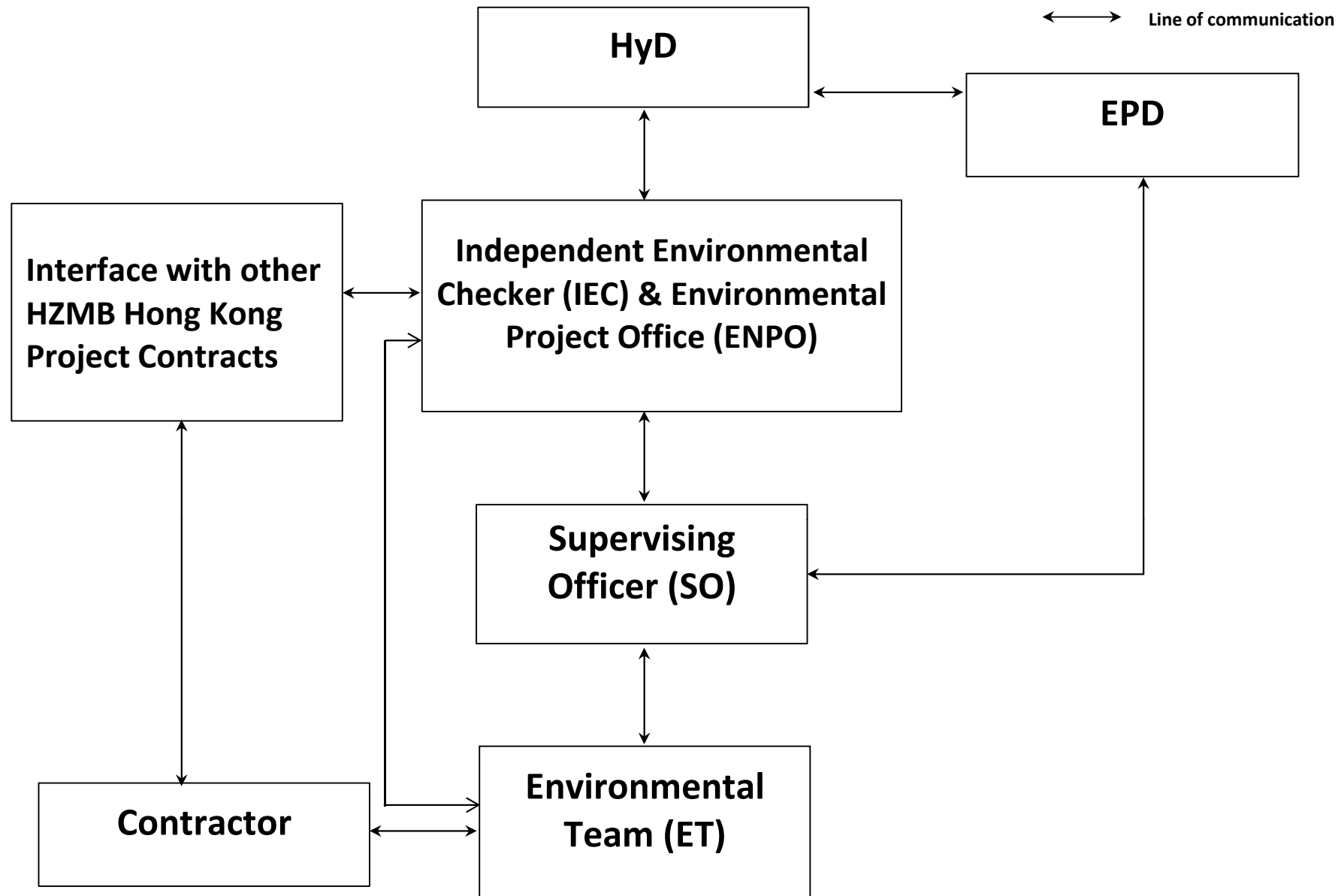
Title	Contract No. HY/2011/09		Scale	N.T.S	Propose No.	MA12014	
	Hong Kong-Zhuhai-Macao Bridge						
	Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill		Date	May-13	Figure	1b	
	Site Layout Plan (Portion A)						



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



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 (Pier(s) Site)	Scale	N.T.S	Propose No.	MA12014	CINOTECH
		Date	Feb-13	Figure	1d	

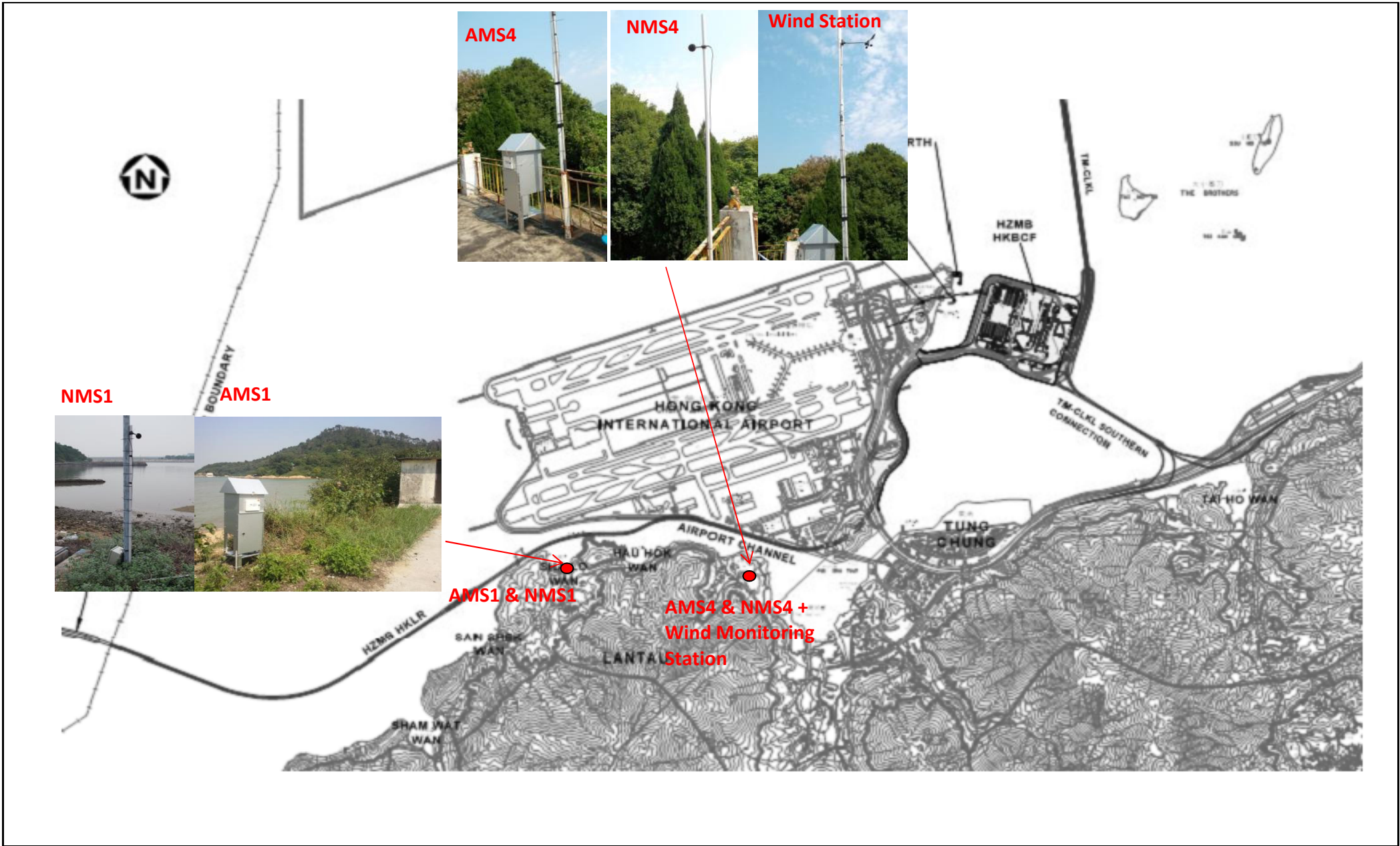


Title Contract No. HY/2011/09
 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between
 HKSAR Boundary and Scenic Hill
 Project Organisation for Environmental Works

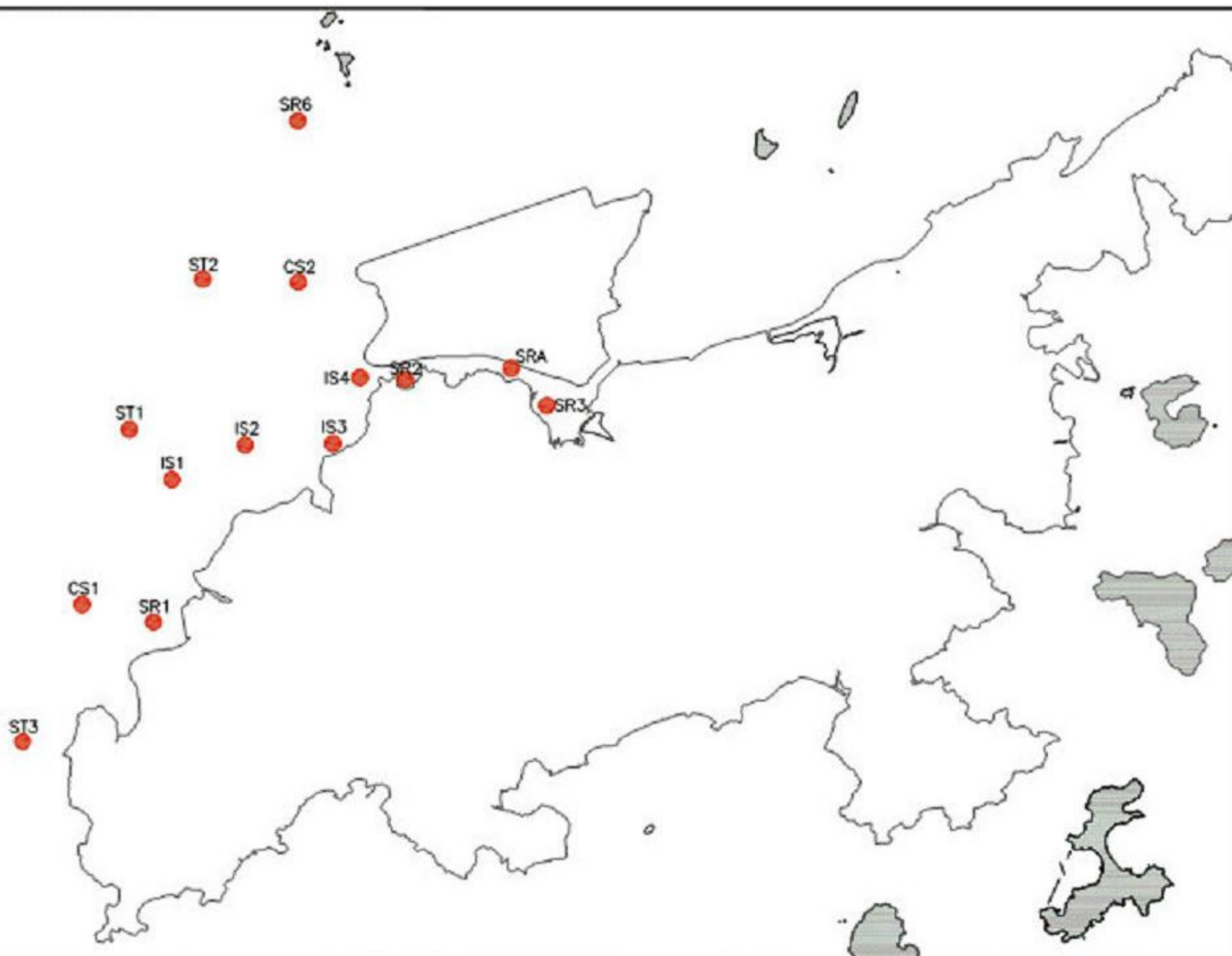
Scale N.T.S
 Date Feb-13

Propose No. MA12014
 Figure 2





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



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

**APPENDIX A
CONSTRUCTION PROGRAMME**

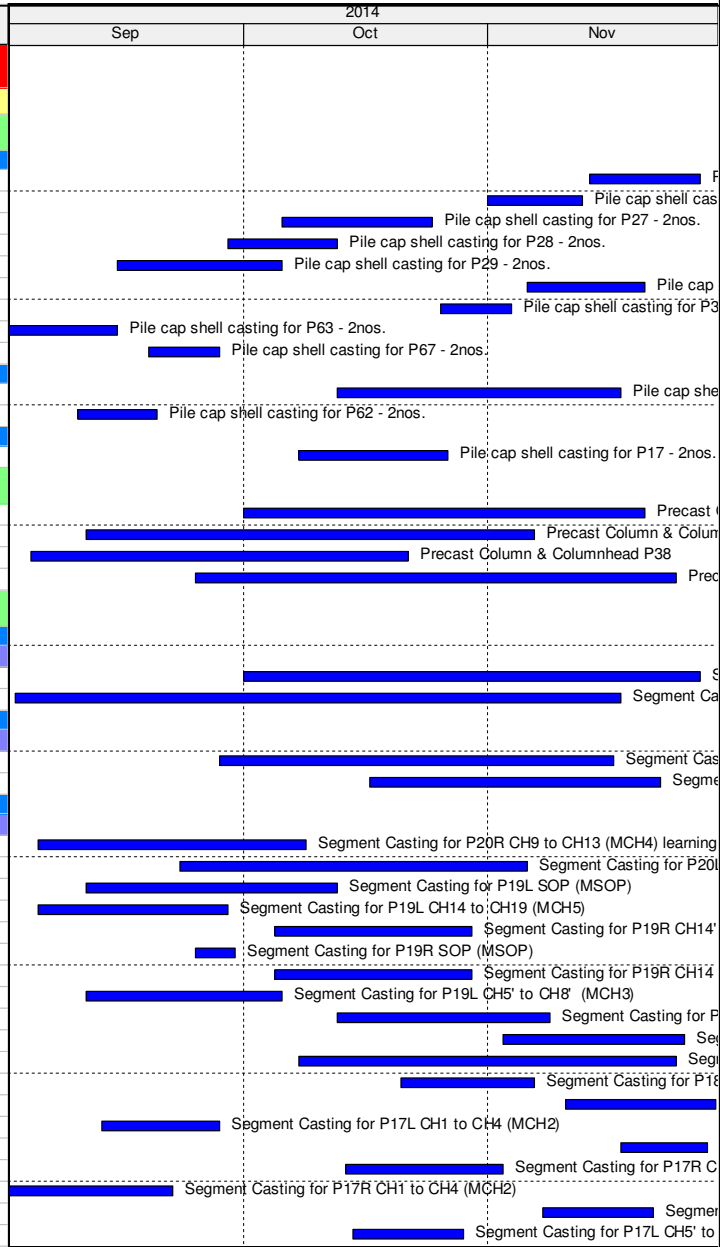


Dragages - China Harbour - VSL Joint Venture 寶高 - 中國港務 - 威勝利聯營

Activity ID	Activity Name	Original	Remaining	Schedule %	Start	Finish	Late Start	Late Finish
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HKZB Hong Kong Link Road - 3 Months Rolling Programme 1412 (Based on D1)

Procurement and Fabrication								
Pile Cap Shell Casting								
Type CP1 & CP5								
PC1140	Pile cap shell casting for P14 - 2nos.	16	0	0%	14-Nov-14	28-Nov-14 A	18-Dec-14	18-Dec-14
PC1160	Pile cap shell casting for P16 - 2nos.	16	0	100%	01-Nov-14	13-Nov-14 A	29-Apr-14	29-Apr-14
PC1230	Pile cap shell casting for P27 - 2nos.	16	0	100%	06-Oct-14 A	25-Oct-14 A	07-Mar-14	07-Mar-14
PC1240	Pile cap shell casting for P28 - 2nos.	16	0	100%	29-Sep-14	13-Oct-14 A	31-Mar-14	31-Mar-14
PC1250	Pile cap shell casting for P29 - 2nos.	16	0	100%	15-Sep-14	06-Oct-14 A	11-Apr-14	11-Apr-14
PC1260	Pile cap shell casting for P30 - 2nos.	16	0	100%	06-Nov-14	21-Nov-14 A	11-Apr-14	11-Apr-14
PC1280	Pile cap shell casting for P32 - 2nos.	16	0	100%	26-Oct-14 A	04-Nov-14 A	02-Apr-14	02-Apr-14
PC1590	Pile cap shell casting for P63 - 2nos.	16	0	100%	01-Sep-14	15-Sep-14 A	07-Mar-14	07-Mar-14
PC1630	Pile cap shell casting for P67 - 2nos.	16	0	100%	19-Sep-14	28-Sep-14 A	31-Mar-14	31-Mar-14
Type CP2 & CP3								
PC1550	Pile cap shell casting for P59 - 2nos.	18	0	100%	13-Oct-14 A	18-Nov-14 A	27-Feb-14	27-Feb-14
PC1580	Pile cap shell casting for P62 - 2nos.	18	0	100%	10-Sep-14	20-Sep-14 A	27-Feb-14	27-Feb-14
Type CP4, CP6, F1 & F2								
PC1640	Pile cap shell casting for P17 - 2nos.	45	0	0%	08-Oct-14 A	27-Oct-14 A	29-Dec-14	29-Dec-14
Column Casting								
PC2050	Precast Column & Columnhead P36	28	0	100%	01-Oct-14 A	21-Nov-14 A	18-Apr-14	18-Apr-14
PC2060	Precast Column & Columnhead P37	28	0	100%	11-Sep-14	07-Nov-14 A	08-Apr-14	08-Apr-14
PC2070	Precast Column & Columnhead P38	28	0	100%	04-Sep-14	22-Oct-14 A	15-Apr-14	15-Apr-14
PC2080	Precast Column & Columnhead P39	28	0	100%	25-Sep-14	25-Nov-14 A	06-Mar-14	06-Mar-14
Segment Casting								
Type A, C, D Segment (Total 12 set Moulds)								
Type A Segment (Western Water Typical Span)								
SC5408	Segment Casting for P36 SOP	10	0	100%	01-Oct-14 A	28-Nov-14 A	28-Feb-14	28-Feb-14
SC5948	Segment Casting for P64 SOP	10	0	100%	02-Sep-14	18-Nov-14 A	26-Feb-14	26-Feb-14
Type B Segment (Total 1 set Mould)								
Turnaround								
SC6126	Segment Casting for P53 SOP	20	0	100%	28-Sep-14	17-Nov-14 A	26-Mar-14	26-Mar-14
SC6186	Segment Casting for P59 SOP	20	0	100%	17-Oct-14 A	23-Nov-14 A	26-Mar-14	26-Mar-14
Type CH Segment (Total 12 set Moulds)								
ML03 (P16 TO P21)								
SC1088	Segment Casting for P20R CH9 to CH13 (MCH4) learning	26	0	100%	05-Sep-14	09-Oct-14 A	07-Jul-14	07-Jul-14
SC1138	Segment Casting for P20L CH14' to CH19' (MCH5) Learning	24	0	100%	23-Sep-14	06-Nov-14 A	07-Jul-14	07-Jul-14
SC1148	Segment Casting for P19L SOP (MSOP)	28	0	100%	11-Sep-14	13-Oct-14 A	20-Mar-14	20-Mar-14
SC1188	Segment Casting for P19L CH14 to CH19 (MCH5)	12	0	100%	05-Sep-14	29-Sep-14 A	06-Aug-14	06-Aug-14
SC1228	Segment Casting for P19R CH14' to CH19' (MCH5)	12	0	100%	05-Oct-14 A	30-Oct-14 A	06-Aug-14	06-Aug-14
SC1238	Segment Casting for P19R SOP (MSOP)	28	0	100%	25-Sep-14	30-Sep-14 A	01-Apr-14	01-Apr-14
SC1278	Segment Casting for P19R CH14 to CH19 (MCH5)	12	0	100%	05-Oct-14 A	30-Oct-14 A	07-Jul-14	07-Jul-14
SC1298	Segment Casting for P19L CH5' to CH8' (MCH3)	12	0	100%	11-Sep-14	06-Oct-14 A	15-Jun-14	15-Jun-14
SC1308	Segment Casting for P19L CH9' to CH13' (MCH4)	13	0	100%	13-Oct-14 A	09-Nov-14 A	28-Jun-14	28-Jun-14
SC1368	Segment Casting for P18L CH14 to CH19 (MCH5)	12	0	100%	03-Nov-14	26-Nov-14 A	06-Aug-14	06-Aug-14
SC1398	Segment Casting for P18R CH9' to CH13' (MCH4)	13	0	100%	08-Oct-14 A	25-Nov-14 A	14-Jul-14	14-Jul-14
SC1438	Segment Casting for P18R CH5 to CH8 (MCH3)	12	0	100%	21-Oct-14 A	07-Nov-14 A	15-Jun-14	15-Jun-14
SC1448	Segment Casting for P18R CH9 to CH13 (MCH4)	13	0	100%	11-Nov-14	30-Nov-14 A	28-Jun-14	28-Jun-14
SC1518	Segment Casting for P17L CH1 to CH4 (MCH2)	16	0	0%	13-Sep-14	28-Sep-14 A	15-Aug-15	15-Aug-15
SC1528	Segment Casting for P17L CH5 to CH8 (MCH3)	12	0	0%	18-Nov-14	29-Nov-14 A	15-Aug-15	15-Aug-15
SC1558	Segment Casting for P17R CH1' to CH4' (MCH2)	16	0	0%	14-Oct-14 A	03-Nov-14 A	15-Aug-15	15-Aug-15
SC1608	Segment Casting for P17R CH1 to CH4 (MCH2)	16	0	0%	01-Sep-14	22-Sep-14 A	17-Aug-15	17-Aug-15
SC1618	Segment Casting for P17R CH5 to CH8 (MCH3)	12	0	0%	08-Nov-14	22-Nov-14 A	17-Aug-15	17-Aug-15
SC1658	Segment Casting for P17L CH5' to CH8' (MCH3)	12	0	0%	15-Oct-14 A	29-Oct-14 A	10-Sep-15	10-Sep-15



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

3 Months Rolling Programme (Sep 14 to Nov 14)
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Date	Revision	Chec...	Approved
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Activity ID	Activity Name	Original	Remaining	Schedule %	Start	Finish	Late Start	Late Finish	2014			
									Sep	Oct	Nov	
ML11 (P70 TO P74)												
SC1698	Segment Casting for P71L CH1 to CH3 (MCH1) Learning	24	0	100%	21-Sep-14	13-Oct-14 A	10-Apr-14	10-Apr-14				
SC1699	Segment Casting for P71L CH4 to CH7 (MCH2)	16	0	100%	17-Oct-14 A	01-Nov-14 A	11-Jun-14	11-Jun-14				
SC1798	Segment Casting for P71R CH1 to CH3 (MCH1) Learning	24	0	100%	31-Oct-14 A	12-Nov-14 A	10-Apr-14	10-Apr-14				
SC1848	Segment Casting for P71L CH1' to CH3' (MCH1) Learning	24	0	100%	30-Sep-14	20-Oct-14 A	10-Apr-14	10-Apr-14				
SC1908	Segment Casting for P72L CH1 to CH3 (MCH1)	12	0	41.67%	21-Oct-14 A	02-Nov-14 A	10-Apr-14	10-Apr-14				
SC1918	Segment Casting for P72L CH4 to CH7 (MCH2)	16	0	0%	06-Nov-14	20-Nov-14 A	24-Jun-14	24-Jun-14				
SC2018	Segment Casting for P72R CH1 to CH3 (MCH1)	12	0	100%	11-Nov-14	24-Nov-14 A	10-Apr-14	10-Apr-14				
Viaduct between HKSAR Boundary and Landing Point on Airport Island												
ML01L/R 75mx8 - Stage 2 of Works												
Pier P1L/R												
Foundation - Bored Pile												
WW1110	Construct bored piles P1 - 6 nos.	48	0	100%	23-Oct-14 A	26-Nov-14 A	07-Jul-14	07-Jul-14				
ML01L/R 75mx8 - Stage 4 of Works												
Pier P3L/R												
Foundation - Bored Pile												
WW1280	Pile testing P3	28	0	75%	30-Oct-14 A	18-Nov-14 A	28-Jul-14	28-Jul-14				
Pier P5L/R												
Temporary Works												
WW10457	Install temporary working platform for bored pile P5 (Platform only)	12	0	100%	29-Sep-14	09-Oct-14 A	21-Jul-14	21-Jul-14				
ML02L/R 75mx8 - Stage 4 of Works												
Pier P9L/R												
Foundation - Bored Pile												
WW1750	Construct bored piles P9 - 6 nos.	37	0	10.81%	24-Oct-14 A	27-Nov-14 A	02-Sep-14	02-Sep-14				
Pier P15L/R												
Temporary Works												
WW10507	Remove the temporary working platform P15 (Platform only)	4	0	100%	17-Oct-14 A	21-Oct-14 A	01-Dec-14	01-Dec-14				
ML03L/R 109.661m+150mx3+109.661m Navigation Channel - Stage 4 of Works												
Pier P19L/R												
Foundation - Bored Pile												
NC1430	Pile testing P19 (Dolphin)	28	0	100%	09-Oct-14 A	07-Nov-14 A	09-Jul-16	09-Jul-16				
ML04L/R 74.5mx8 - Stage 4 of Works												
Pier P21L/R (M.J.)												
Temporary Works												
WW8600	Remove the temporary working platform P21 (Platform only)	4	0	100%	04-Oct-14 A	10-Oct-14 A	25-Apr-14	25-Apr-14				
Foundation - Bored Pile												
WW8630	Pile testing P21 (Bridge)	28	0	100%	25-Oct-14 A	13-Nov-14 A	25-Apr-14	25-Apr-14				
Pier P23L/R												
Foundation - Bored Pile												
WW5109	Construct bored piles P23 - 6 nos.	24	0	100%	06-Oct-14 A	13-Nov-14 A	09-Apr-14	09-Apr-14				
Pier P25L/R												
Foundation - Bored Pile												
WW5280	Pile testing P25	28	0	100%	07-Nov-14	20-Nov-14 A	24-May-14	24-May-14				
Pier P26L/R												
Foundation - Bored Pile												
WW5360	Pile testing P26	28	0	100%	28-Oct-14 A	12-Nov-14 A	05-May-14	05-May-14				
Pier P28L/R												
Foundation - Bored Pile												
WW5520	Pile testing P28	28	0	100%	08-Sep-14	29-Sep-14 A	02-Apr-14	02-Apr-14				
ML05L/R 74.5mx8 - Stage 4 of Works												
Pier P29L/R (M.J.)												
Foundation - Bored Pile												
WW5600	Pile testing P29	28	0	100%	06-Sep-14	22-Sep-14 A	05-May-14	05-May-14				
Pier P31L/R												
Temporary Works												
WW5740	Remove the temporary working platform P31 (Platform only)	4	0	100%	04-Oct-14 A	10-Oct-14 A	02-Apr-14	02-Apr-14				
Foundation - Bored Pile												
WW5760	Pile testing P31	28	0	100%	06-Oct-14 A	25-Nov-14 A	02-Apr-14	02-Apr-14				
Pier P32L/R												

■ Actual Work ◆ ◆ Milestone
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3 Months Rolling Programme (Sep 14 to Nov 14)
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Date	Revision	Chec...	Approved
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Activity ID	Activity Name	Original	Remaining	Schedule %	Start	Finish	Late Start	Late Finish	2014			
									Sep	Oct	Nov	
Temporary Works												
WW5820	Remove the temporary working platform P32 (Platform only)	4	0	100%	15-Sep-14	20-Sep-14 A	02-Apr-14	02-Apr-14		■	Remove the temporary working platform P32 (Platform only)	
Foundation - Bored Pile												
WW5840	Pile testing P32	28	0	100%	25-Sep-14	04-Oct-14 A	02-Apr-14	02-Apr-14		■	Pile testing P32	
Pier P33L/R												
Pile Cap Construction												
WW5930	Construct pile cap P33 - 2 nos.	30	0	100%	26-Sep-14	12-Nov-14 A	05-May-14	05-May-14		■	Construct pile cap	
Pier P34L/R												
Pile Cap Construction												
WW6010	Construct pile cap P34 - 2 nos.	30	0	100%	26-Sep-14	07-Nov-14 A	02-Apr-14	02-Apr-14		■	Construct pile cap P34 -	
Pier P35L/R												
Column Construction												
WW6100	Construct column P35 - 2 nos. (in-situ section)	12	0	100%	14-Nov-14	27-Nov-14 A	05-Jun-14	05-Jun-14		■	Co	
Pier P36L/R												
Column Construction												
WW6180	Construct column P36 - 2 nos. (in-situ section)	12	0	100%	28-Oct-14 A	11-Nov-14 A	18-Apr-14	18-Apr-14		■	Construct column P3	
ML06L/R 74.5mx8 - Stage 4 of Works												
Pier P37L/R (M.J.)												
Column Construction												
WW6260	Construct column P37 - 2 nos. (in-situ section)	12	0	100%	06-Oct-14 A	19-Oct-14 A	15-Apr-14	15-Apr-14		■	Construct column P37 - 2 nos. (in-situ section)	
Pier 38L/R												
Column Construction												
WW6340	Construct column P38 - 2 nos. (in-situ section)	12	0	100%	30-Sep-14	11-Oct-14 A	15-Apr-14	15-Apr-14		■	Construct column P38 - 2 nos. (in-situ section)	
Pier 39L/R												
Column Construction												
WW9600	Install base precast column segment at P39	1	0	0%	28-Nov-14	28-Nov-14 A	06-Mar-14	06-Mar-14		■	I	
Pier 40L/R												
Column Construction												
WW9620	Install base precast column segment at P40	1	0	0%	13-Nov-14	13-Nov-14 A	06-Mar-14	06-Mar-14		■	I	
WW9622	Align & cast stitch for base column segment at P40	4	0	0%	17-Nov-14	21-Nov-14 A	08-Apr-14	08-Apr-14		■	Align & c	
Pier 41L/R												
Column Construction												
WW6580	Construct column P41 - 2 nos. (in-situ section)	12	0	100%	15-Sep-14	21-Sep-14 A	06-Mar-14	06-Mar-14		■	Construct column P41 - 2 nos. (in-situ section)	
WW9640	Install base precast column segment at P41	1	0	0%	03-Nov-14	03-Nov-14 A	06-Mar-14	06-Mar-14		■	I	
WW9642	Align & cast stitch for base column segment at P41	4	0	0%	10-Nov-14	13-Nov-14 A	08-Apr-14	08-Apr-14		■	Align & cast stitc	
WW9644	Install remain precast column & column head segment at P41	3	0	0%	21-Nov-14	24-Nov-14 A	08-Apr-14	08-Apr-14		■	Instal	
Pier 43L/R												
Column Construction												
WW9680	Install base precast column segment at P43 (Learning)	2	0	100%	04-Oct-14 A	06-Oct-14 A	14-Jan-14	14-Jan-14		■	Install base precast column segment at P43 (Learning)	
WW9682	Align & cast stitch for base column segment at P43	4	0	100%	07-Oct-14 A	21-Oct-14 A	24-Jan-14	24-Jan-14		■	Align & cast stitch for base column segmen	
WW9684	Install remain precast column & column head segment at P43 (Learning)	5	0	80%	14-Nov-14	14-Nov-14 A	24-Jan-14	24-Jan-14		■	Install remain pre	
Pier 44L/R												
Column Construction												
WW9700	Install base precast column segment at P44 (Learning)	2	0	100%	06-Oct-14 A	07-Oct-14 A	14-Jan-14	14-Jan-14		■	Install base precast column segment at P44 (Learning)	
WW9702	Align & cast stitch for base column segment at P44	4	0	100%	20-Oct-14 A	24-Oct-14 A	14-Jan-14	14-Jan-14		■	Align & cast stitch for base column segm	
WW9704	Install remain precast column & column head segment at P44 (Learning)	5	0	100%	31-Oct-14 A	31-Oct-14 A	14-Jan-14	14-Jan-14		■	Install remain precast column &	
ML07L/R 73.396mx8 - Stage 4 of Works												
Pier P45L/R (M.J.)												
Column Construction												
WW10016	Construct column head P45 - 2 nos. (insitu)	21	0	100%	27-Sep-14	07-Nov-14 A	04-Feb-14	04-Feb-14		■	Construct column head F	
Pier P46L/R												
Pier Segment Construction												
WW6988	Prepare works for precast SOP P46 - 4 nos.(Learning)	4	0	100%	20-Oct-14 A	23-Oct-14 A	14-Jan-14	14-Jan-14		■	Prepare works for precast SOP P46 - 4 nos	
WW6990	Install precast SOP P46 - 4 nos.(Learning)	6	0	100%	29-Oct-14 A	31-Oct-14 A	14-Jan-14	14-Jan-14		■	Install precast SOP P46 - 4 nos.	
Pier P47L/R												
Pier Segment Construction												
WW7068	Prepare works for precast SOP P47 - 4 nos.(Learning)	4	0	100%	22-Sep-14	26-Sep-14 A	14-Jan-14	14-Jan-14		■	Prepare works for precast SOP P47 - 4 nos.(Learning)	
WW7070	Install precast SOP P47 - 4 nos.(Learning)	6	0	100%	27-Sep-14	28-Sep-14 A	14-Jan-14	14-Jan-14		■	Install precast SOP P47 - 4 nos.(Learning)	
Pier P51L/R												
Column Construction												
WW10107	Construct column P51 - 2 nos. (insitu)	24	0	100%	14-Sep-14	25-Oct-14 A	27-Feb-14	27-Feb-14		■	Construct column P51 - 2 nos. (insitu)	
Pier P52L/R												
Column Construction												

■ Actual Work ◆ ◆ Milestone
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3 Months Rolling Programme (Sep 14 to Nov 14)
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Activity ID	Activity Name	Original	Remaining	Schedule %	Start	Finish	Late Start	Late Finish	2014			
									Sep	Oct	Nov	
WW10127	Construct column P52 - 2 nos. (insitu)	24	0	100%	11-Sep-14	05-Oct-14 A	07-Mar-14	07-Mar-14	Construct column P52 - 2 nos. (insitu)			
WW10137	Construct column head P52 - 2 nos. (insitu)	21	0	100%	30-Oct-14 A	14-Nov-14 A	07-Mar-14	07-Mar-14	Construct column head P52 - 2 nos. (insitu)			
ML09L/R 73.396Mx8 - Stage 4 of Works												
Pier P60L/R												
Column Construction												
WW10287	Construct column P60 - 2 nos. (insitu)	12	0	0%	05-Nov-14	16-Nov-14 A	07-Apr-14	07-Apr-14	Construct column P60 - 2 nos. (insitu)			
Pier P61L/R												
Pile Cap Construction												
WW8130	Construct pile cap P61 - 2 nos.	30	0	100%	27-Sep-14	08-Nov-14 A	07-Mar-14	07-Mar-14	Construct pile cap P61 - 2 nos.			
Pier P62L/R												
Pile Cap Construction												
WW8200	Construct pile cap P62 - 2 nos.	30	0	100%	12-Oct-14 A	17-Nov-14 A	07-Mar-14	07-Mar-14	Construct pile cap P62 - 2 nos.			
Pier P63L/R												
Pile Cap Construction												
WW8300	Construct pile cap P63 - 2 nos.	30	0	80%	31-Oct-14 A	28-Nov-14 A	07-Mar-14	07-Mar-14	Construct pile cap P63 - 2 nos.			
Pier P64L/R												
Pile Cap Construction												
WW8380	Construct pile cap P64 - 2 nos.	30	0	100%	12-Sep-14	28-Oct-14 A	18-Feb-14	18-Feb-14	Construct pile cap P64 - 2 nos.			
Pier P65L/R												
Column Construction												
WW10387	Construct column P65 - 2 nos. (insitu)	12	0	100%	11-Nov-14	23-Nov-14 A	18-Feb-14	18-Feb-14	Construct column P65 - 2 nos. (insitu)			
Pier P66L/R												
Column Construction												
WW10407	Construct column P66 - 2 nos. (insitu)	12	0	100%	21-Oct-14 A	03-Nov-14 A	18-Feb-14	18-Feb-14	Construct column P66 - 2 nos. (insitu)			
ML13L/R 115m+180m+115m - Stage 4 of Works												
Pier P79L/R												
Foundation - Bored Pile												
AC1980	Pile testing P79	28	0	100%	28-Oct-14 A	15-Nov-14 A	29-Apr-14	29-Apr-14	Pile testing P79			
ML14L/R 115m+180m+100.561m - Stage 4 of Works												
Pier P82L/R												
Foundation - Bored Pile												
AC2250	Pile testing P82 (Marine)	28	0	100%	24-Sep-14	30-Sep-14 A	05-Jun-14	05-Jun-14	Pile testing P82 (Marine)			
Pier P83L/R												
Foundation - Bored Pile												
AC2350	Pile testing P83 (Marine)	28	0	100%	01-Sep-14	08-Sep-14 A	04-Jun-14	04-Jun-14	Pile testing P83 (Marine)			
Viaduct between Landing Point on Airport Island and Scenic Hill												
ML15L/R 43m+65mx6+37m - Stage 5 of Works												
Pier P91L/R												
Column Construction												
A11560	Construct column P91 - 2 nos.	66	0	43.94%	04-Oct-14 A	20-Nov-14 A	12-Aug-14	12-Aug-14	Construct column P91 - 2 nos.			
ML16L/R 37m+65mx5+43m - Stage 5 of Works												
Pier P92L/R (M.J.)												
Temporary Works												
A13370	Remove temporary platform P92	10	0	100%	14-Nov-14	24-Nov-14 A	11-Aug-14	11-Aug-14	Remove temporary platform P92			
Pier P93L/R												
Temporary Works												
A13380	Remove temporary platform P93	10	0	100%	06-Nov-14	17-Nov-14 A	25-Jul-14	25-Jul-14	Remove temporary platform P93			
Pier P94L/R												
Temporary Works												
A13390	Remove temporary platform P94	10	0	100%	10-Nov-14	20-Nov-14 A	10-Jul-14	10-Jul-14	Remove temporary platform P94			
Pier P95L/R												
Temporary Works												
A13400	Remove temporary platform P95	10	0	100%	04-Oct-14 A	15-Oct-14 A	24-Jun-14	24-Jun-14	Remove temporary platform P95			
Pier P98L/R												
Temporary Works												
A13430	Remove temporary platform P98	10	0	100%	18-Oct-14 A	21-Oct-14 A	23-May-14	23-May-14	Remove temporary platform P98			
ML17L/R 43m+65mx3+47m - Stage 5 of Works												
Pier P99L/R (M.J.)												
Temporary Works												
A13440	Remove temporary platform P99	10	0	100%	08-Oct-14 A	18-Oct-14 A	12-May-14	12-May-14	Remove temporary platform P99			

■ Actual Work ◆ Milestone
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■ Critical Remaining Work

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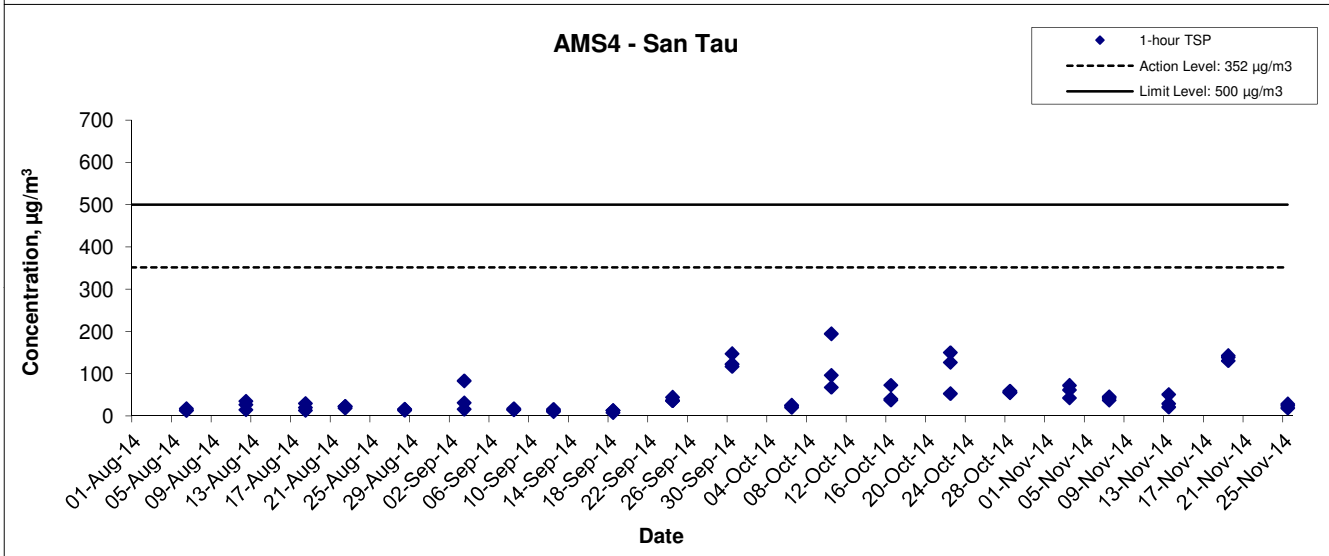
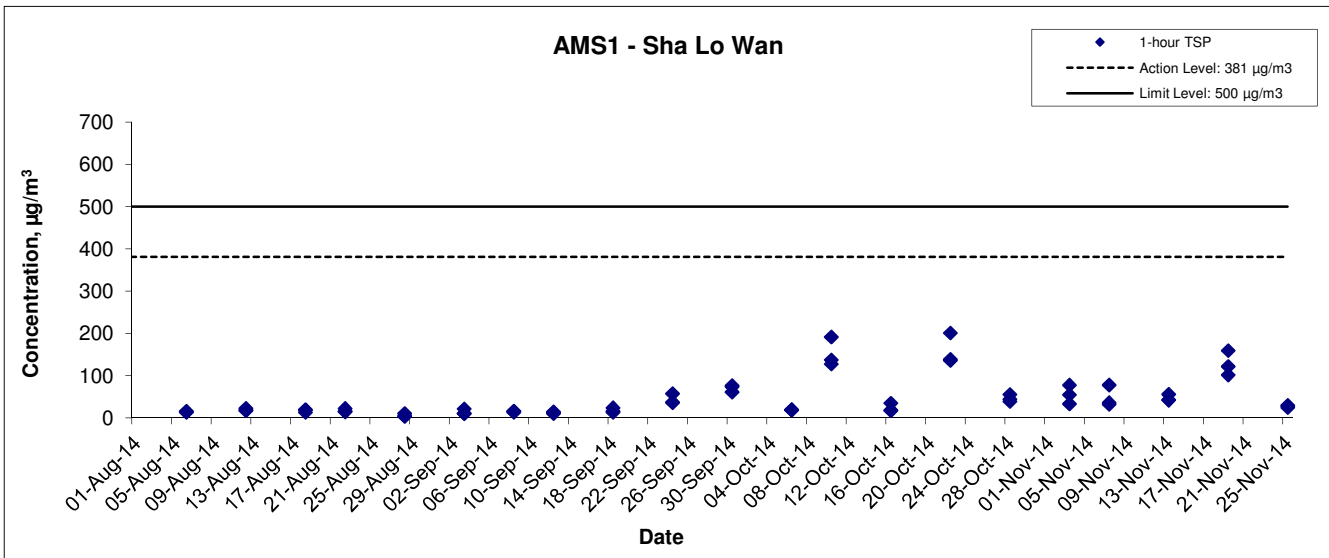
Activity ID	Activity Name	Original	Remaining	Schedule %	Start	Finish	Late Start	Late Finish	2014		
									Sep	Oct	Nov
Pier P100L/R											
Temporary Works											
AI3450	Remove temporary platform P100	10	0	100%	14-Oct-14 A	21-Oct-14 A	21-Jun-14	21-Jun-14			Remove temporary platform P100
Pier P101L/R											
Temporary Works											
AI3460	Remove temporary platform P101	10	0	100%	20-Sep-14	04-Oct-14 A	16-Jun-14	16-Jun-14			Remove temporary platform P101
Pier P102L/R											
Temporary Works											
AI3470	Remove temporary platform P102	10	0	100%	04-Sep-14	16-Sep-14 A	31-May-14	31-May-14			Remove temporary platform P102
In-situ Portal/T-pier Construction											
AI2340	In-situ portal P102 - 1 nos.	60	0	53.33%	18-Sep-14	29-Nov-14 A	31-May-14	31-May-14			
ML18L/R 47m+55mx5+35m - Stage 5 of Works											
Pier P106L/R											
In-situ Portal/T-pier Construction											
AI2630	In-situ portal P106 - 1 nos.	70	0	27.14%	06-Sep-14	21-Nov-14 A	29-Mar-14	29-Mar-14			In-situ pc

Actual Work
 Remaining Work
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 Milestone

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**APPENDIX B
GRAPHICAL PRESENTATION OF 1-
HOUR TSP MONITORING RESULTS**

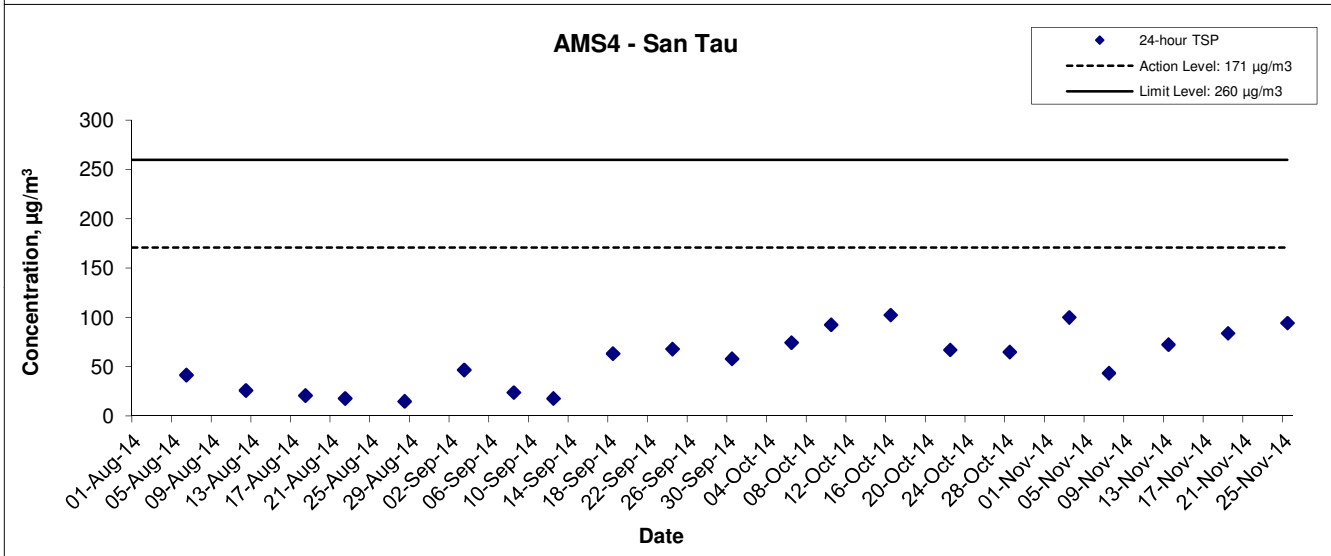
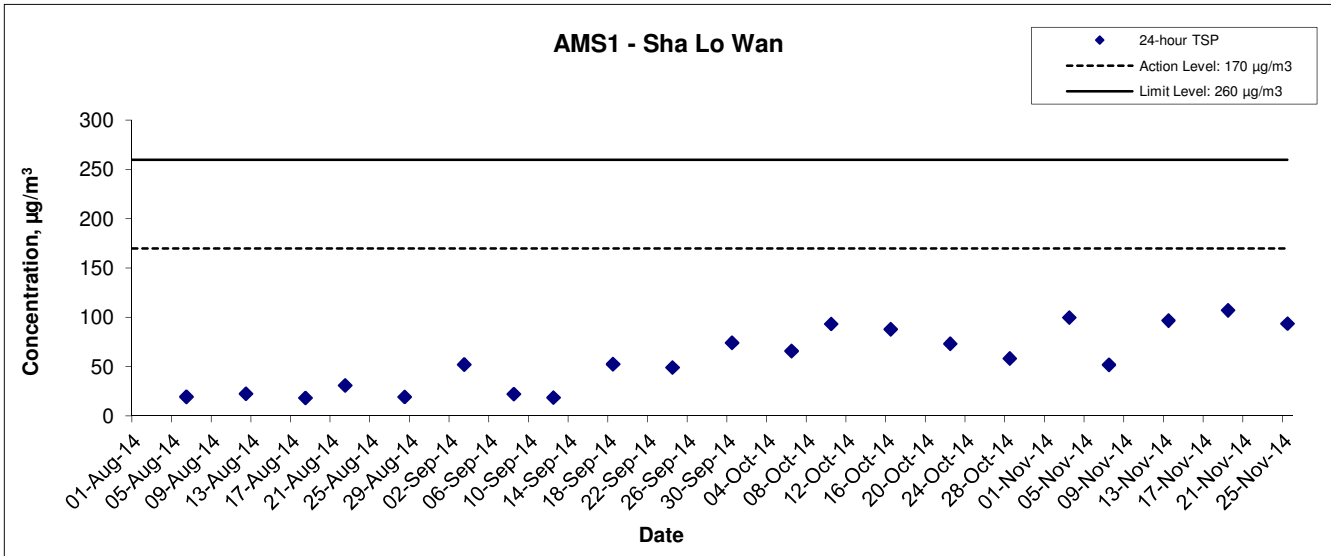
1-hour TSP Concentration Levels



Title Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Graphical Presentation of 1-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12014	
	Date Nov 14	Appendix B	

**APPENDIX C
GRAPHICAL PRESENTATION OF 24-
HOUR TSP MONITORING RESULTS**

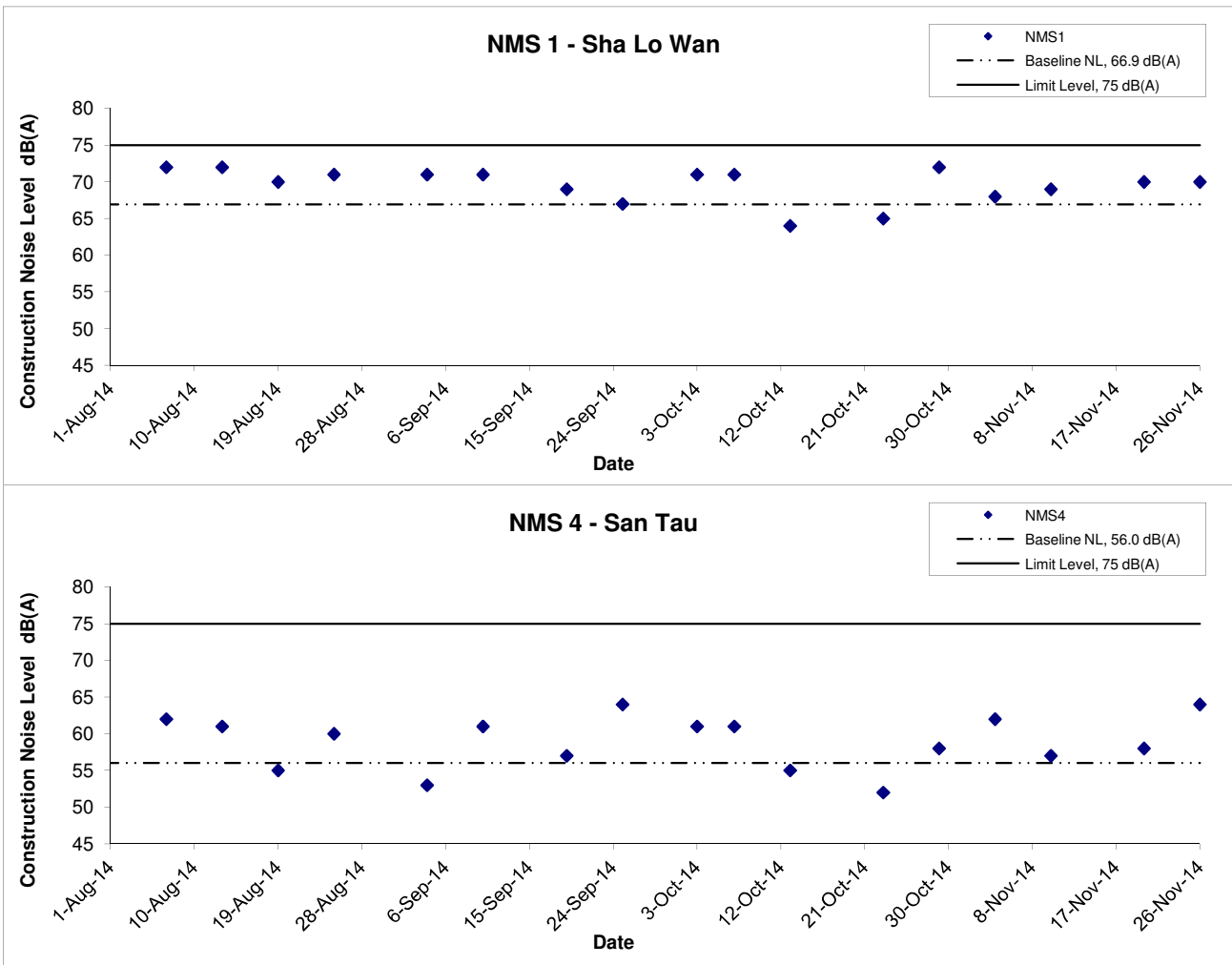
24-hour TSP Concentration Levels



Title Contract No. HY/2011/09 Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S	Project No. MA12014	CINOTECH
	Date Nov 14	Appendix C	

**APPENDIX D
GRAPHICAL PRESENTATION OF
NOISE MONITORING RESULTS**

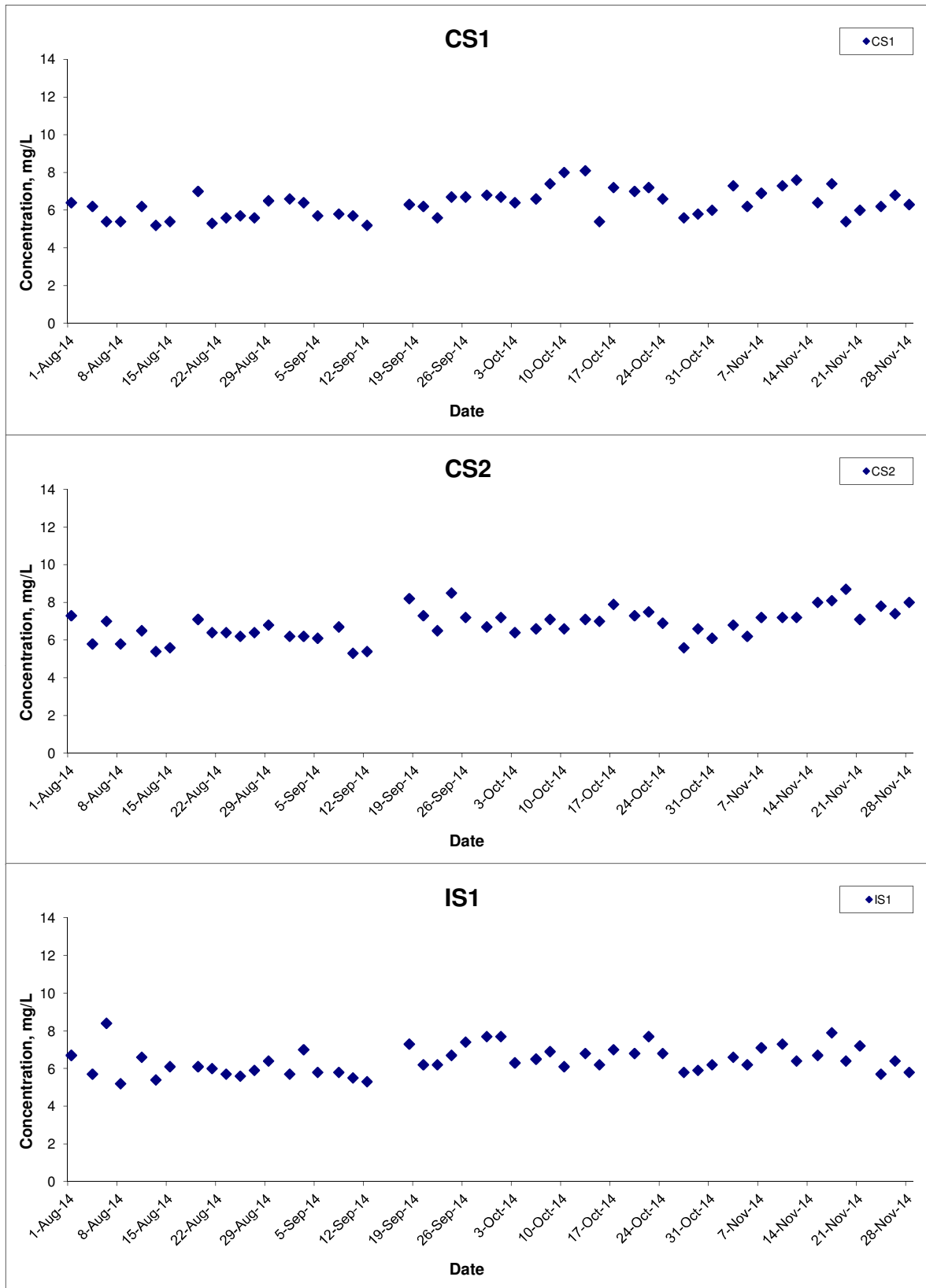
Noise Levels



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	CINOTECH
	Date	Nov 14	Appendix	D	

**APPENDIX E
GRAPHICAL PRESENTATION OF
WATER QUALITY MONITORING
RESULTS**

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



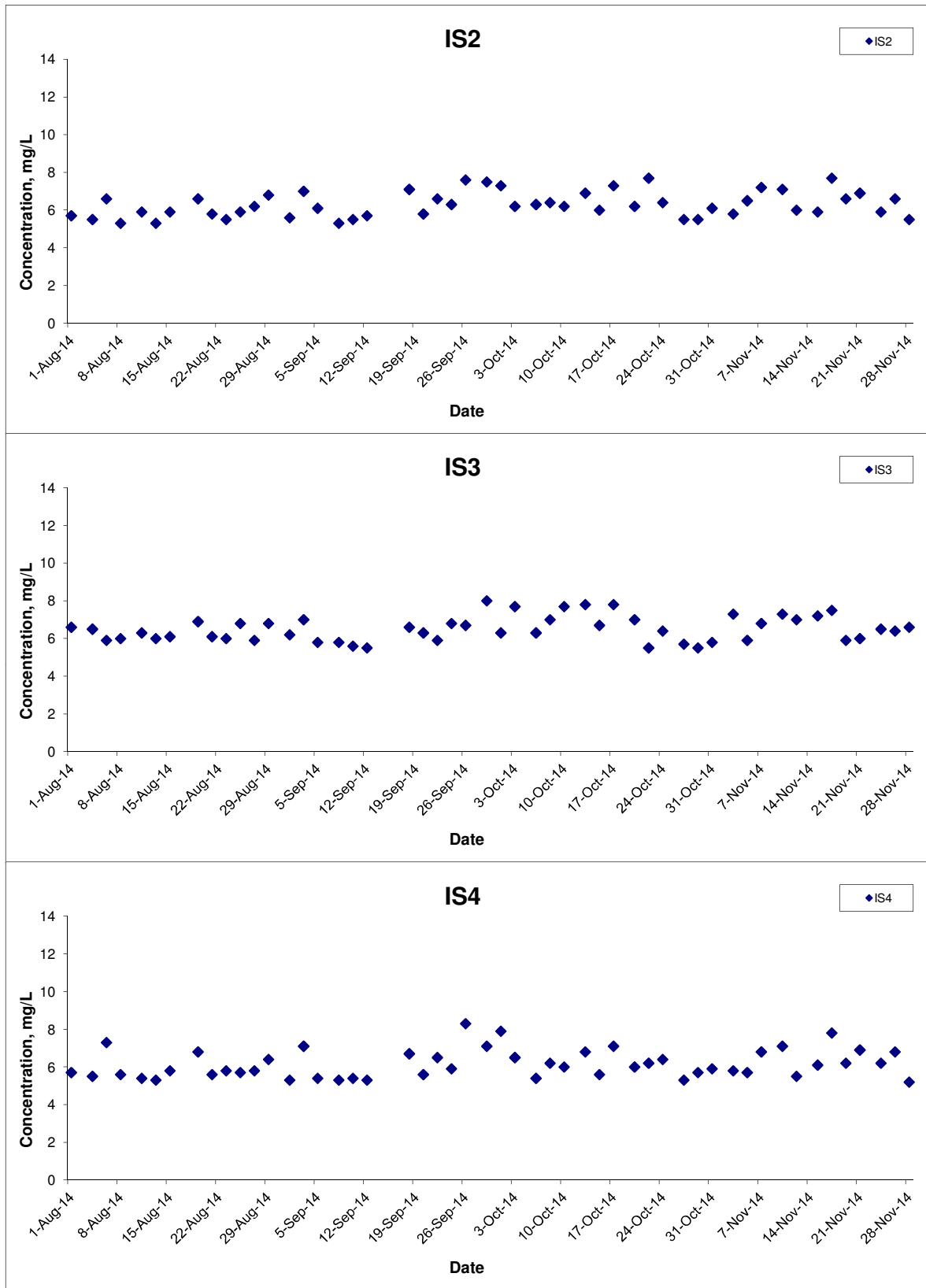
Title Contract HY/2011/09 Hong Kong-Zhuhai-Macao Bridge
 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

Scale N.T.S
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Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



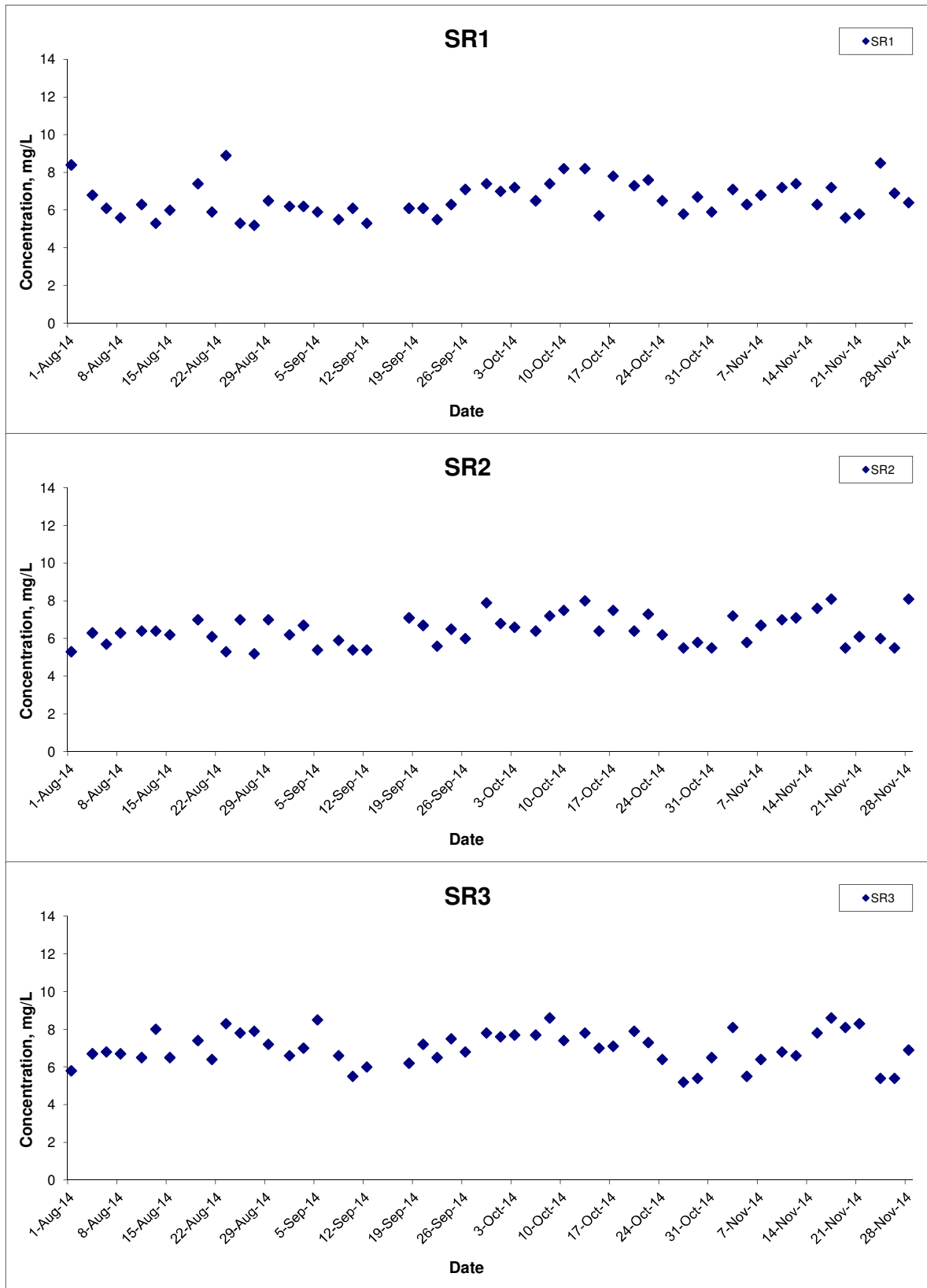
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 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

Scale N.T.S
 Date Nov 14

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



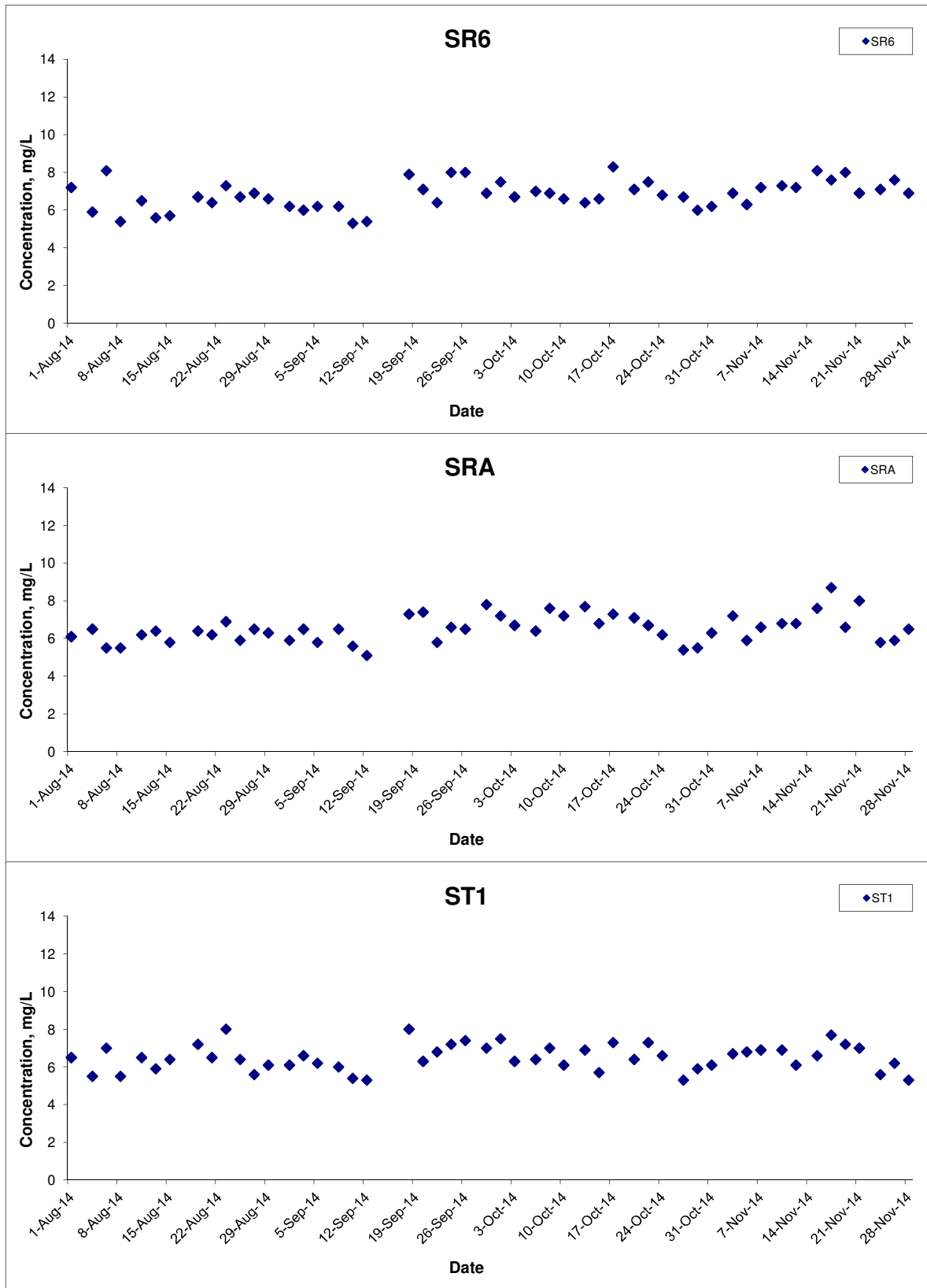
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 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

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



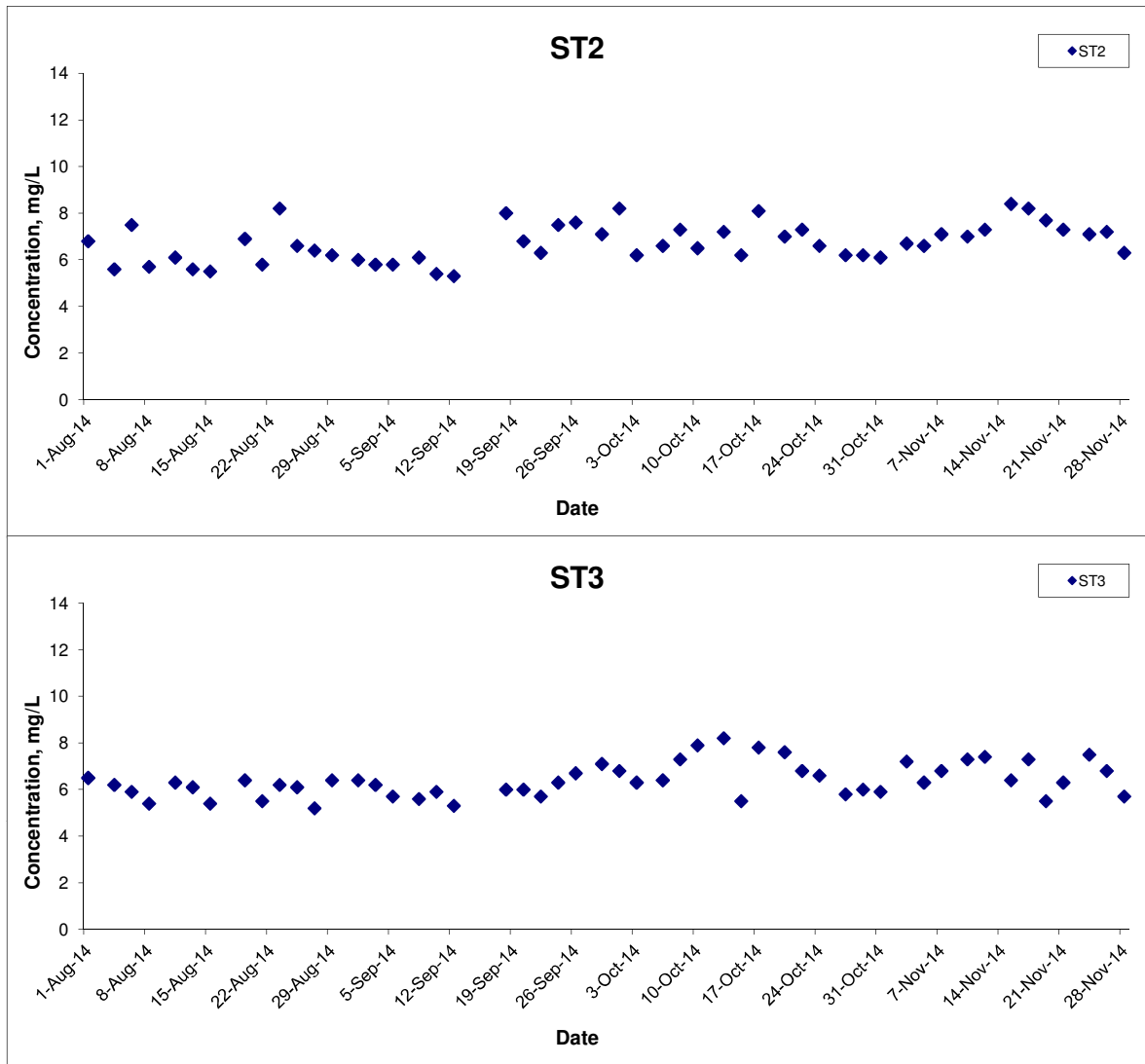
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 Hong Kong Link Road-Section between
 HKSAR Boundary and Scenic Hill
 Graphical Presentation of Water Quality Monitoring
 Results

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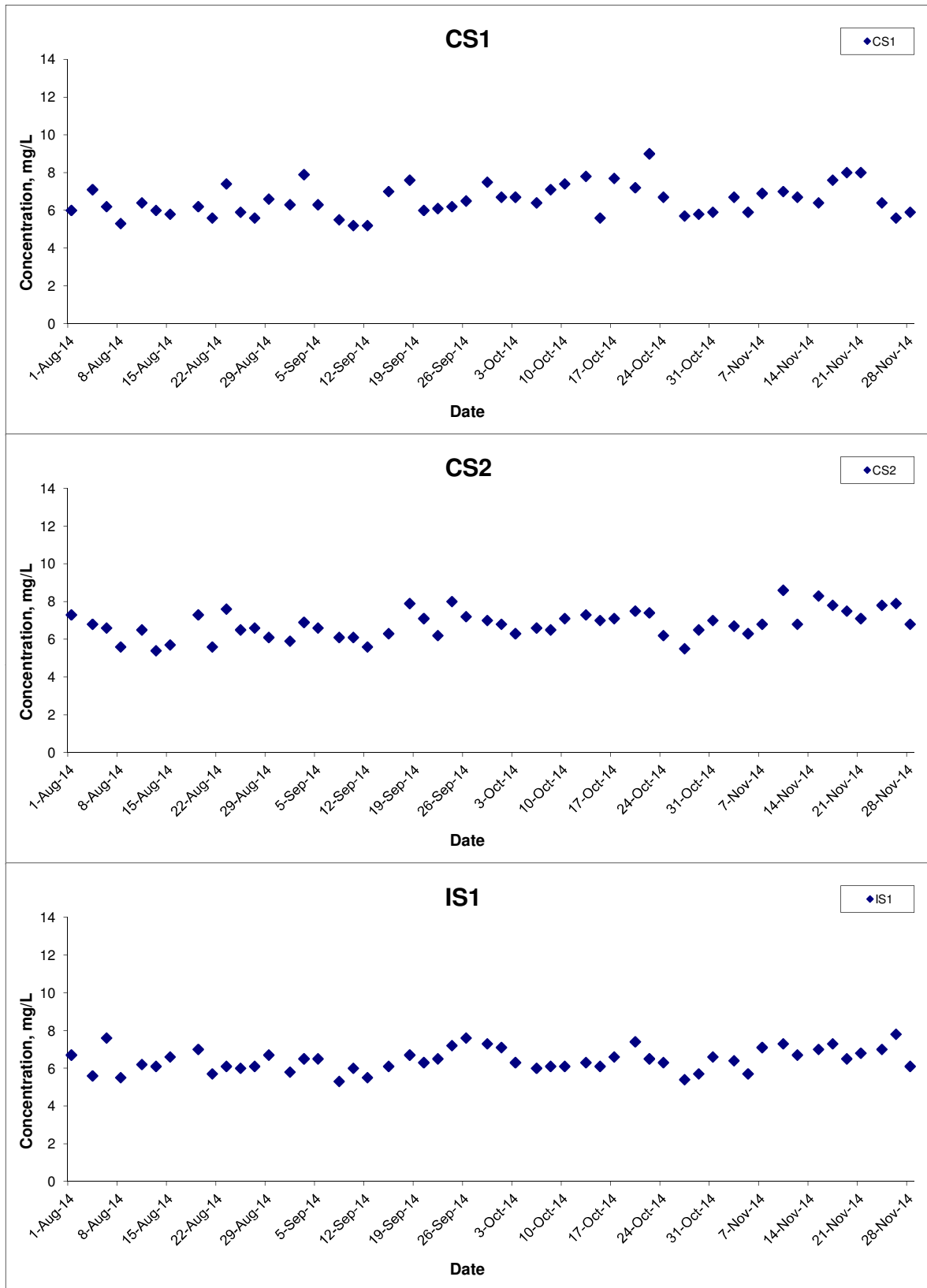


Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



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



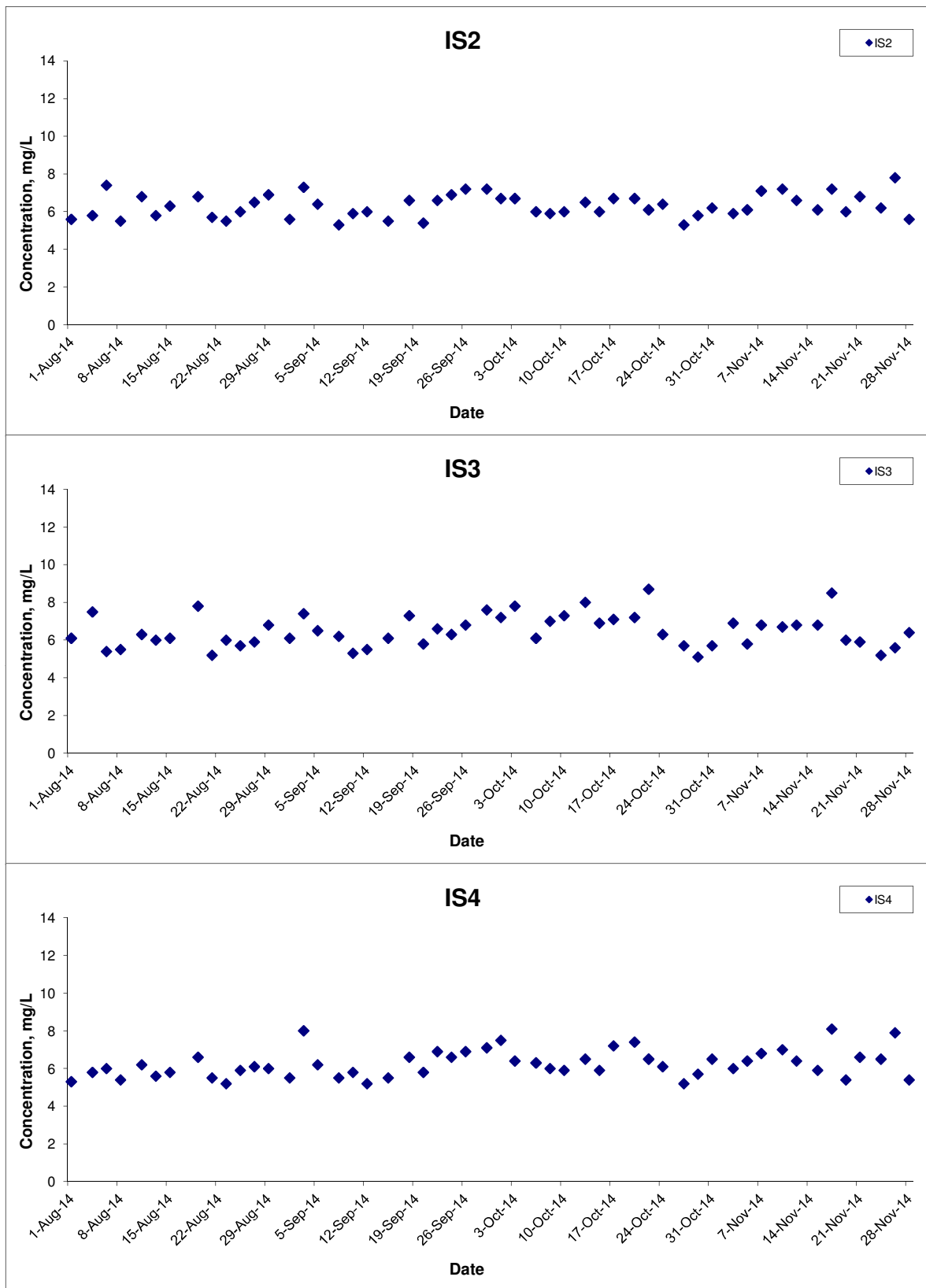
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



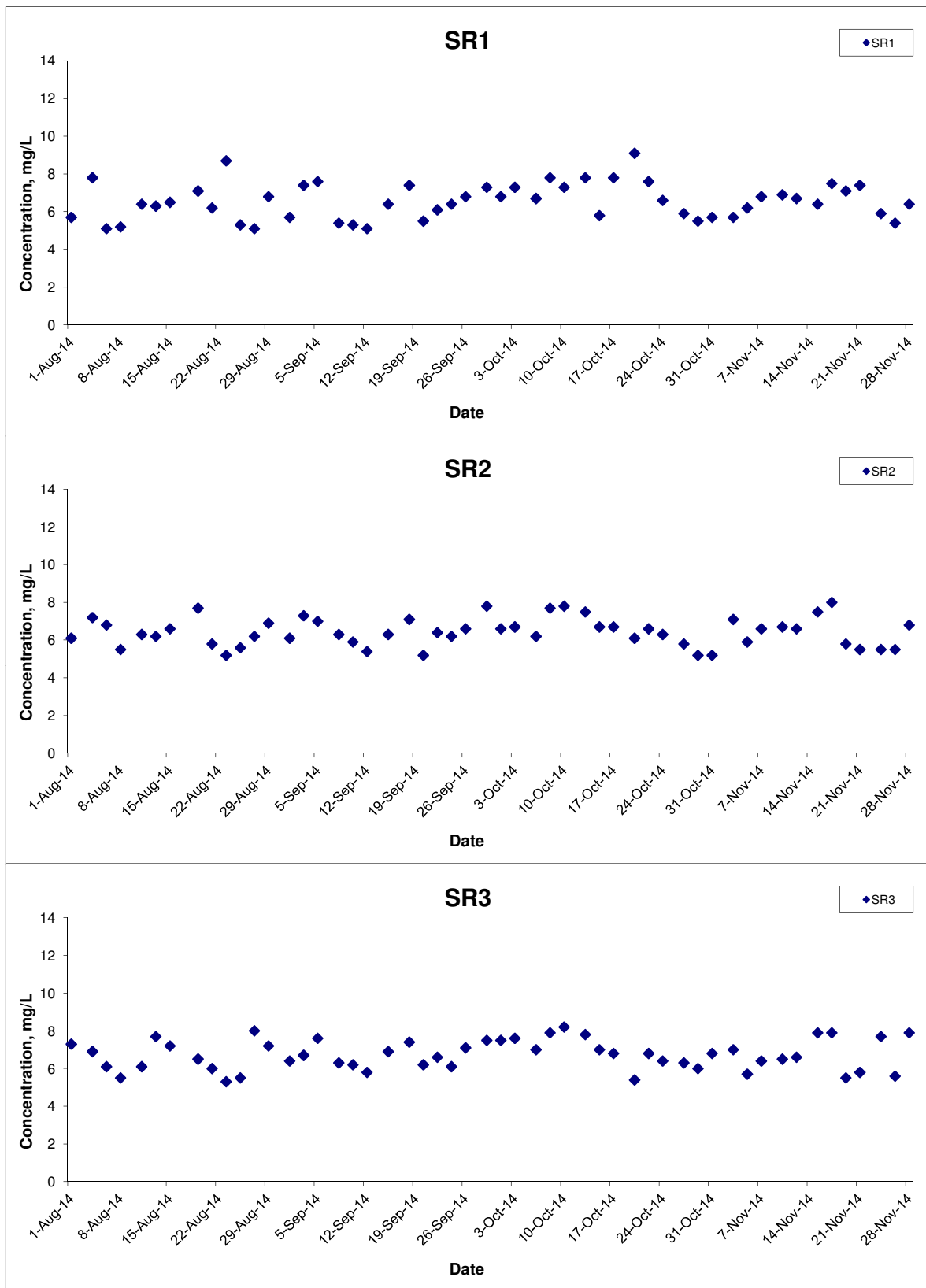
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



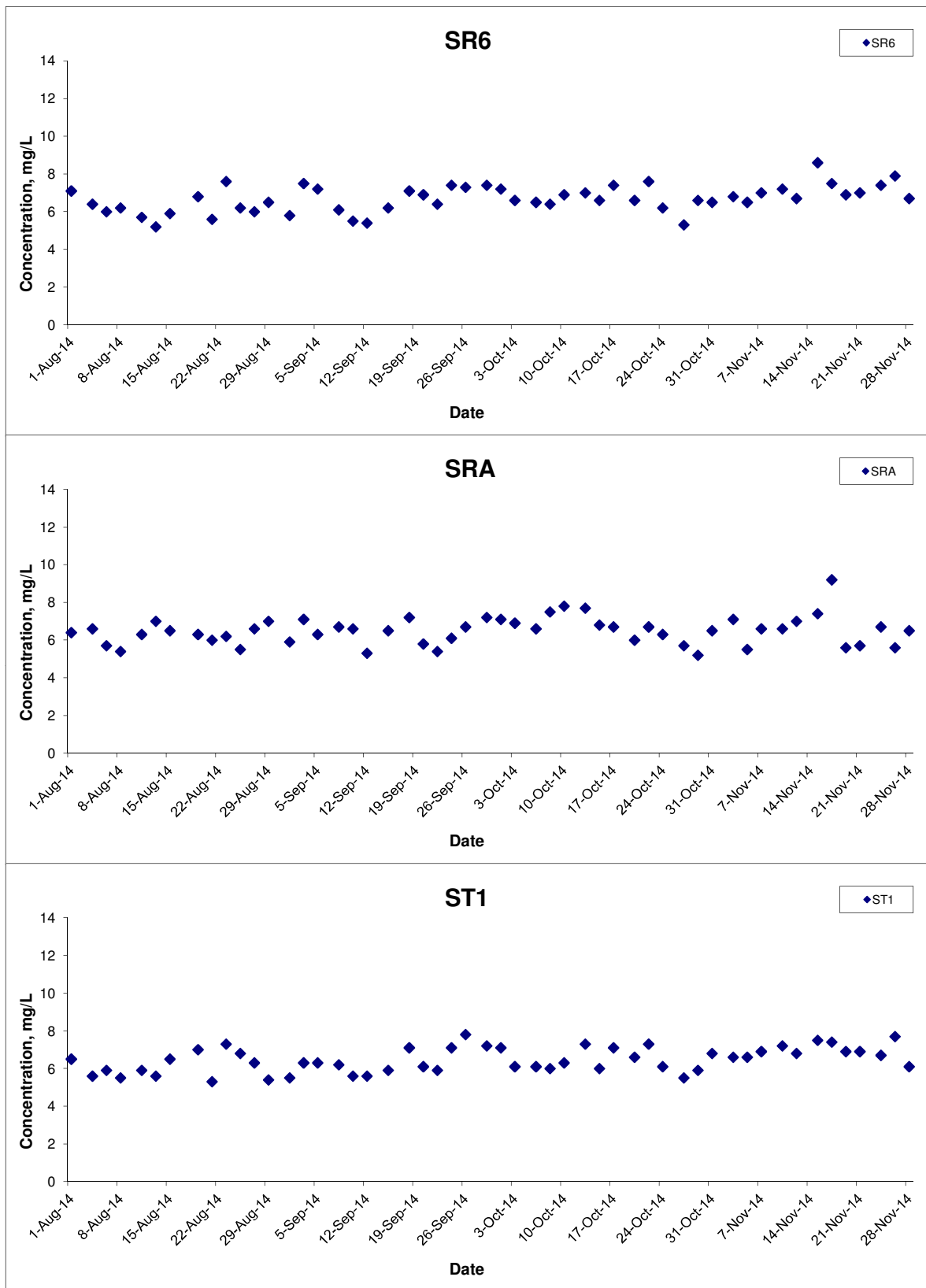
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



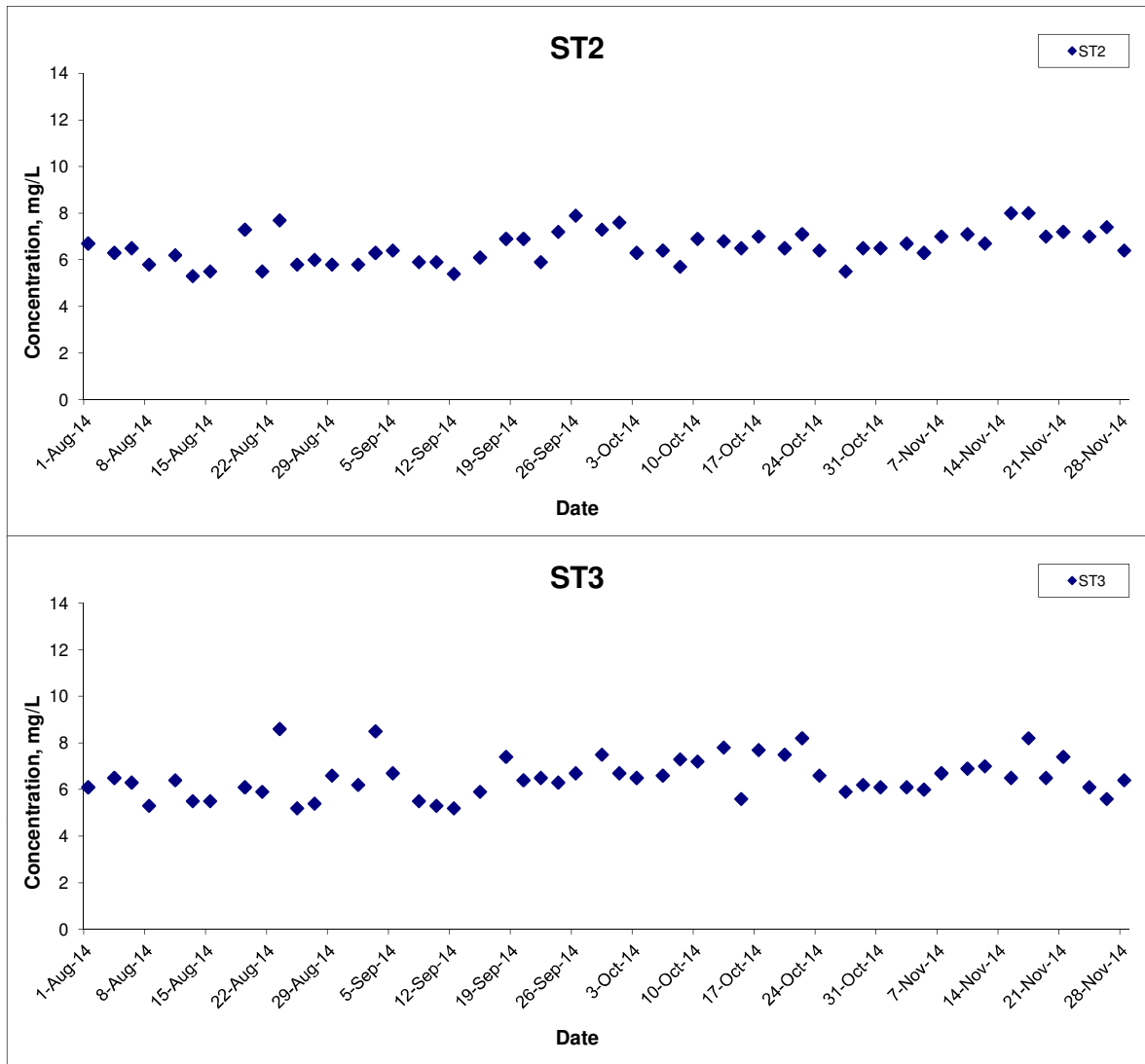
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Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



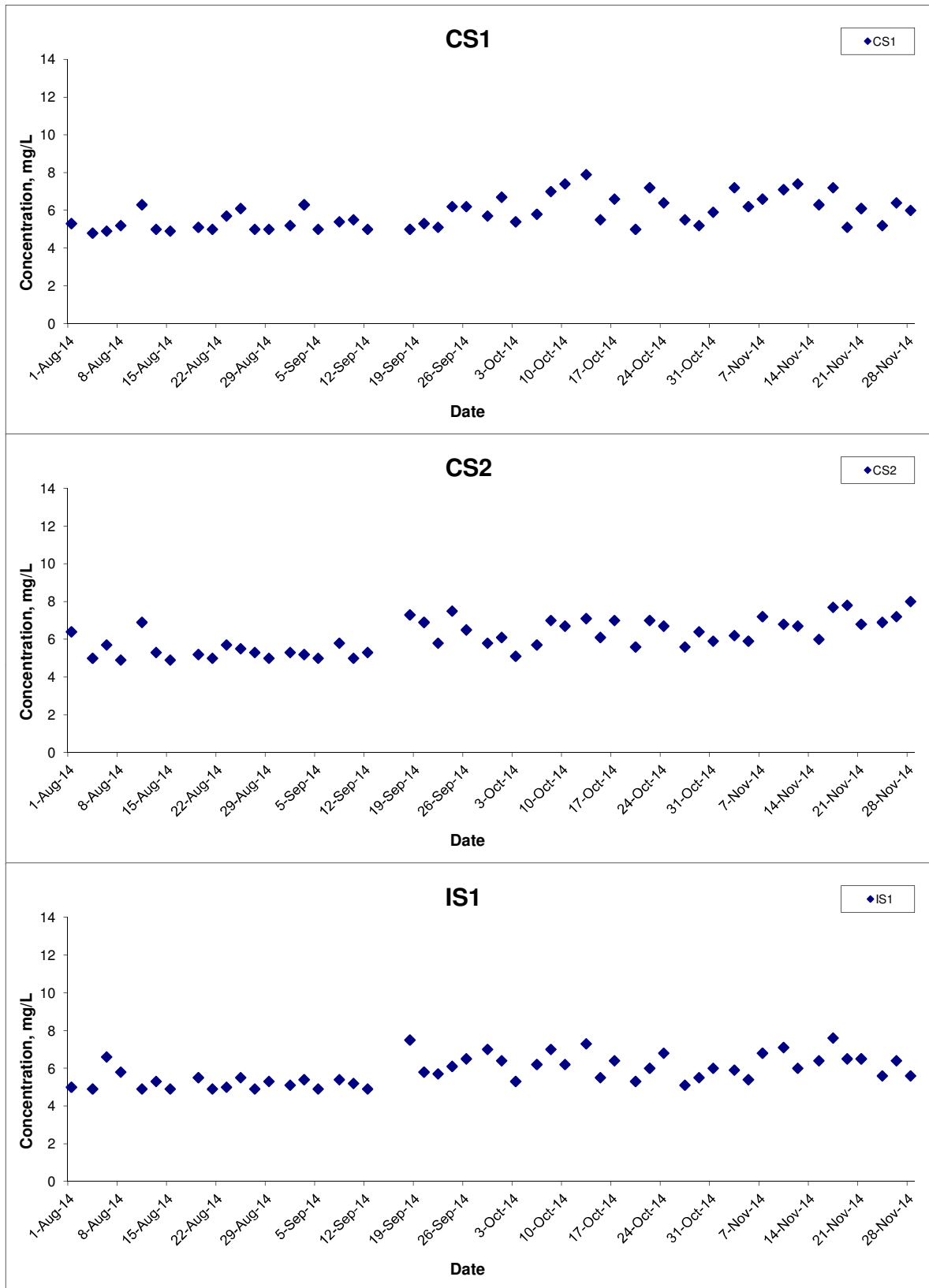
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



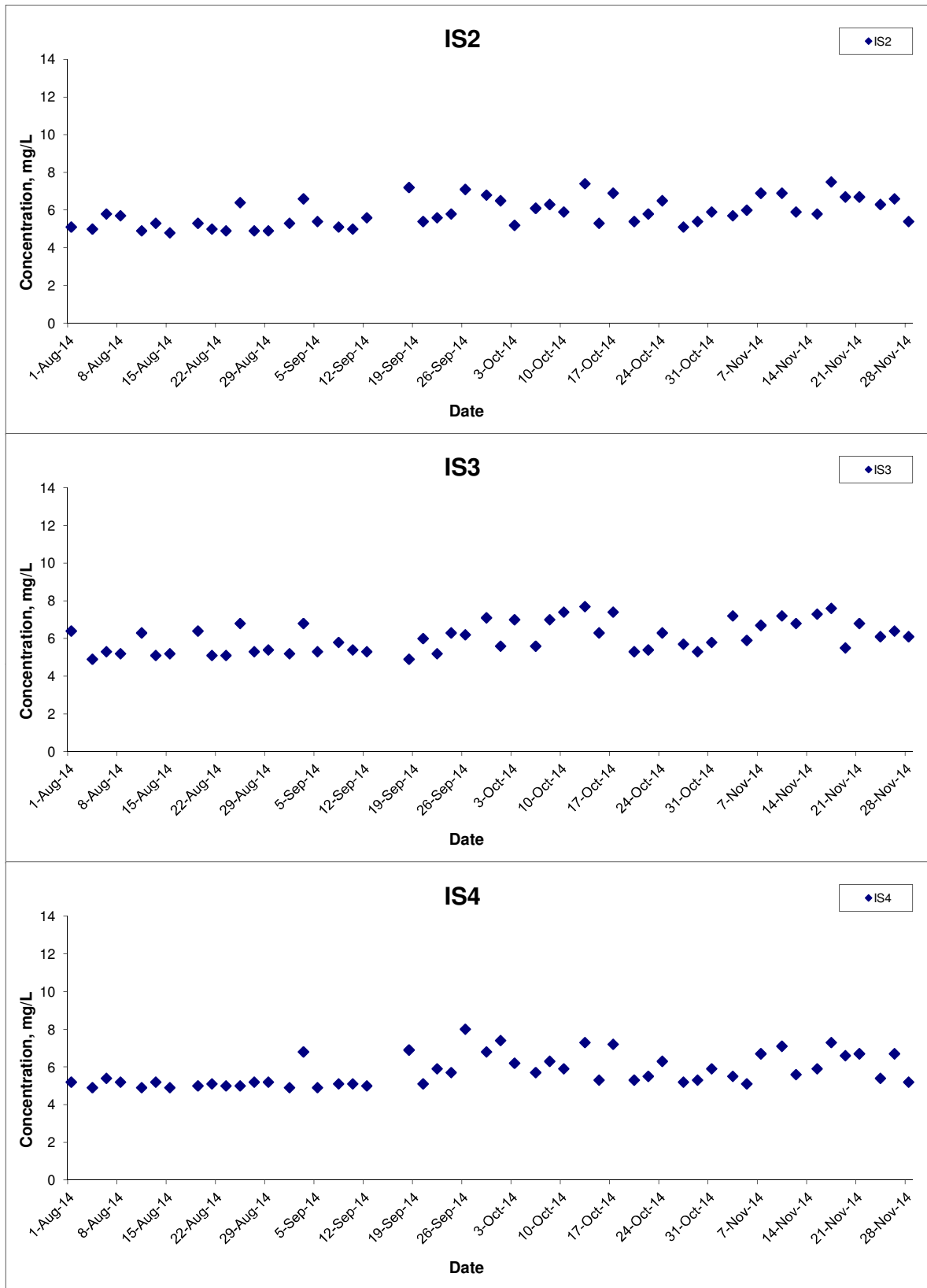
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



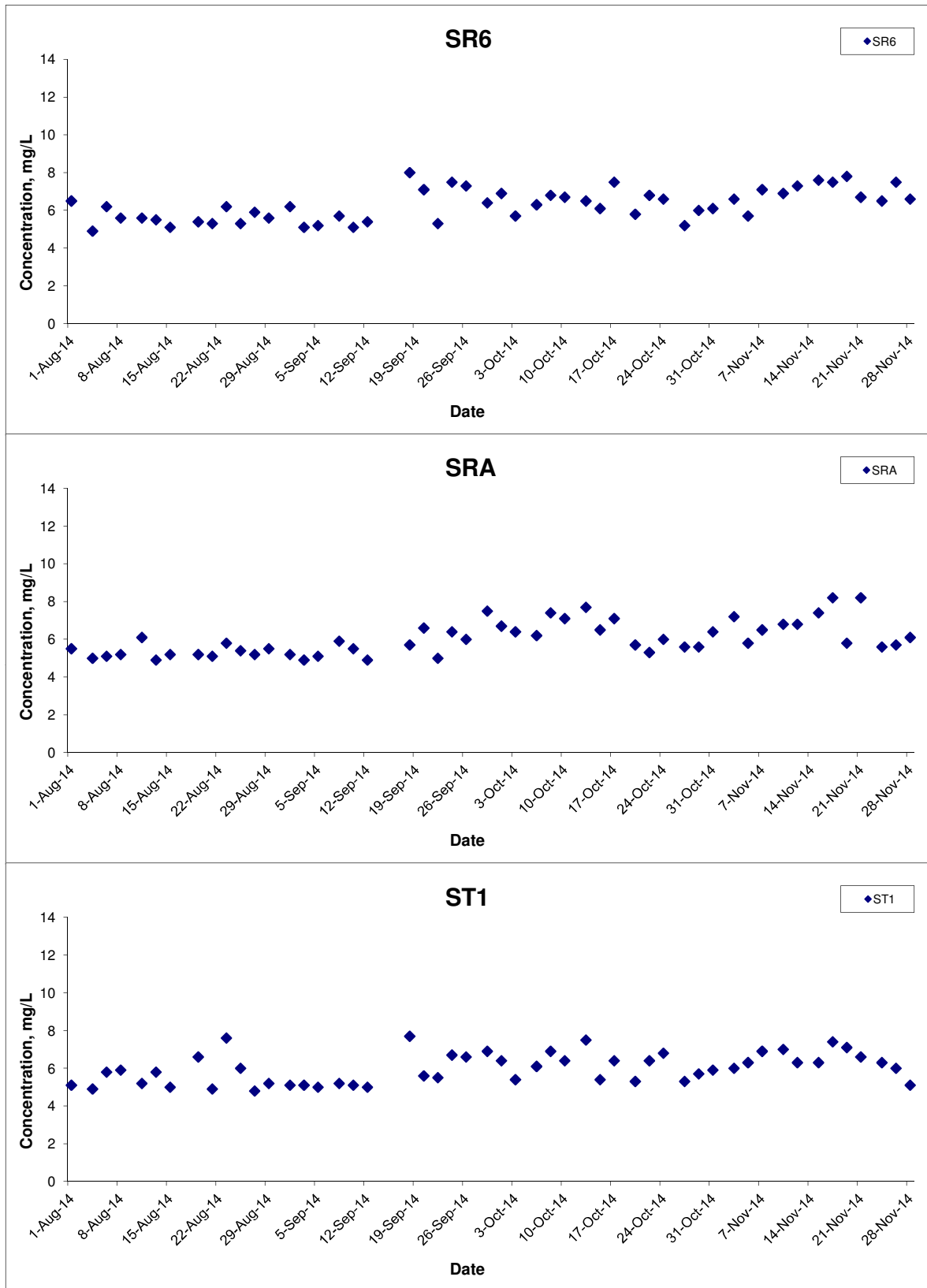
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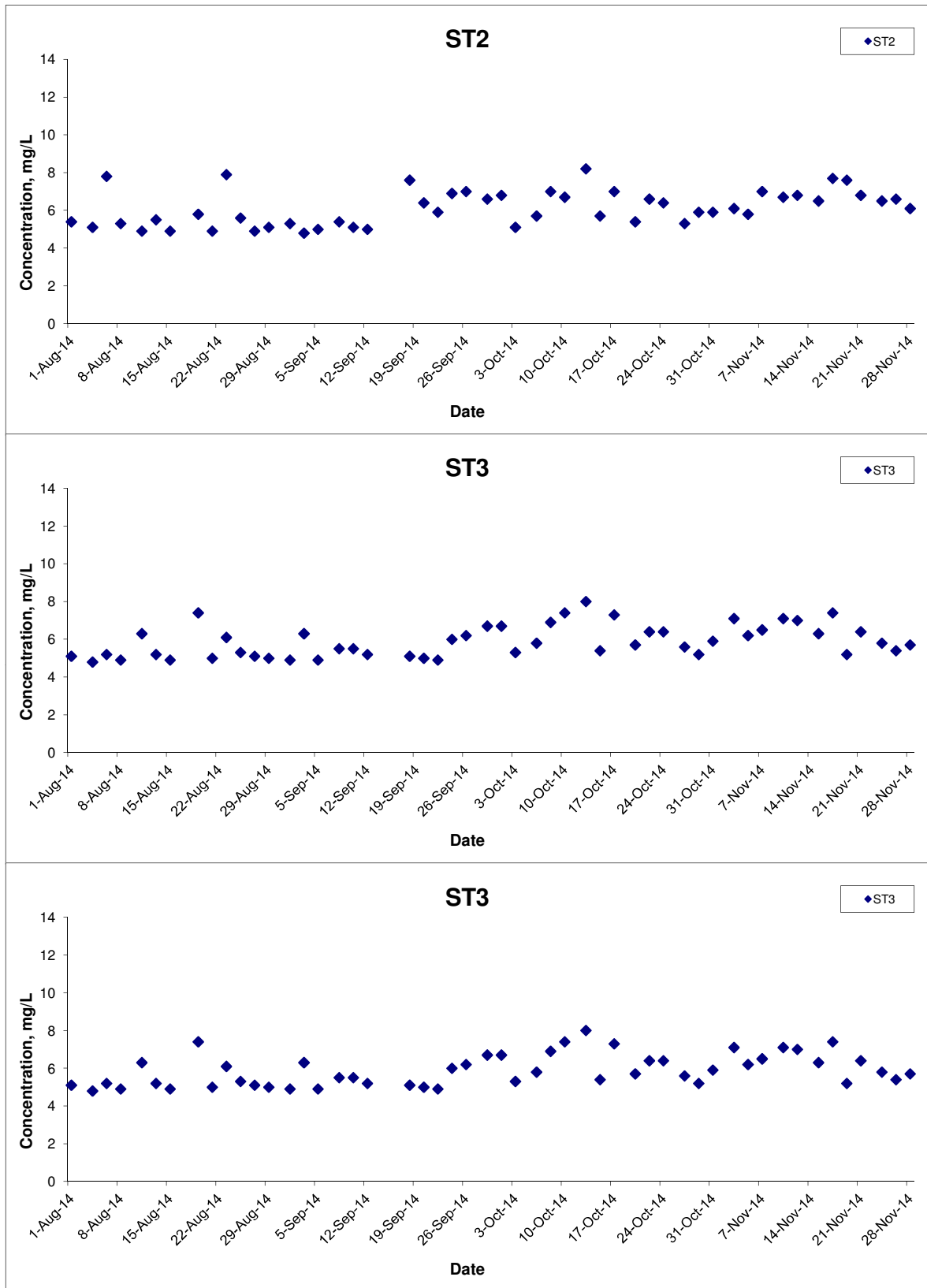
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Dissolved Oxygen (Bottom) at Mid-Ebb Tide



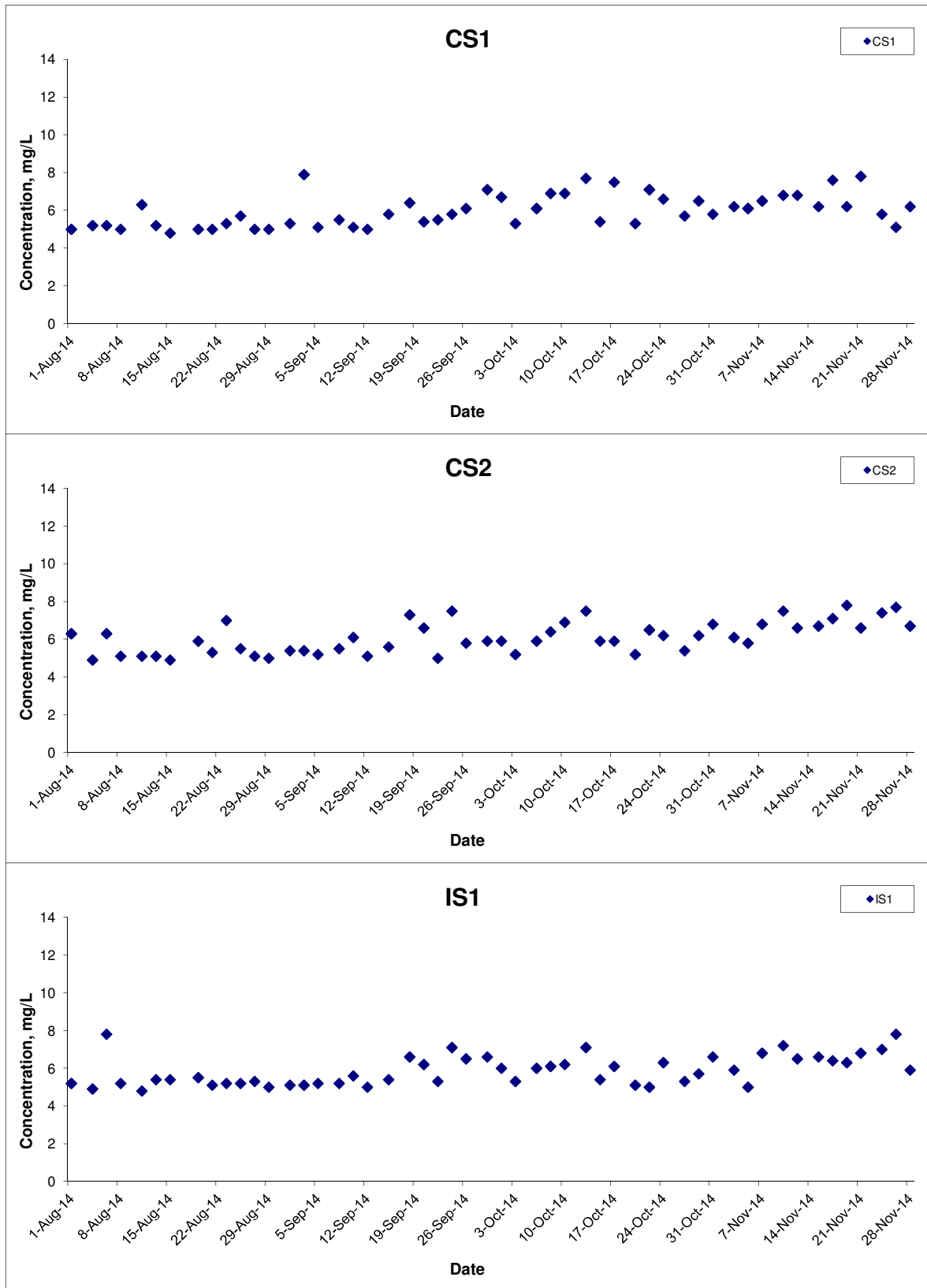
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



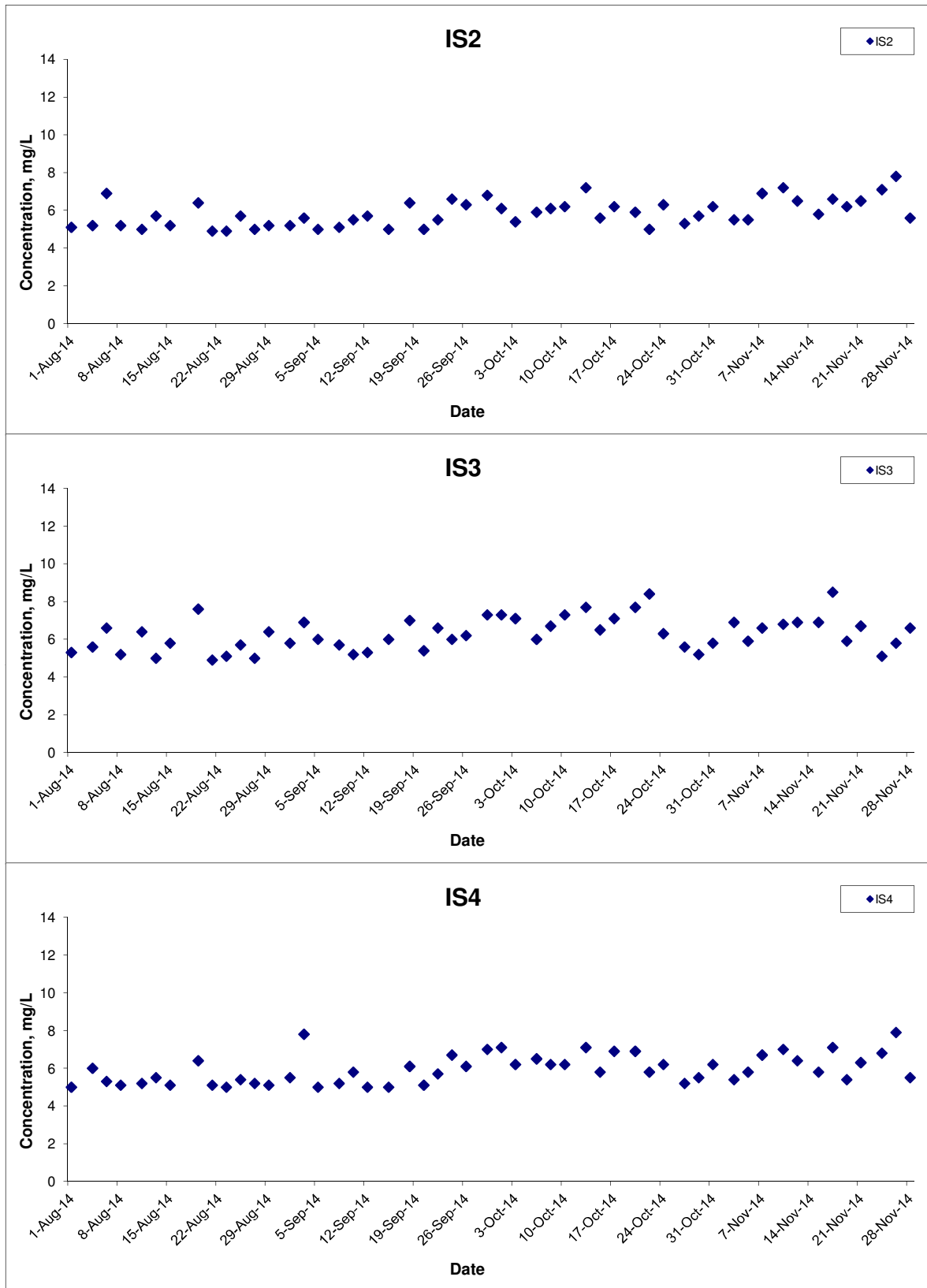
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



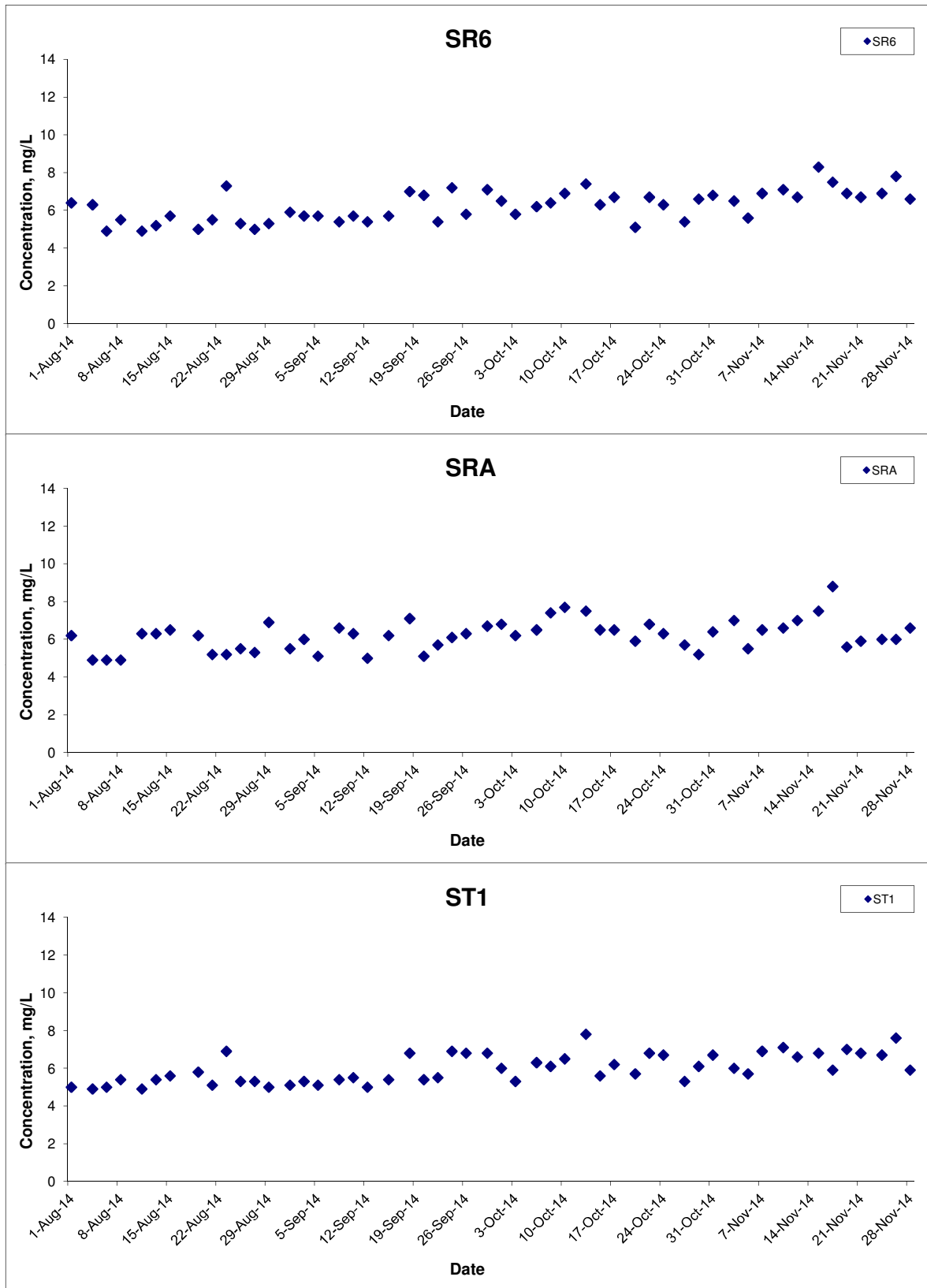
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Dissolved Oxygen (Bottom) at Mid-Flood Tide



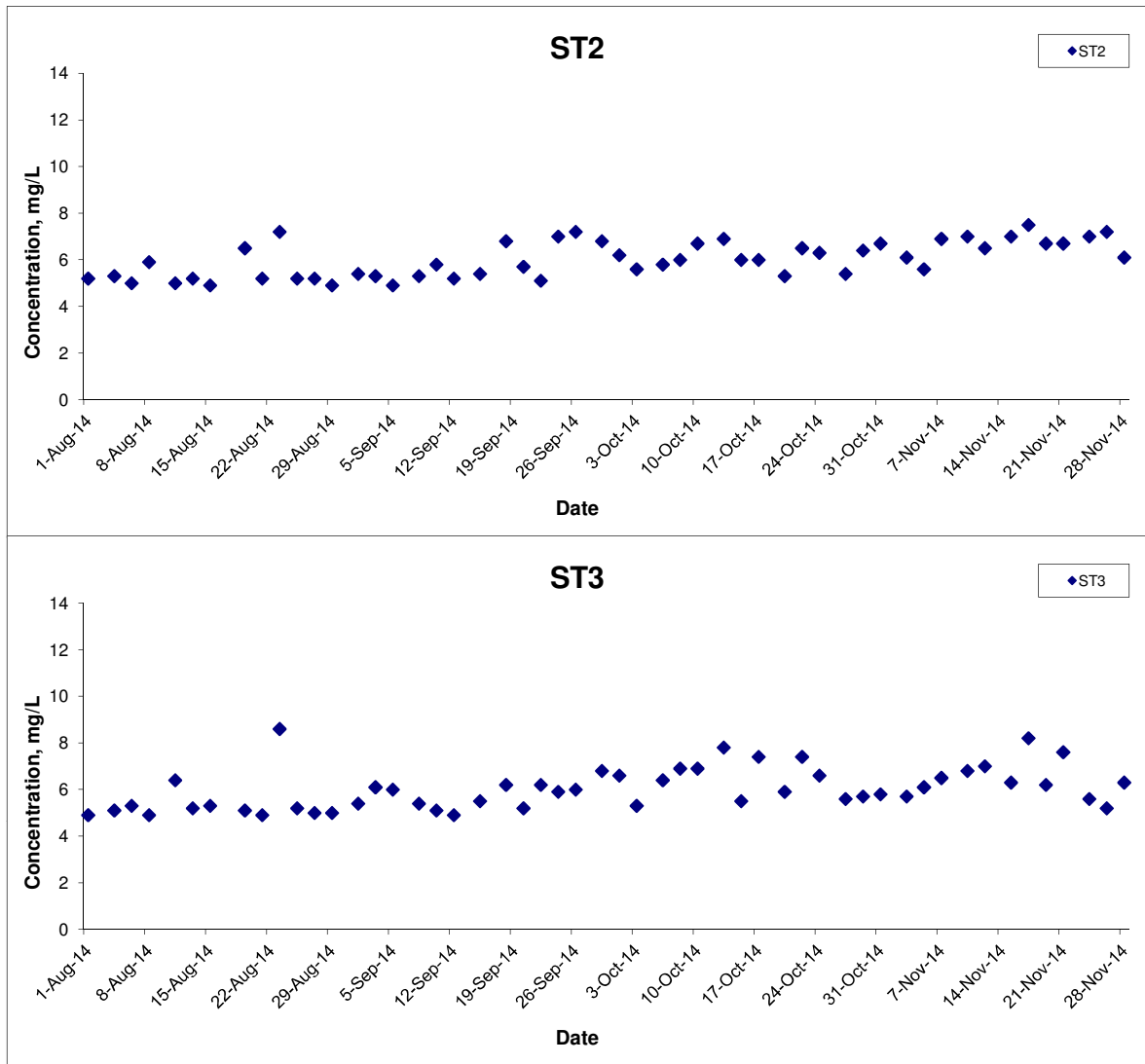
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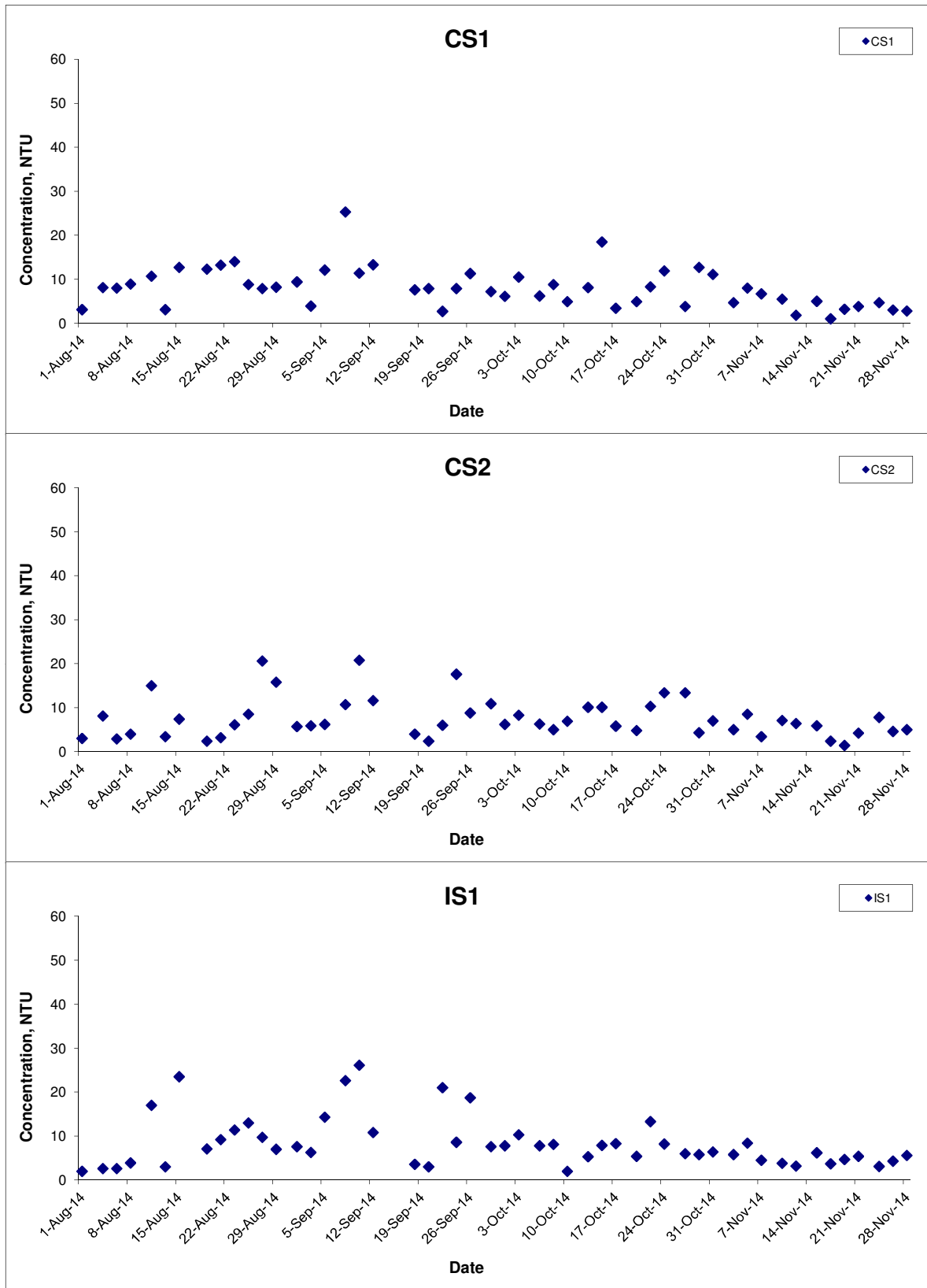


Dissolved Oxygen (Bottom) at Mid-Flood Tide



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



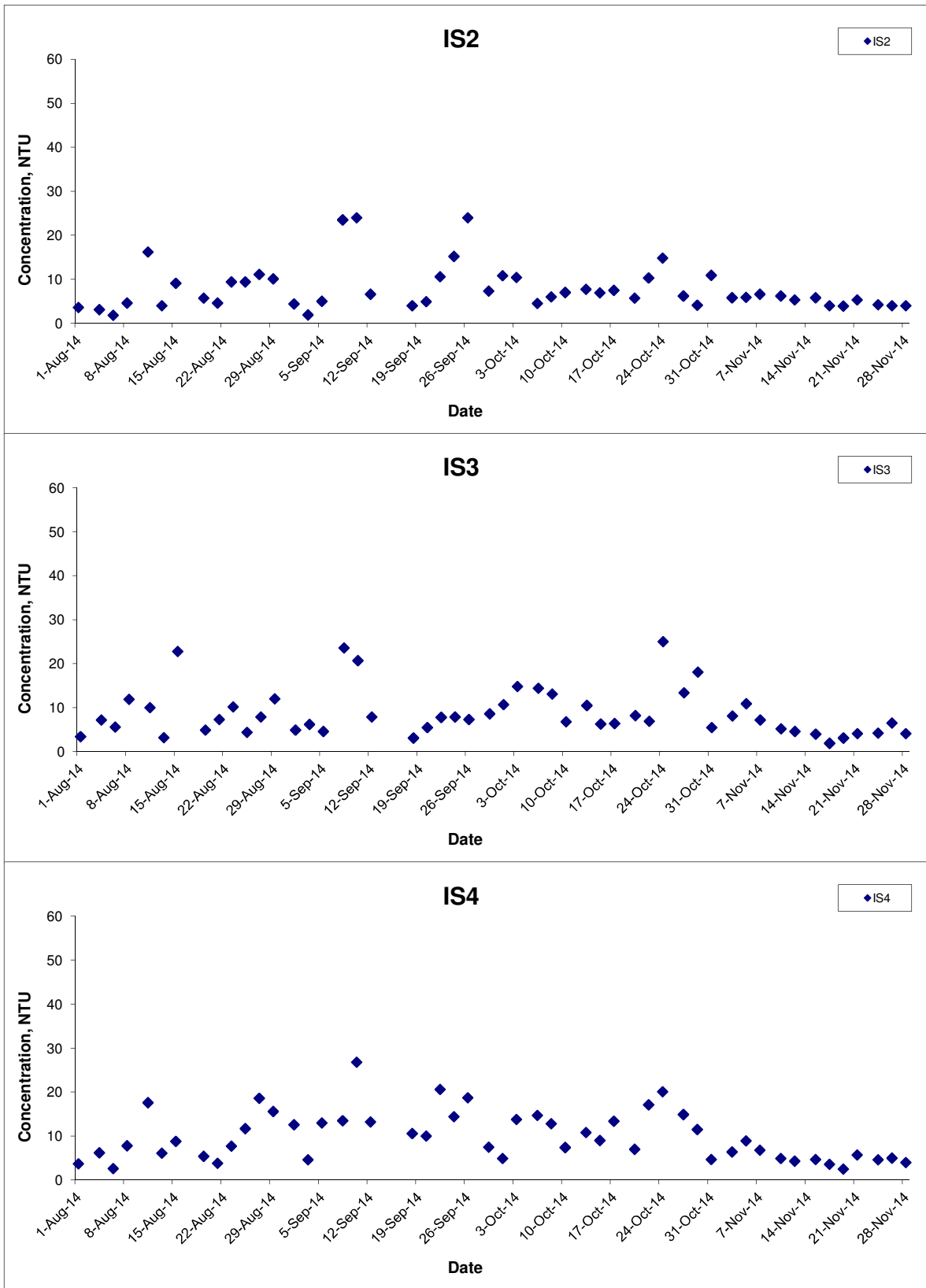
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Turbidity (Depth-averaged) at Mid-Ebb Tide



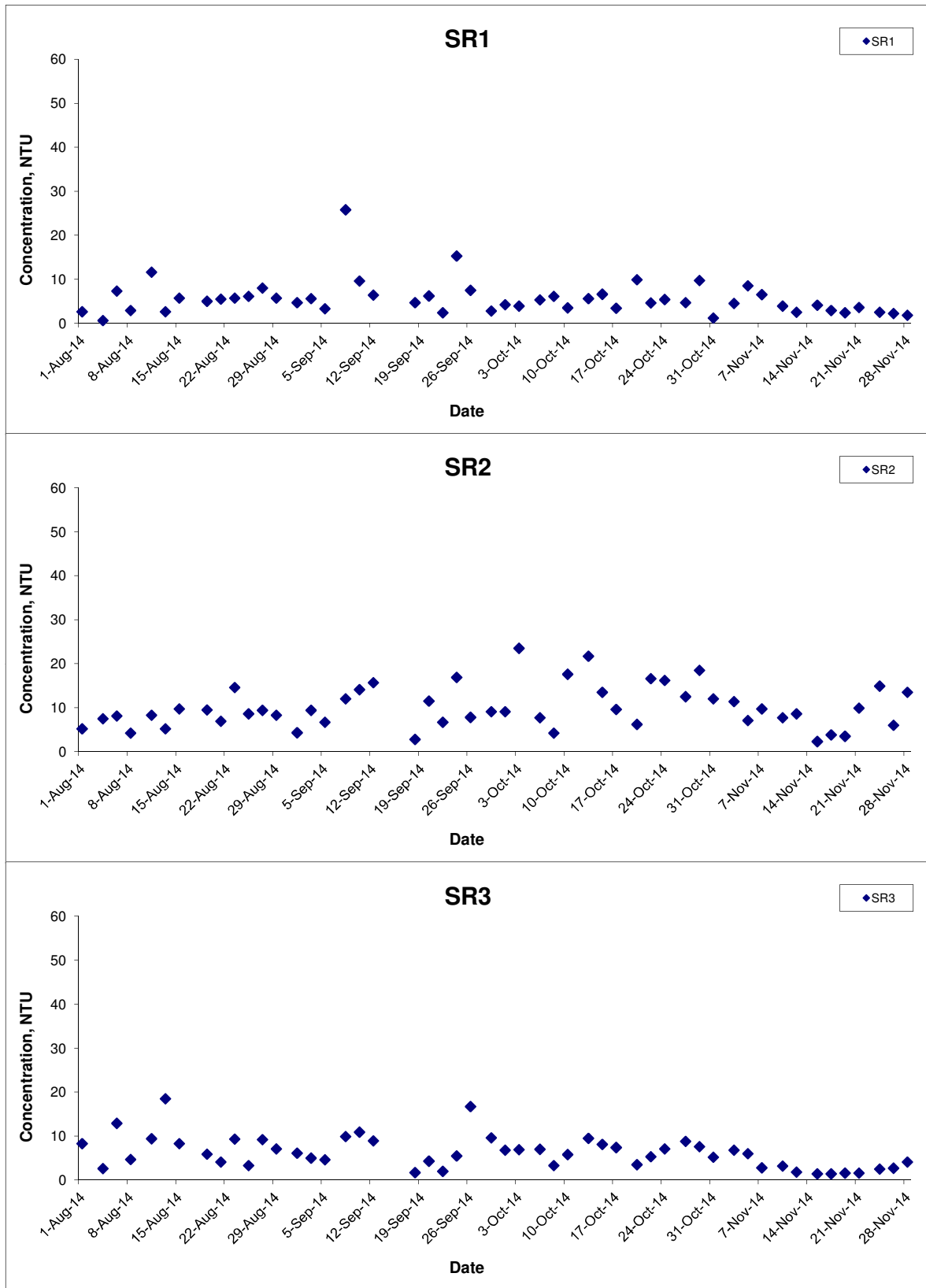
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Turbidity (Depth-averaged) at Mid-Ebb Tide



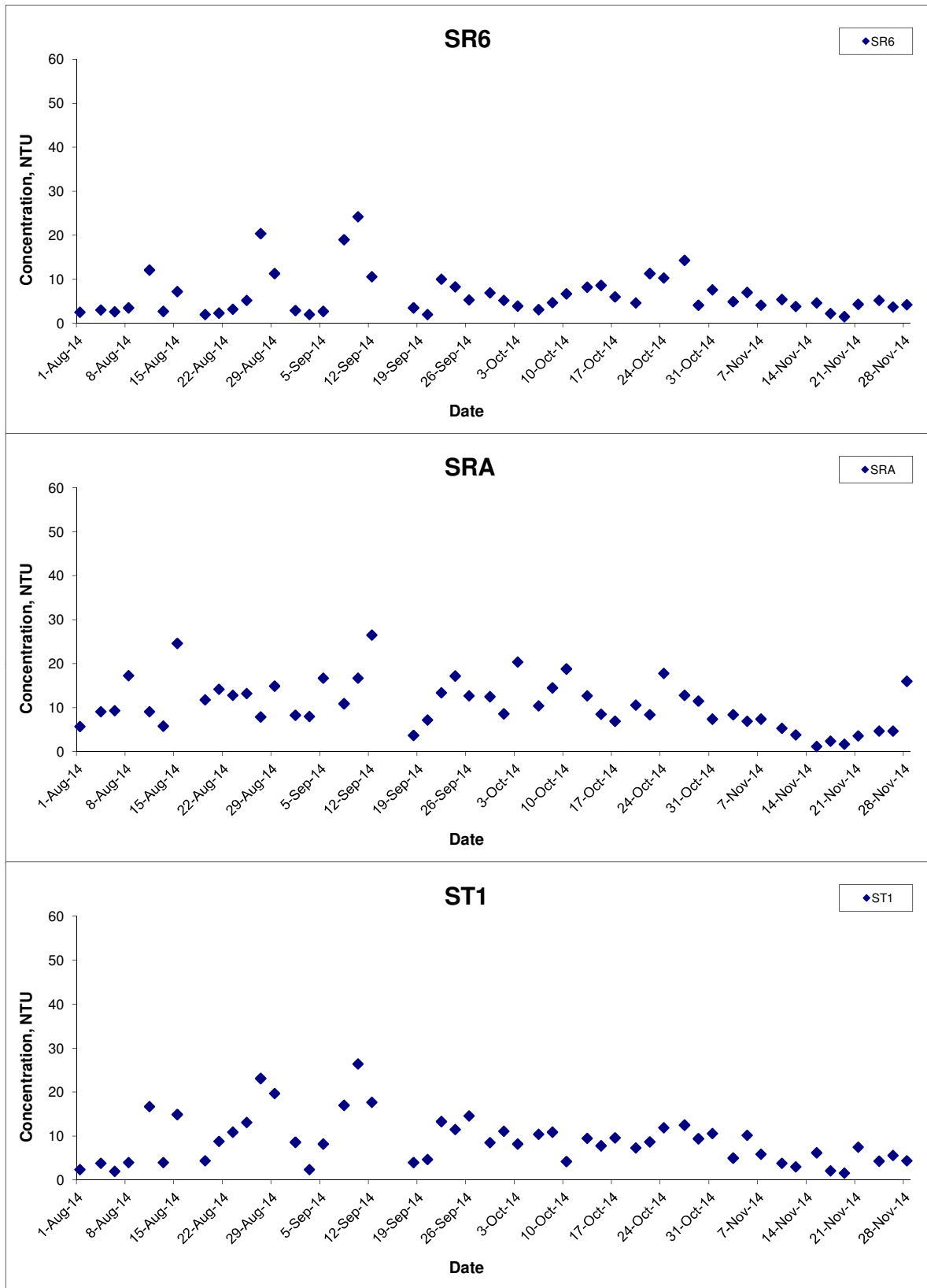
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Turbidity (Depth-averaged) at Mid-Ebb Tide



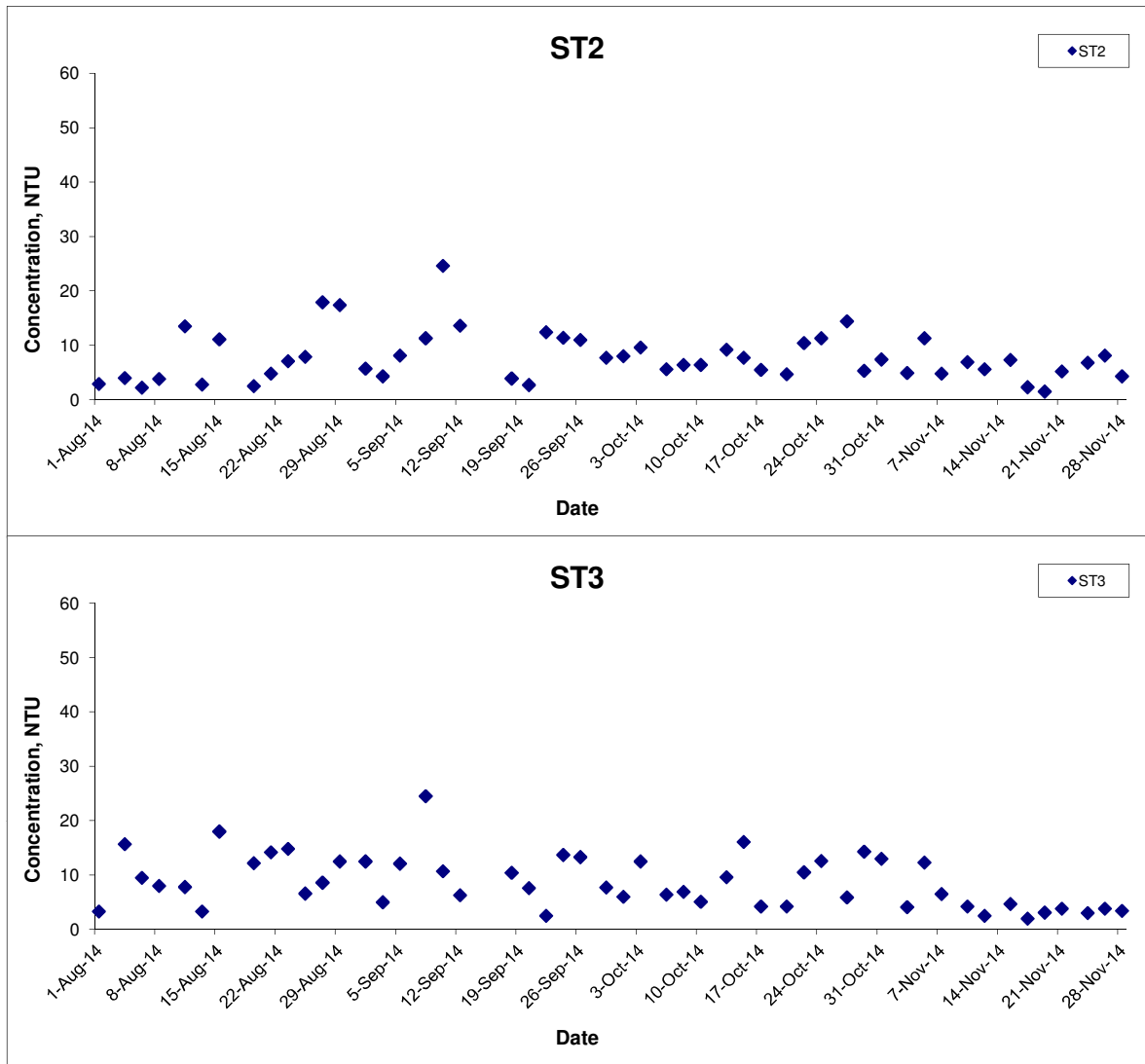
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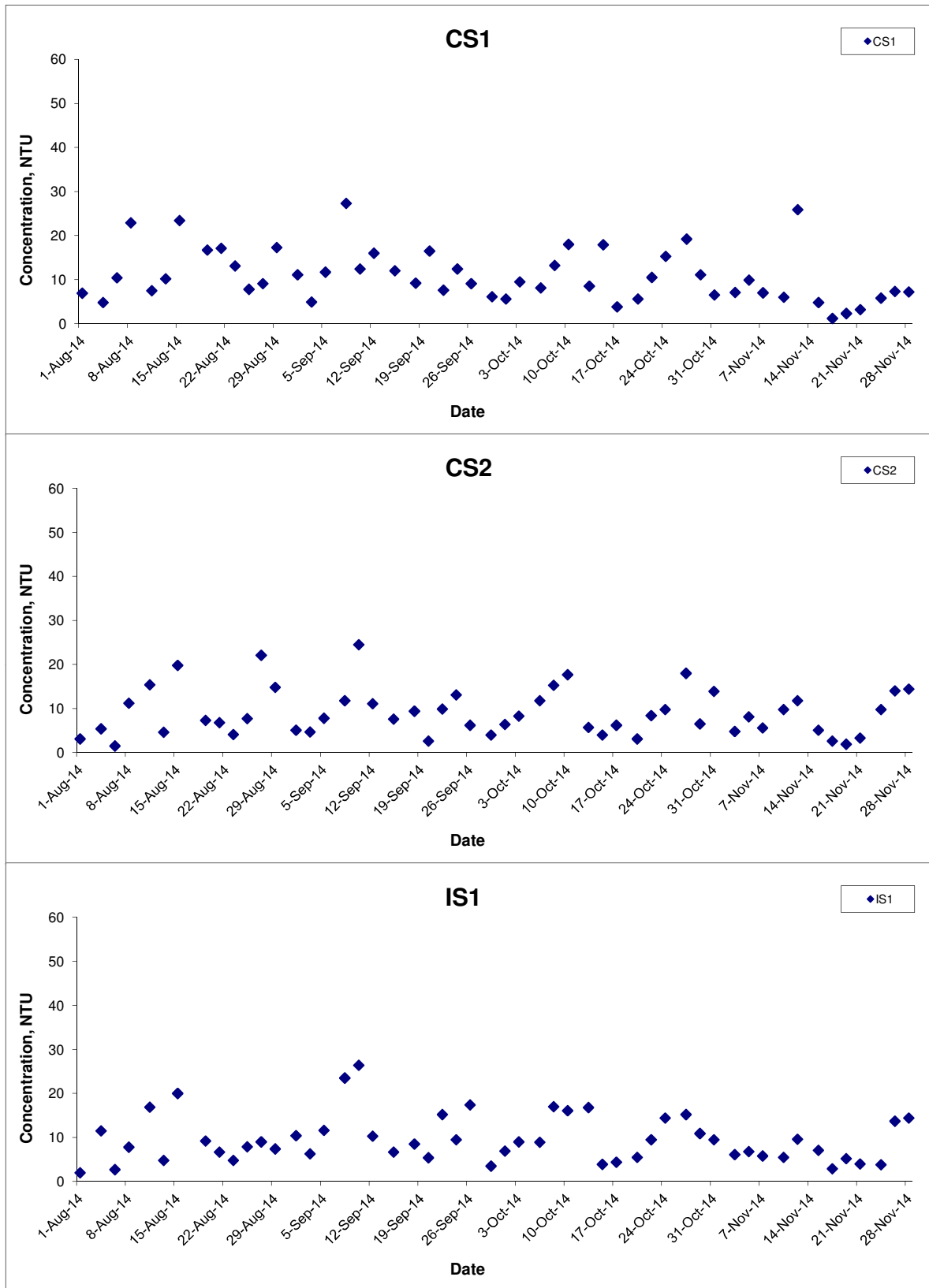


Turbidity (Depth-averaged) at Mid-Ebb Tide



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	Project No.	MA12014	CINOTECH
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Turbidity (Depth-averaged) at Mid-Flood Tide



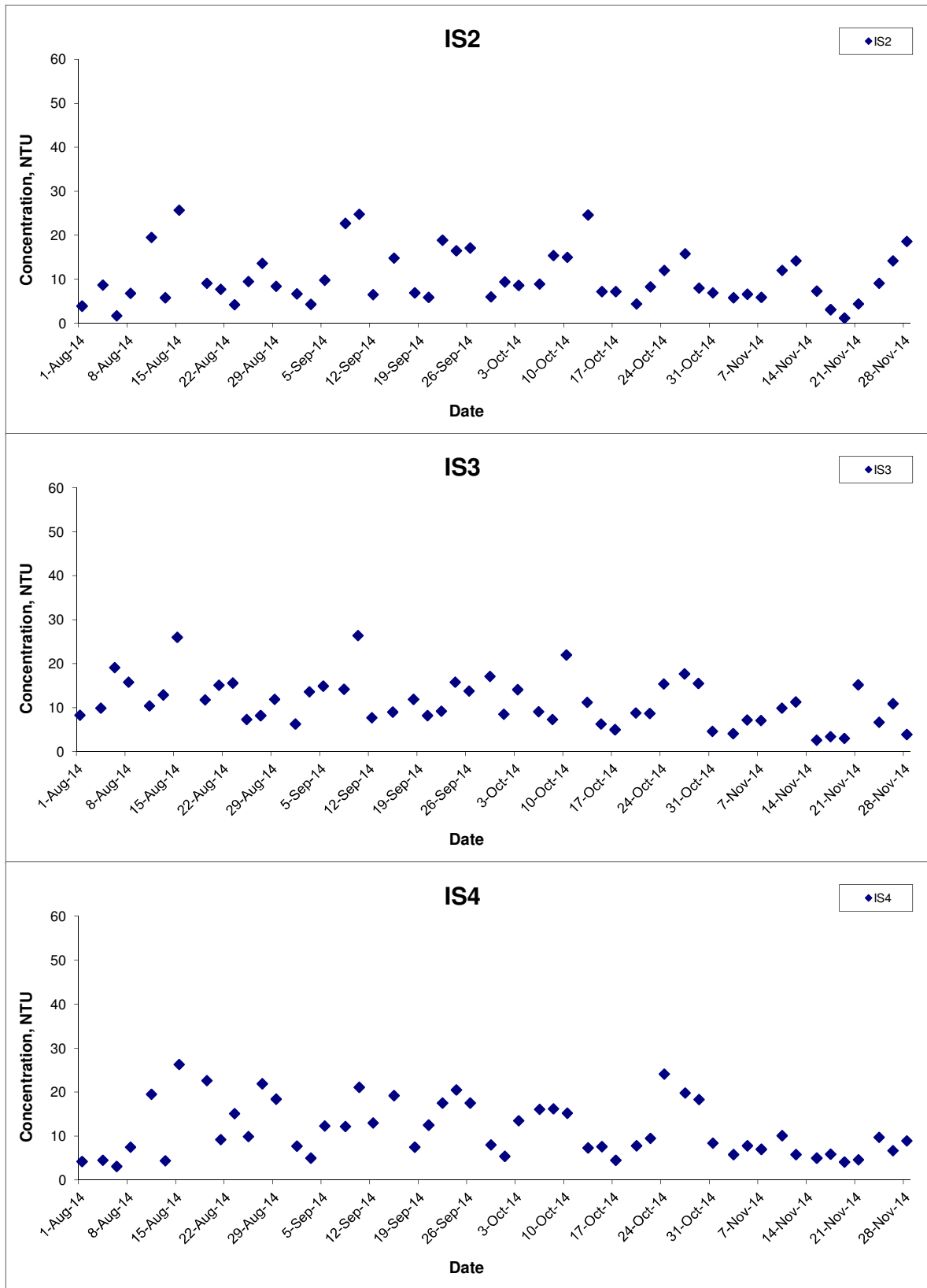
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Turbidity (Depth-averaged) at Mid-Flood Tide



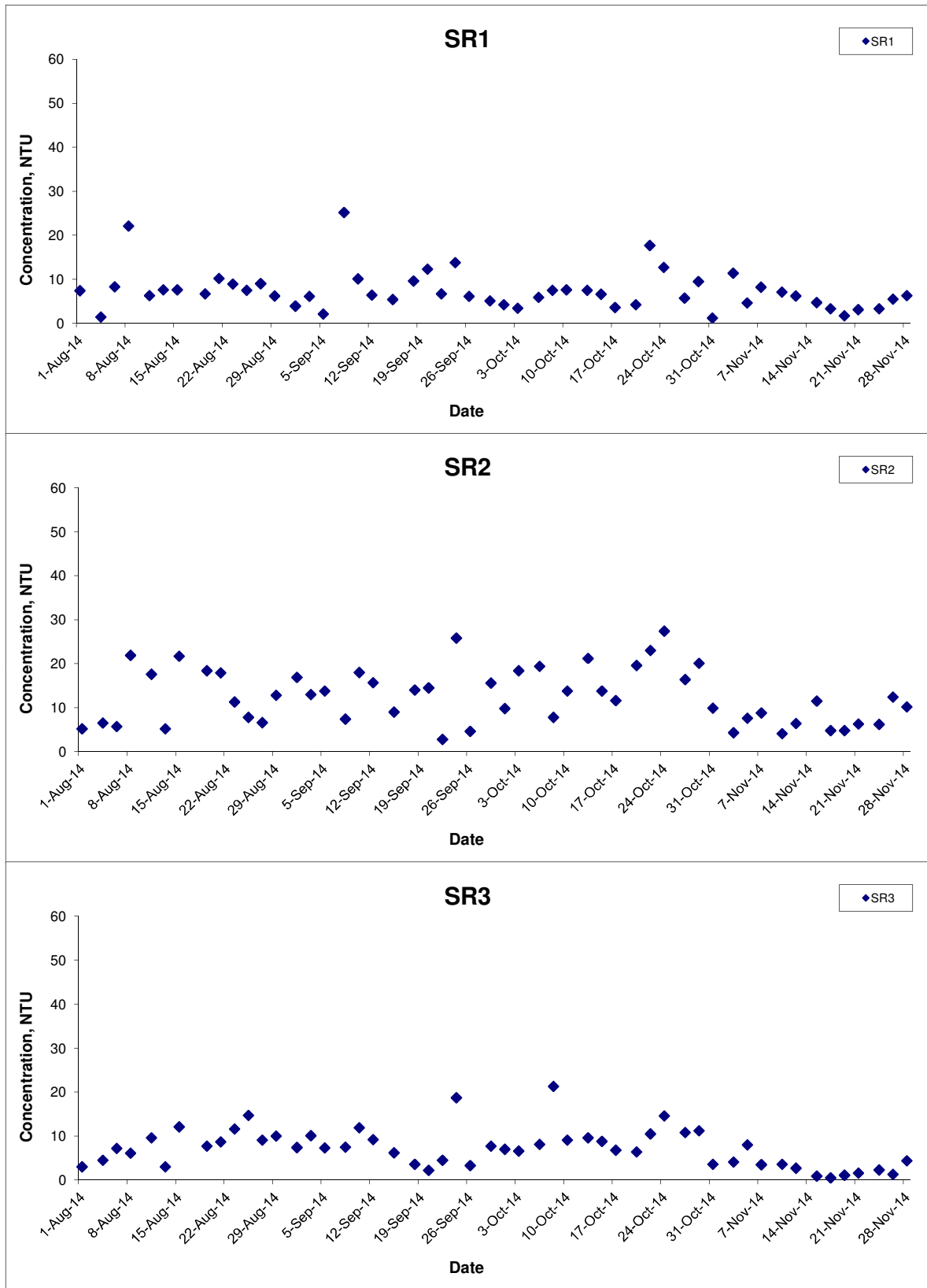
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Turbidity (Depth-averaged) at Mid-Flood Tide



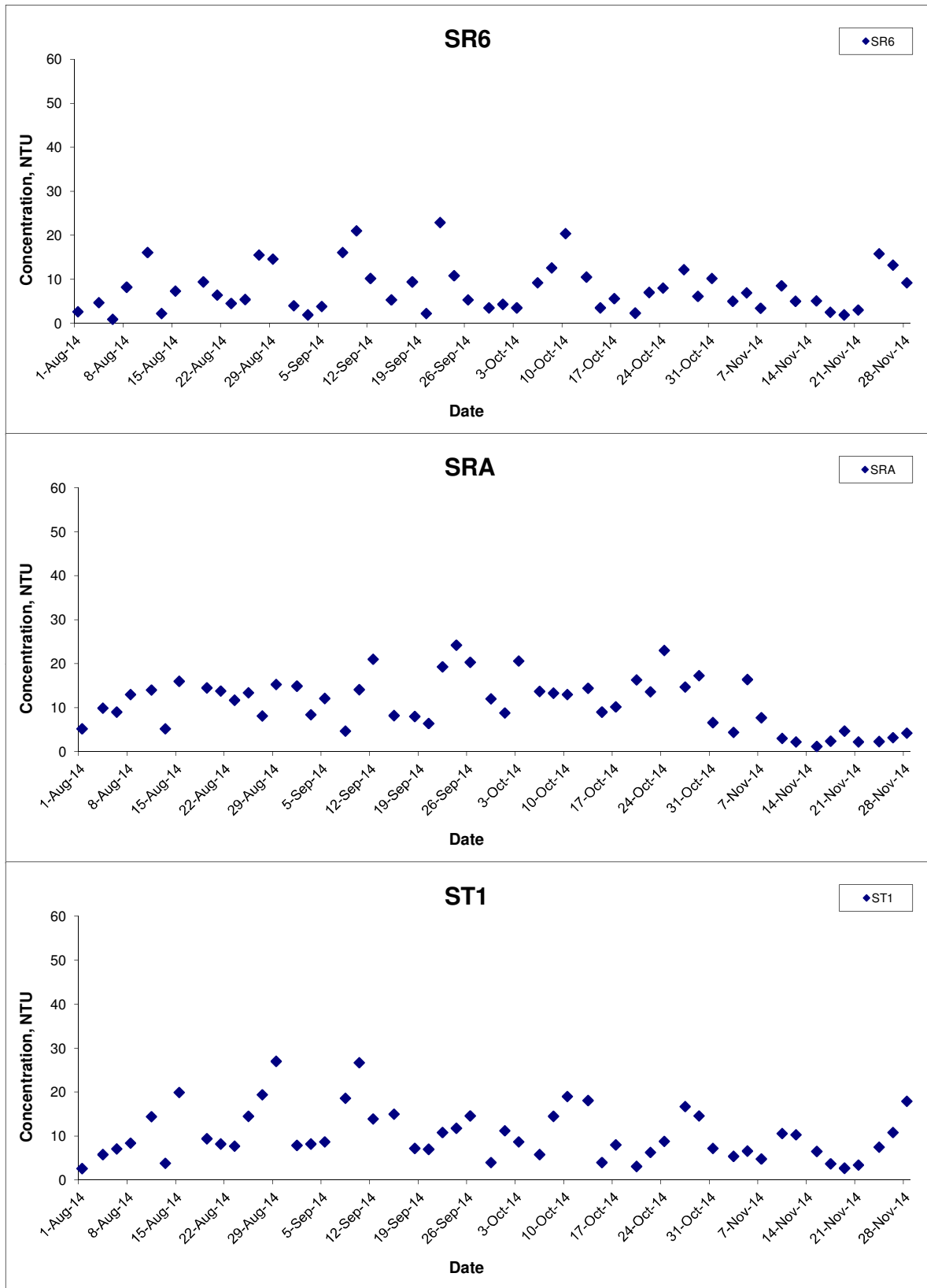
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Turbidity (Depth-averaged) at Mid-Flood Tide



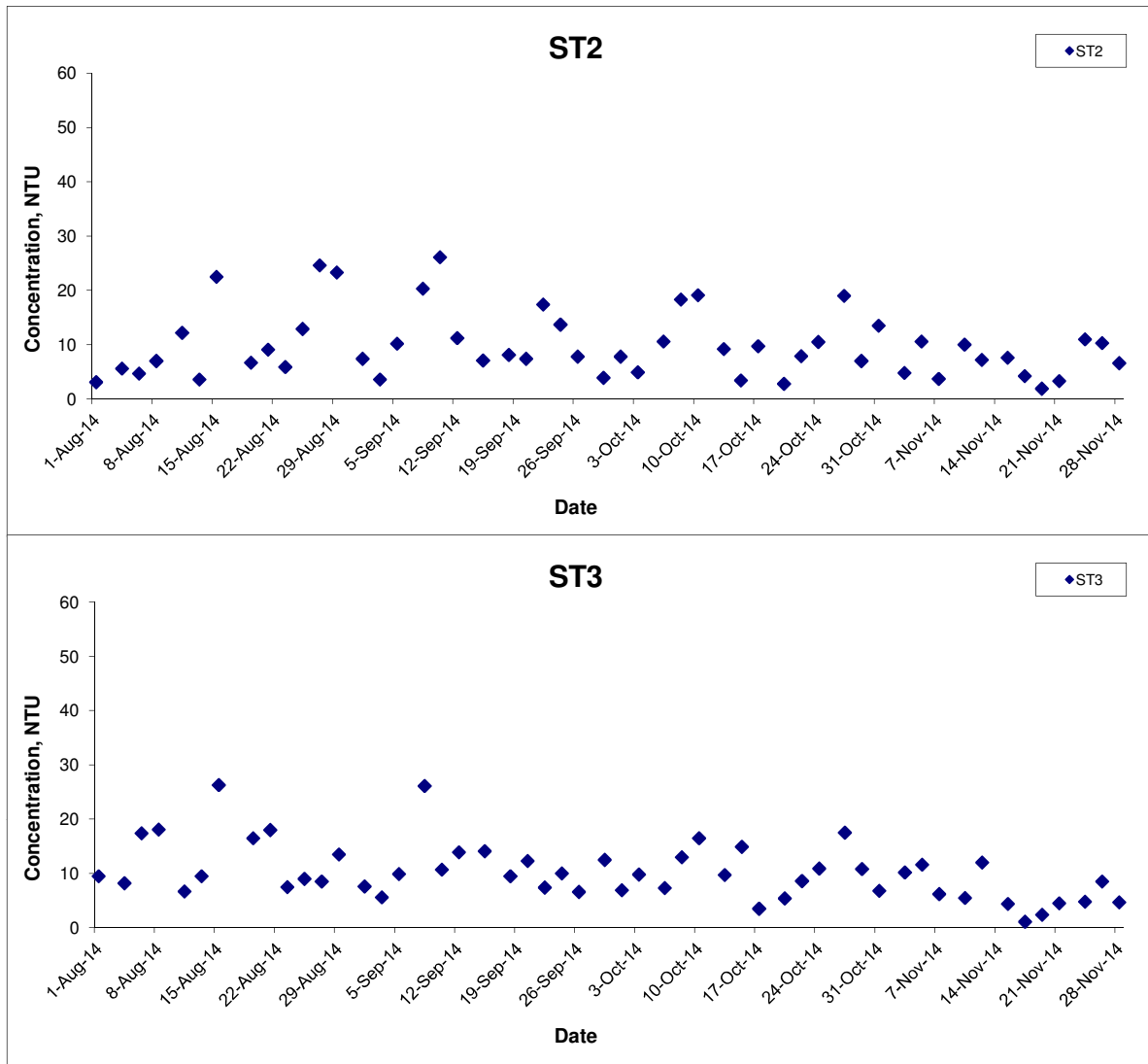
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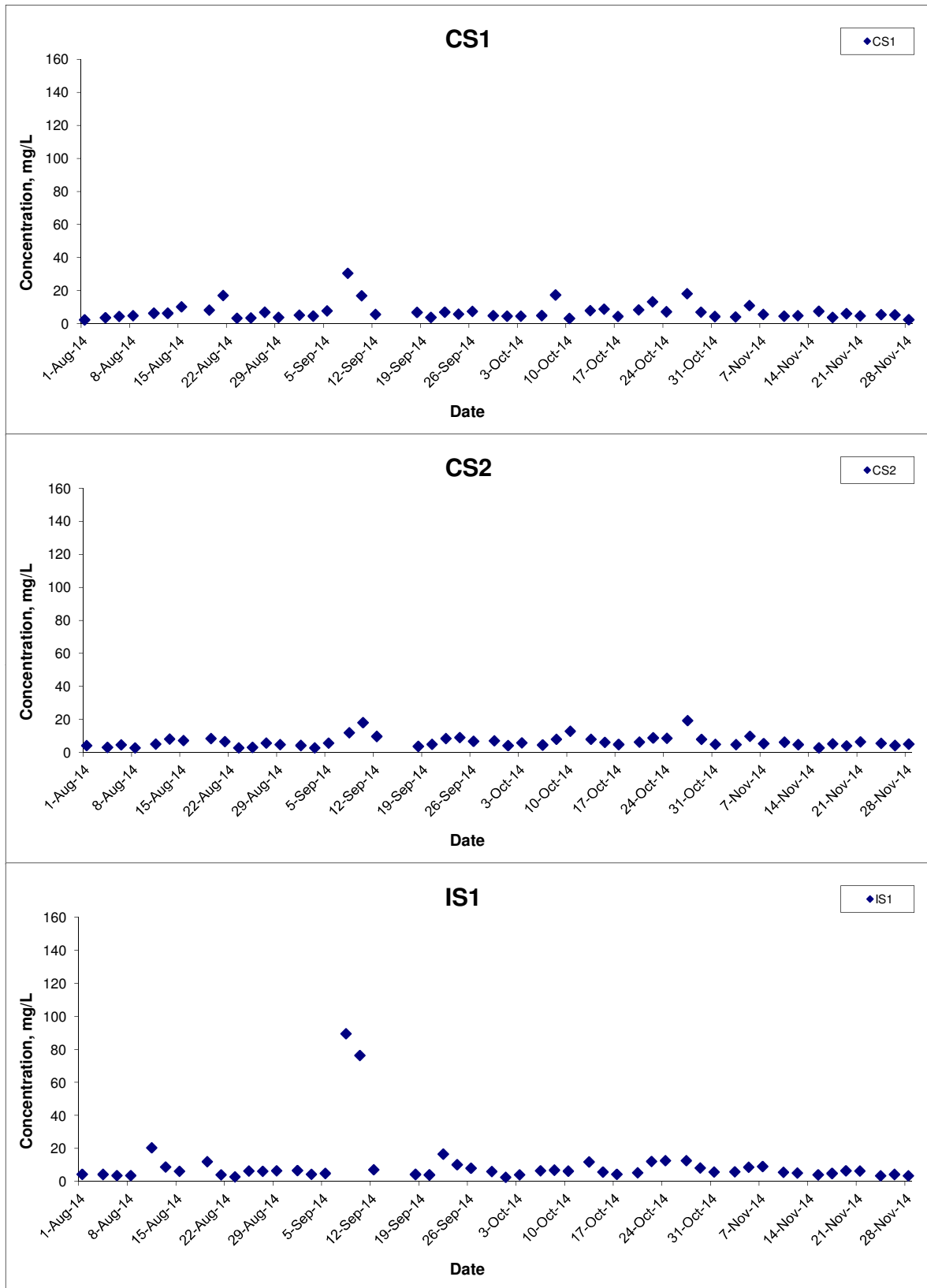


Turbidity (Depth-averaged) at Mid-Flood Tide



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



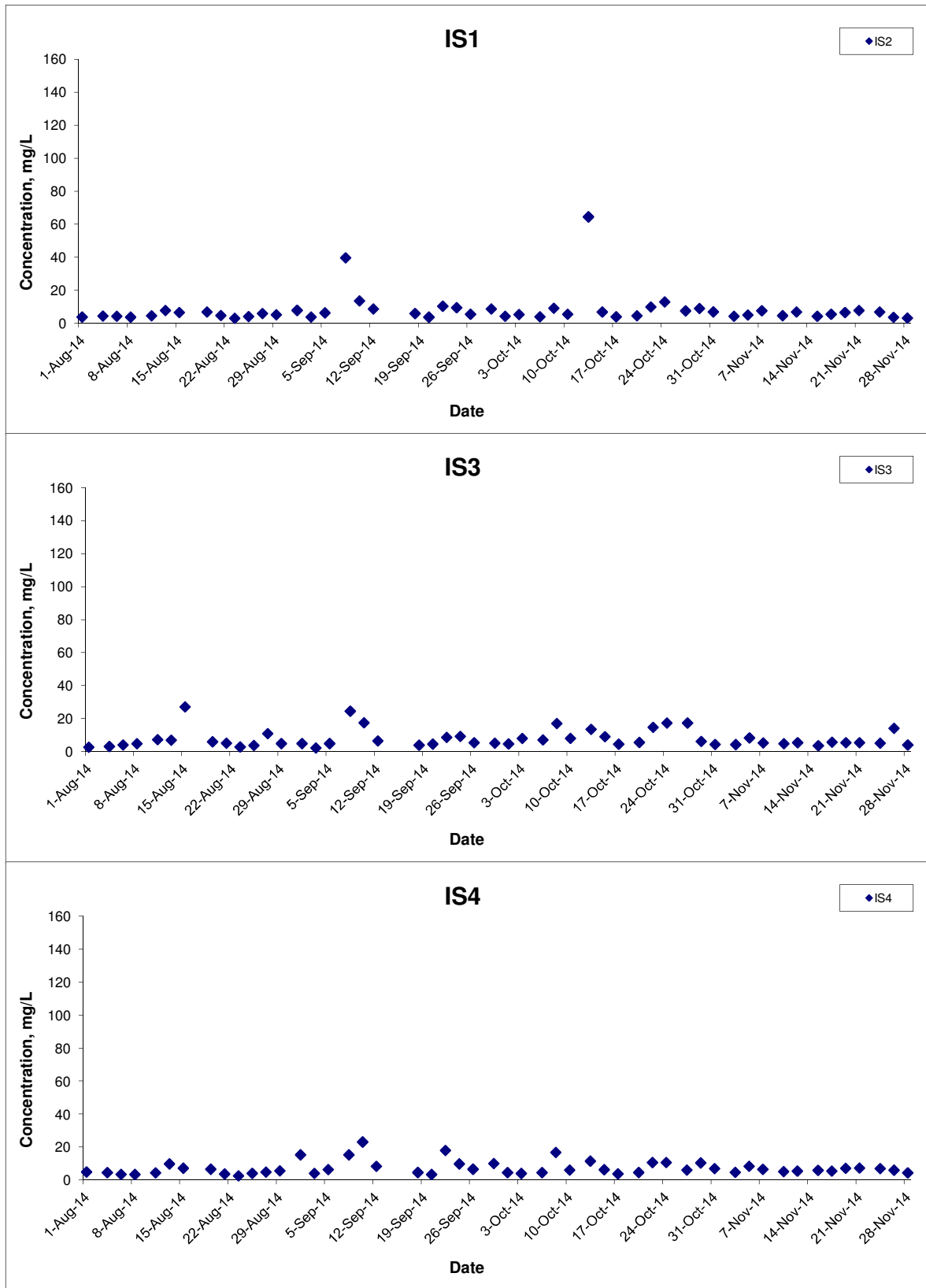
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



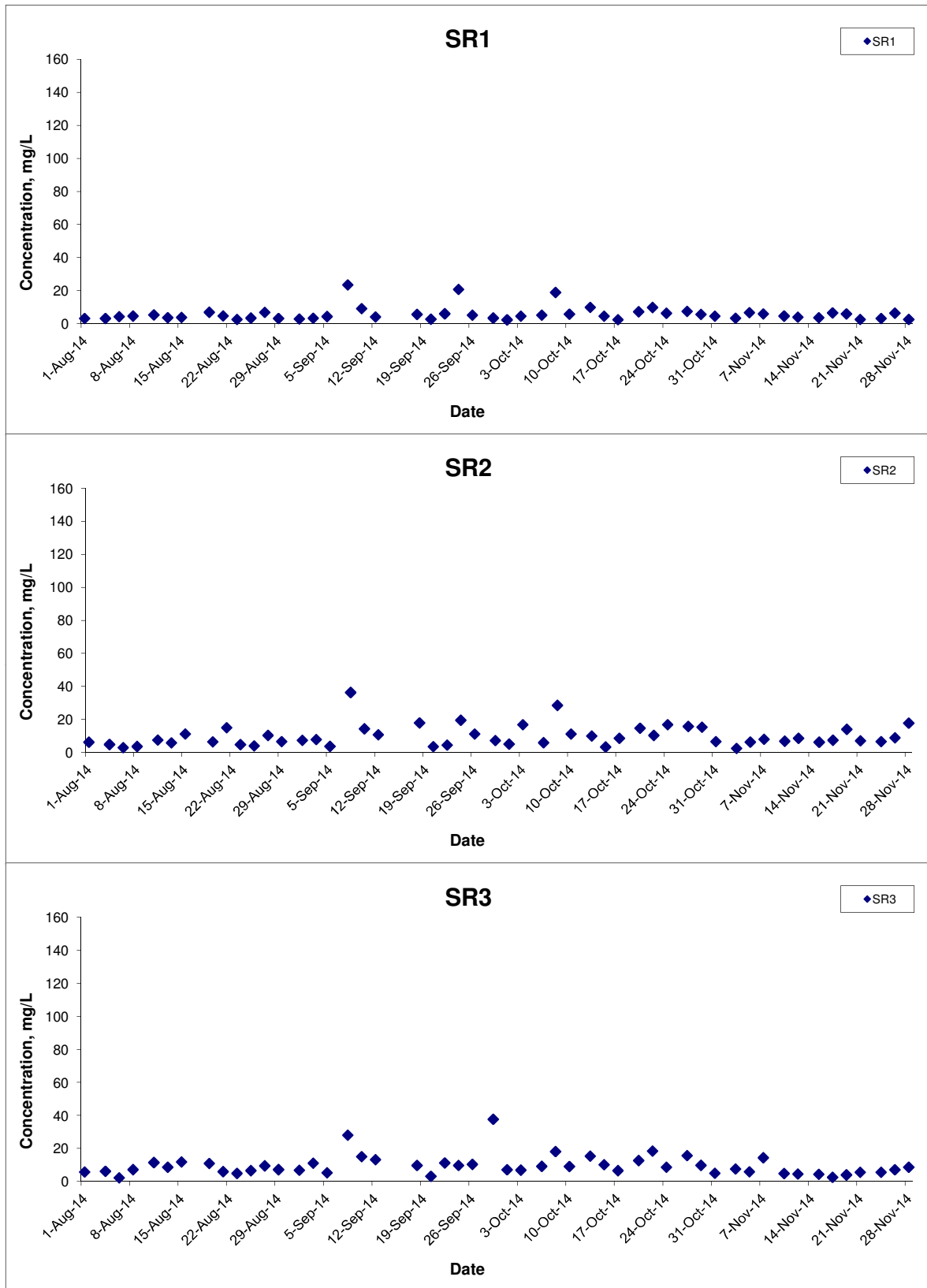
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



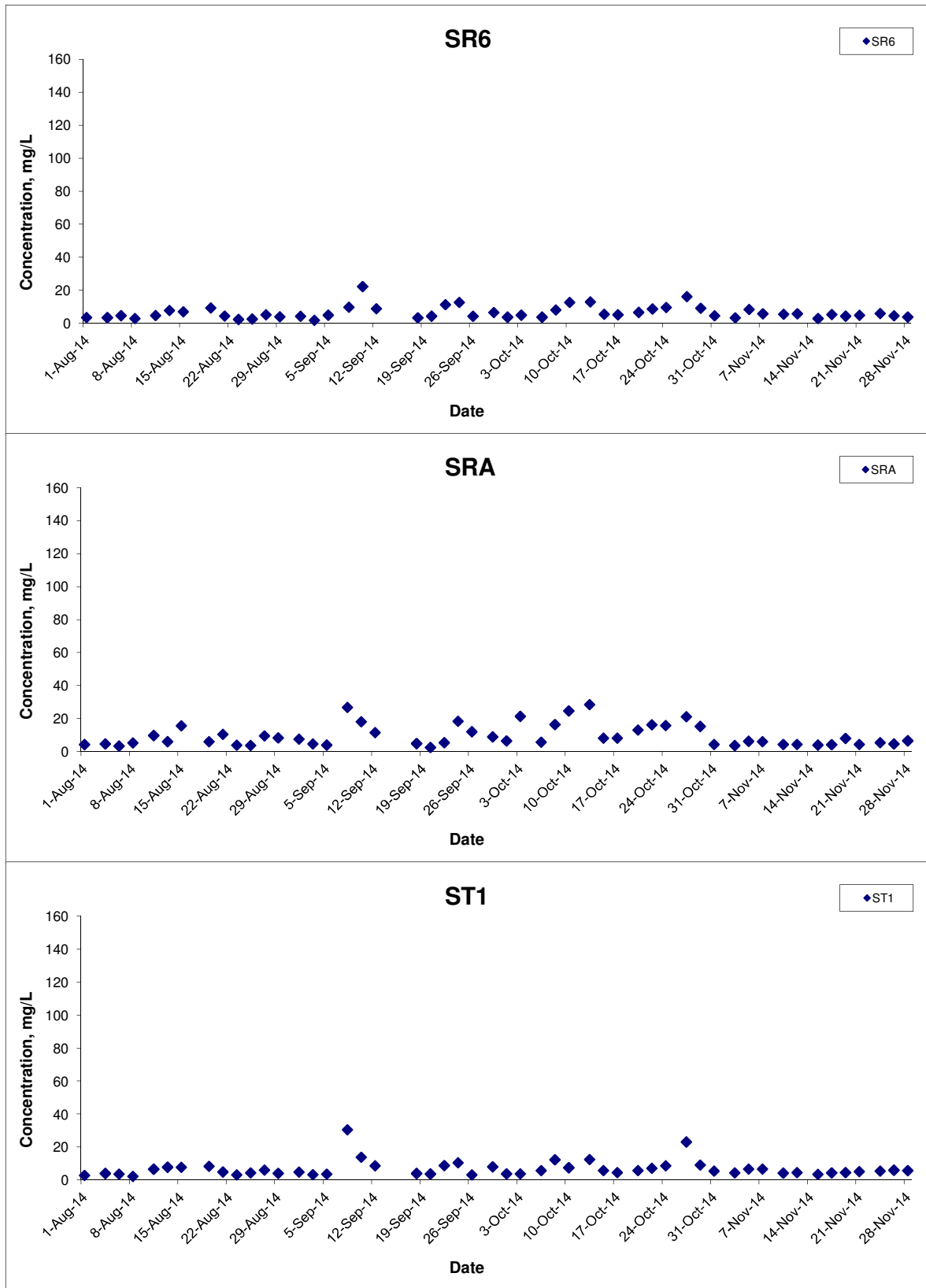
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



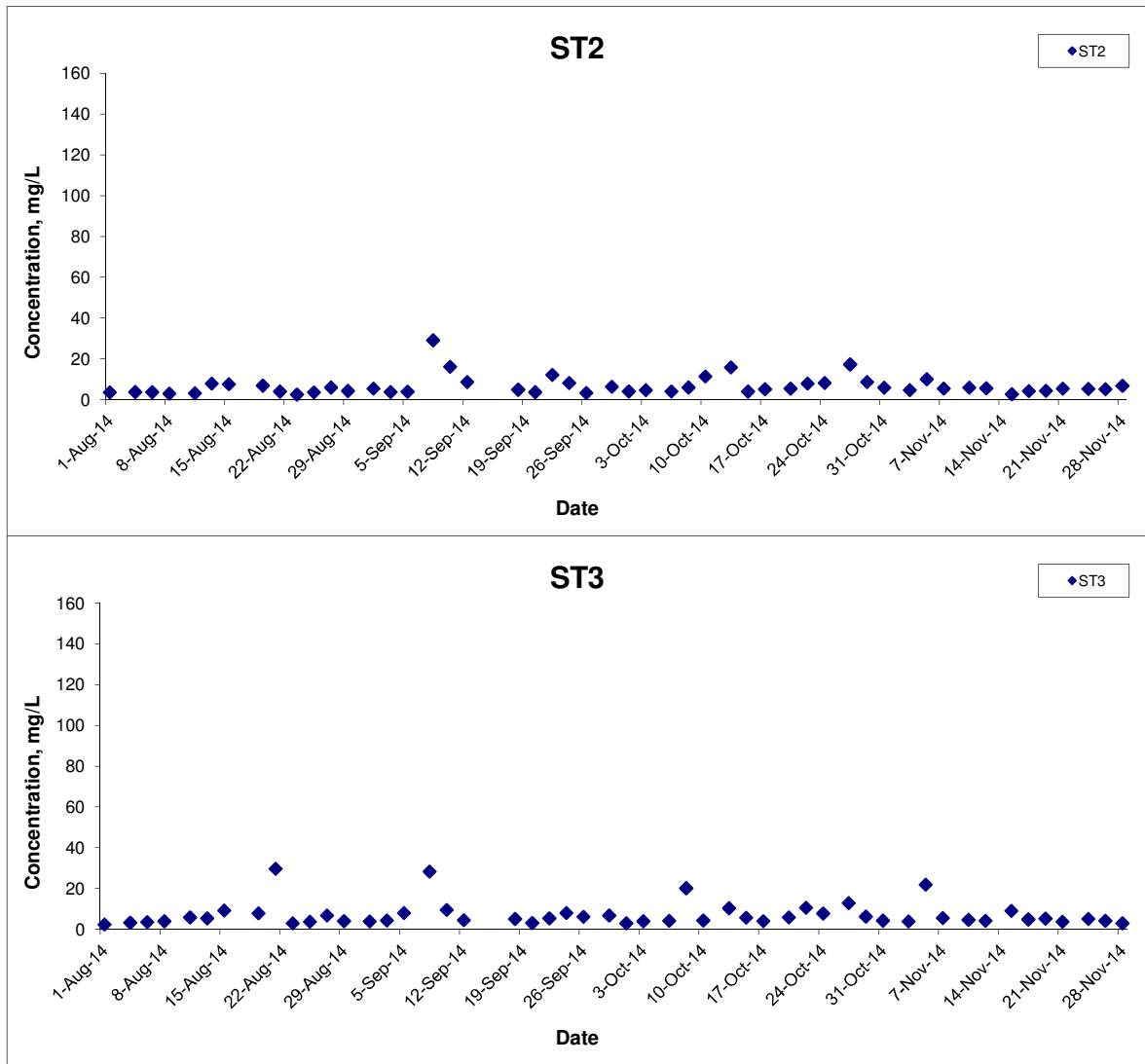
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Suspended Solids (Depth-averaged) at Mid-Ebb Tide



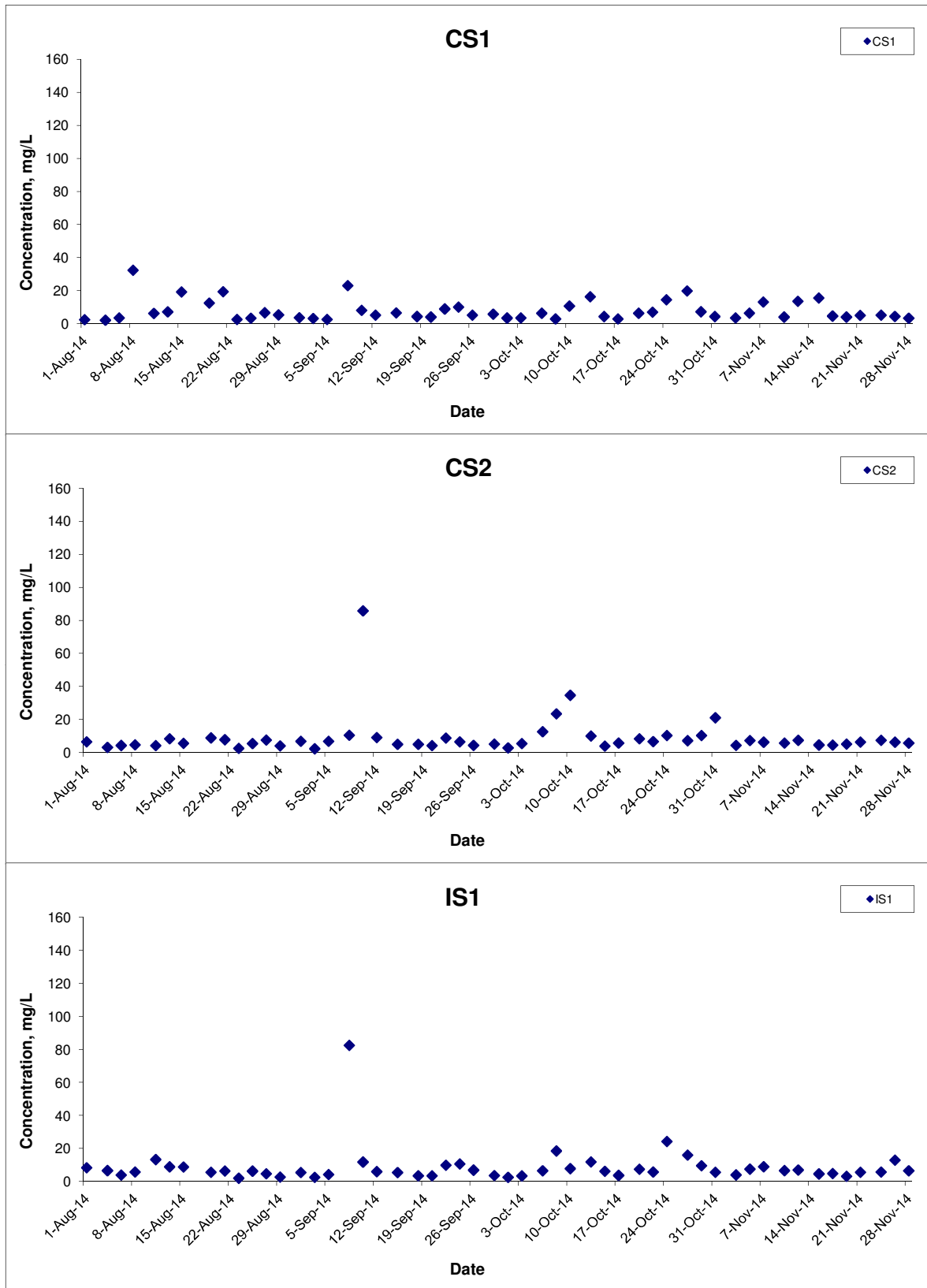
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



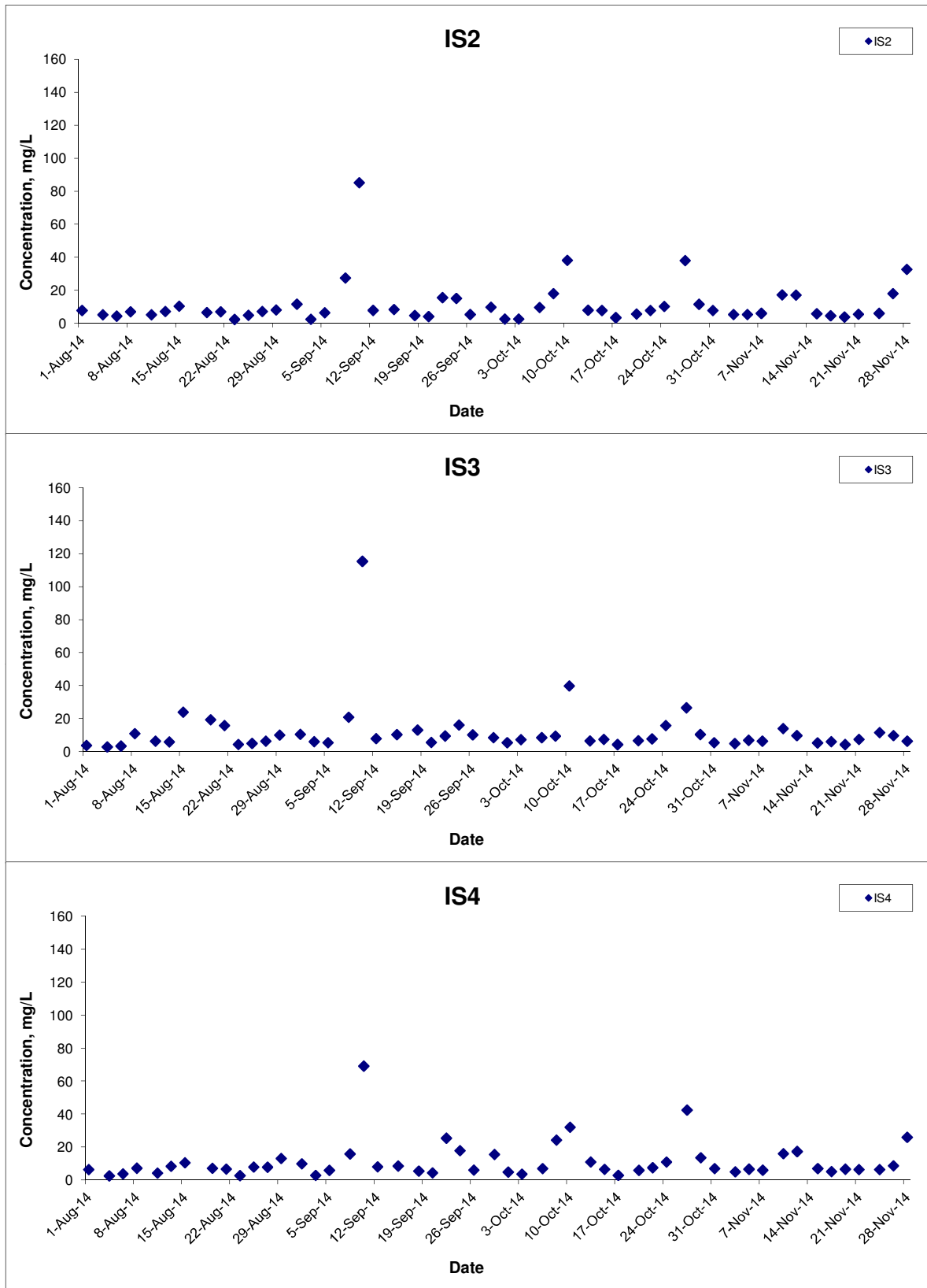
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



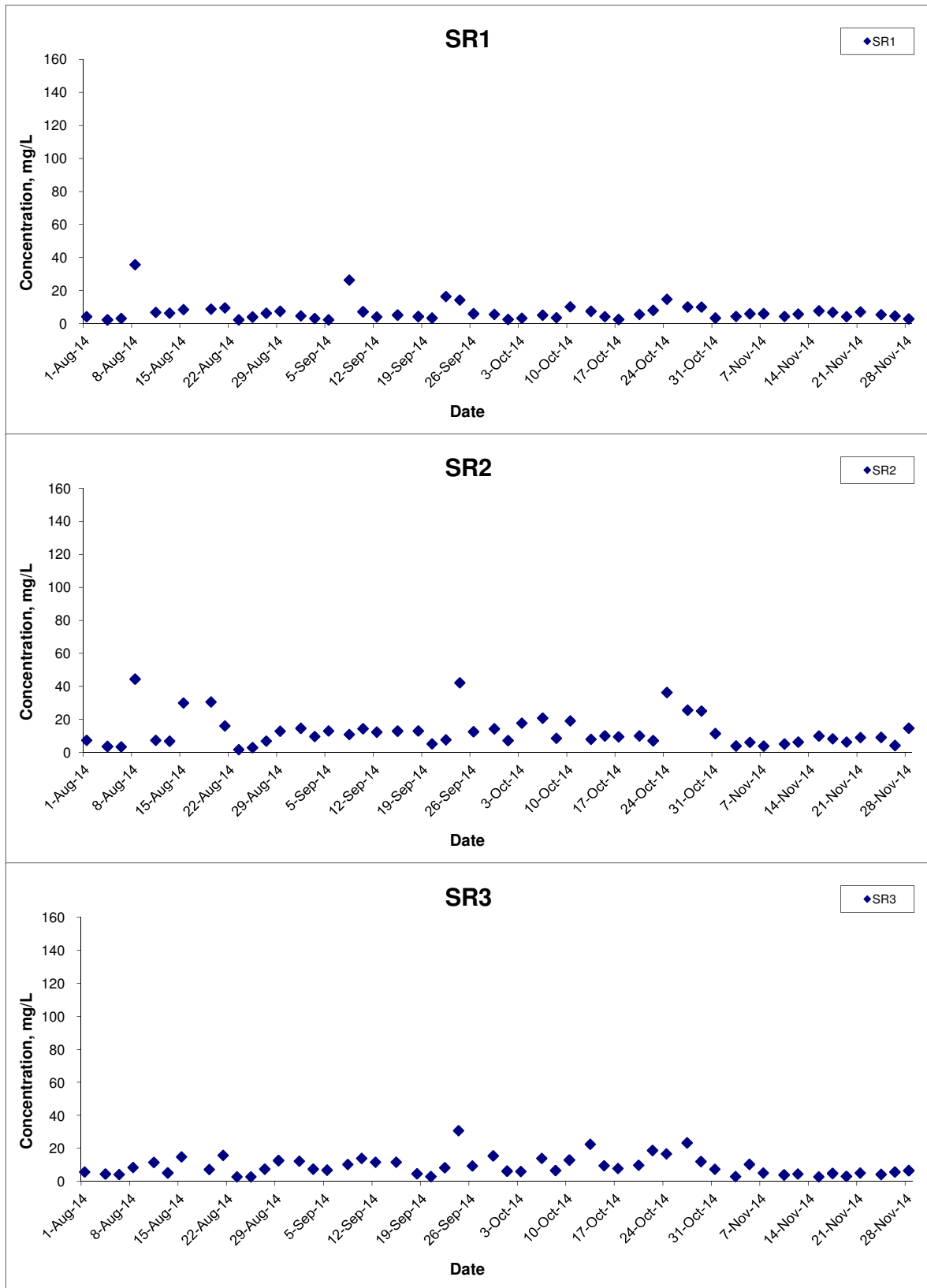
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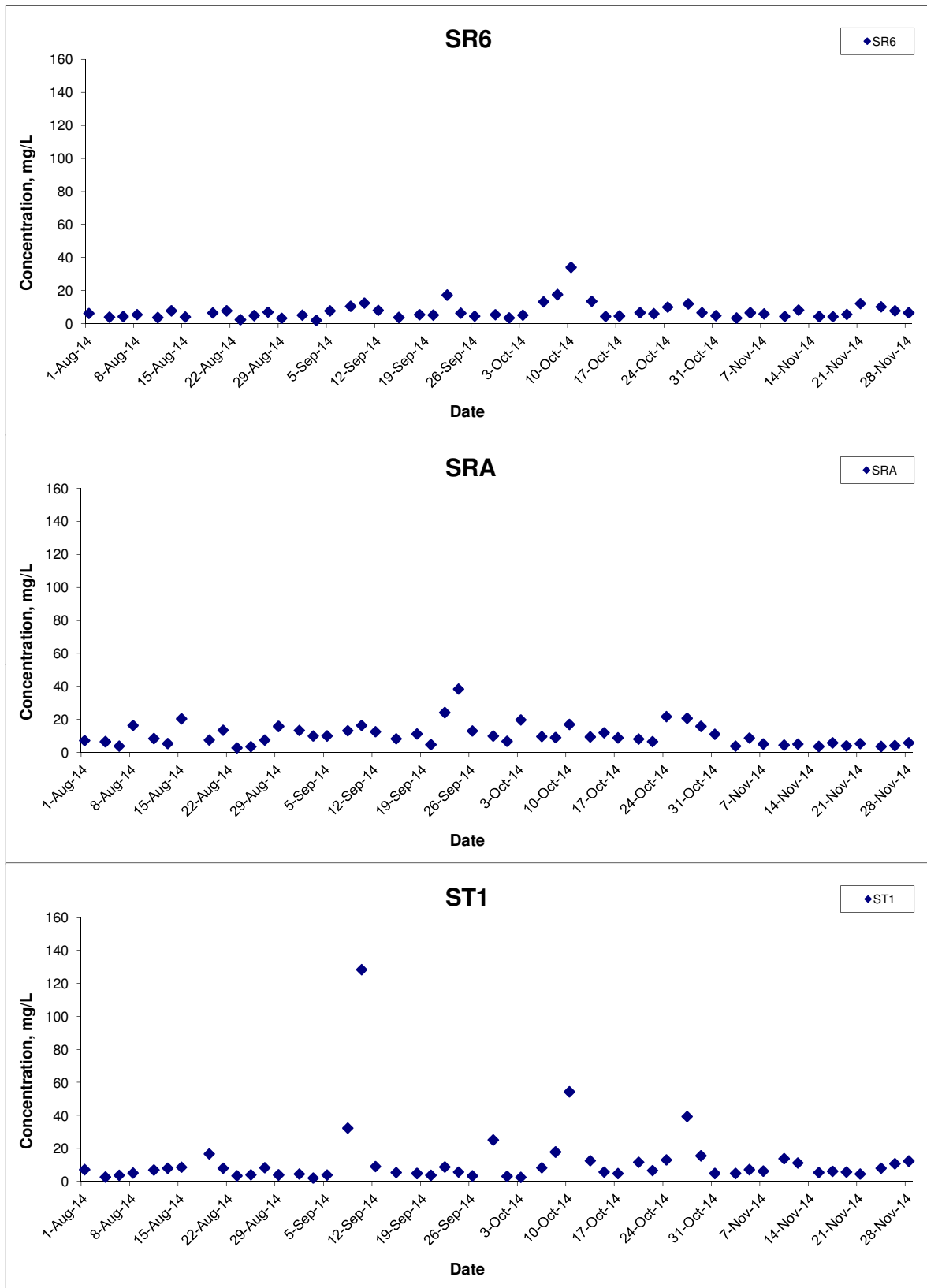
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



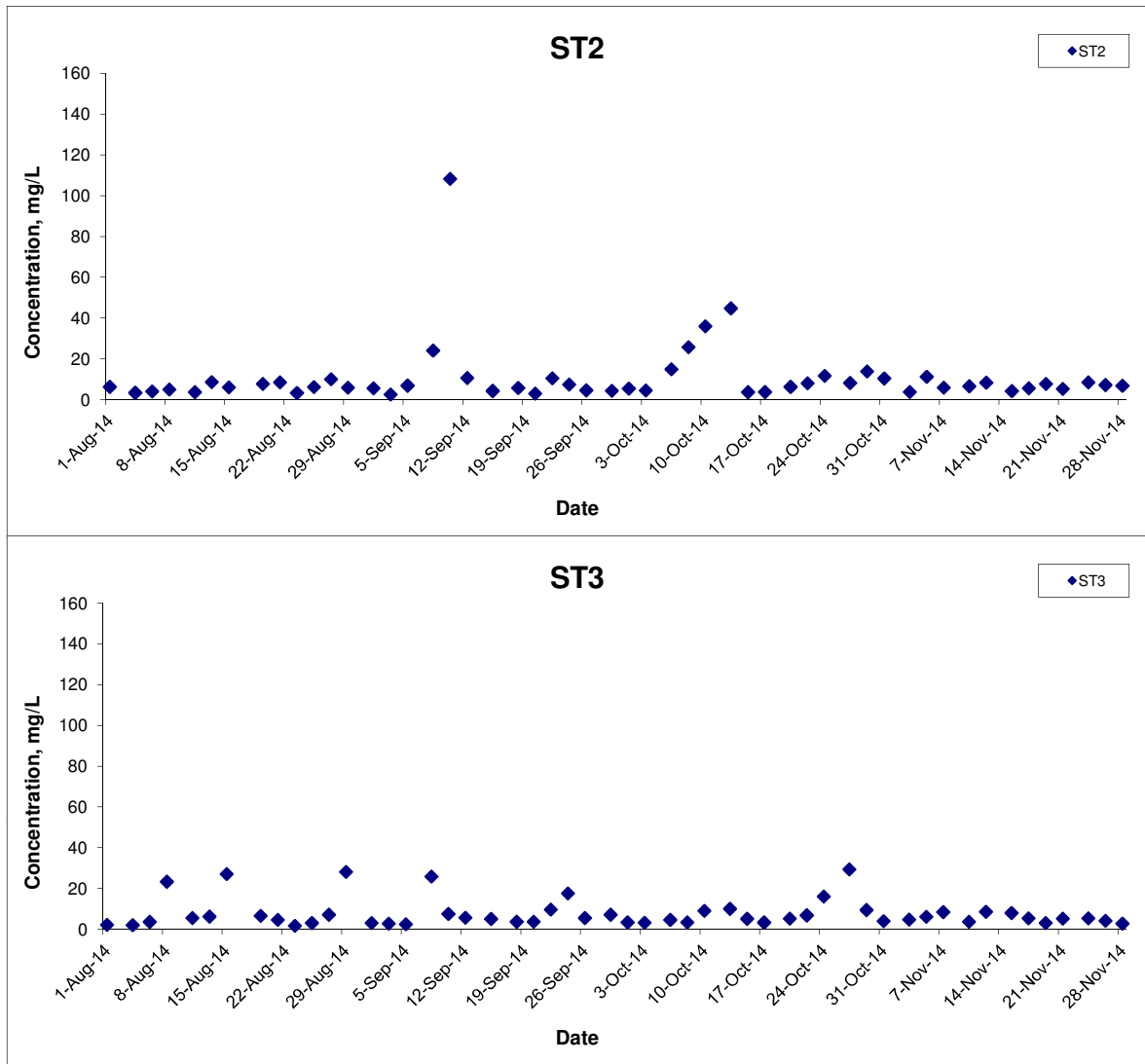
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Suspended Solids (Depth-averaged) at Mid-Flood Tide



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**APPENDIX F
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

Quarterly Progress Report (September – November 2014)

Submitted by

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

15 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 (DCVJV) 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 seventh quarterly progress report under the HKLR09 construction phase dolphin monitoring programme submitted to DCVJV, summarizing the results of the surveys findings during the period of September to November 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 17 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2013).

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 (*Garmin eTrex Legend*).
- 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 (Hung 2013). Therefore, primary and secondary survey effort were both presented as on-effort survey effort in this report.

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. One to two professional digital cameras (*Canon* EOS 7D and/or 60D models), each 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.

2.3. *Data analysis*

- 2.3.1. Distribution Analysis – The line-transect survey data was integrated with the

Geographic Information System (GIS) in order to visualize and interpret different spatial and temporal patterns of dolphin distribution using sighting positions. Location data of dolphin groups were plotted on map layers of Hong Kong using a desktop GIS (ArcView[®] 3.1) to examine their distribution patterns in details. The dataset was also stratified into different subsets to examine distribution patterns of dolphin groups with different categories of group sizes, young calves and activities.

- 2.3.2. Encounter rate analysis – Encounter rates of Chinese white dolphins (number of on-effort sightings per 100 km of survey effort, and total number of dolphins sighted on-effort per 100 km of survey effort) were calculated in West Lantau (WL) survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Dolphin encounter rates were calculated in two ways for comparisons with the HZMB baseline monitoring results as well as to AFCD long-term marine mammal monitoring results.

Firstly, for the comparison with the HZMB baseline monitoring results, the encounter rates were calculated using primary survey effort alone, and only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. The average encounter rate of sightings (STG) and average encounter rate of dolphins (ANI) were deduced based on the encounter rates from six events during the present quarter (i.e. six sets of line-transect surveys in West Lantau), which was also compared with the one deduced from the six events during the baseline period (i.e. six sets of line-transect surveys in West Lantau).

Secondly, the encounter rates were calculated using both primary and secondary survey effort collected under Beaufort 3 or below condition as in AFCD long-term monitoring study. The encounter rate of sightings and dolphins were deduced by dividing the total number of on-effort sightings (STG) and total number of dolphins (ANI) by the amount of survey effort for the entire quarterly period (i.e. September – November 2014).

- 2.3.3. Quantitative grid analysis on habitat use – To conduct quantitative grid analysis of habitat use, positions of on-effort sightings of Chinese White Dolphins collected during the quarterly impact phase monitoring period were plotted onto 1-km² grids in WL survey area on GIS. Sighting densities (number of on-effort sightings per km²) and dolphin densities (total number of dolphins from on-effort sightings per km²) were then calculated for each 1 km by 1 km grid with the aid

of GIS. Sighting density grids and dolphin density grids were then further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin density of each grid were then normalized (i.e. divided by the unit of survey effort).

The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort sightings per 100 units of survey effort. In addition, the derived unit for actual dolphin density was termed DPSE, representing the number of dolphins per 100 units of survey effort. Among the 1-km² grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km² grid within the study area:

$$\text{SPSE} = ((S / E) \times 100) / \text{SA}\%$$

$$\text{DPSE} = ((D / E) \times 100) / \text{SA}\%$$

where S = total number of on-effort sightings
D = total number of dolphins from on-effort sightings
E = total number of units of survey effort
SA% = percentage of sea area

- 2.3.4. Behavioural analysis – When dolphins were sighted during vessel surveys, their behaviour was observed. Different activities were categorized (i.e. feeding, milling/resting, traveling, socializing) and recorded on sighting datasheets. This data was then input into a separate database with sighting information, which can be used to determine the distribution of behavioural data with a desktop GIS. Distribution of sightings of dolphins engaged in different activities and behaviours would then be plotted on GIS and carefully examined to identify important areas for different activities of the dolphins.
- 2.3.5. Ranging pattern analysis – Location data of individual dolphins that occurred during the three-month impact phase monitoring period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program

Animal Movement Analyst Extension, was loaded as an extension with ArcView[®] 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

3. Monitoring Results

3.1. Summary of survey effort and dolphin sightings

- 3.1.1. During the period of September to November 2014, six sets of systematic line-transect vessel surveys were conducted to cover all transect lines in WL survey area twice per month.
- 3.1.2. From these surveys, a total of 195.98 km of survey effort was collected, with 86.8% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). The total survey effort conducted on primary lines was 128.90 km, while the effort on secondary lines was 67.08 km. Survey effort conducted on primary and secondary lines were both considered as on-effort survey data. A summary table of the survey effort is shown in Appendix I.
- 3.1.3. During the six sets of monitoring surveys in September to November 2014, a total of 24 groups of 77 Chinese White Dolphins were sighted. All sightings were made during on-effort search. Sixteen on-effort sightings were made on primary lines, while the other on-effort sightings were made on secondary lines. A summary table of the dolphin sightings is shown in Appendix II.

3.2. Distribution

- 3.2.1. Distribution of dolphin sightings made during monitoring surveys in September to November 2014 is shown in Figure 1. The dolphin groups were evenly distributed throughout the WL survey area, with no particular concentration of sightings (Figure 1). It appeared that dolphins occurred more often near the western territorial boundary than in inshore waters.
- 3.2.2. Sighting distribution of dolphins in the present quarter was similar to the one during the baseline period, with some subtle differences. There appeared to be fewer dolphins sighted near Tai O Peninsula, Kai Kung Shan and Fan Lau during the present monitoring quarter when compared to the dolphin distribution record in the baseline period (Figure 1).

3.2.3. None of the dolphin sightings was made close to the HKLR09 alignment in WL survey area during the present quarter (Figure 1). When pooling the data from HKLR03 monitoring surveys in the same autumn quarter of 2014, dolphins also appear to have avoided the HKLR09 alignment in the present quarter, in contrast to their frequent occurrence there during the baseline monitoring period (i.e. autumn of 2011) (Figure 2).

3.3. Encounter rate

3.3.1. During the three-month impact phase monitoring period, the encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) from West Lantau survey area are shown in Table 2. The average encounter rates deduced from the six sets of surveys from September to November 2014 were also compared with the ones deduced from the baseline monitoring period (September – November 2011) (Table 3).

Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) during the impact monitoring period (September to November 2014)

Survey Area	Dolphin Monitoring	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 Lantau	Set 1 (September 10)	9.4	56.7
	Set 2 (September 23)	26.9	62.8
	Set 3 (October 8)	9.2	64.7
	Set 4 (October 22)	0.0	0.0
	Set 5 (November 5)	17.8	35.7
	Set 6 (November 17)	0.0	0.0

Table 3. Comparison of average dolphin encounter rates from impact monitoring period (September to November 2014) and baseline monitoring period (September to November 2011) (Note: the encounter rates deduced from the baseline monitoring period have been recalculated based only on the survey effort and on-effort sighting data made along the primary transect lines under favourable conditions)

	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)	
	September-November 2014	September-November 2011	September-November 2014	September-November 2011
West Lantau	10.57 ± 10.45	16.43 ± 7.70	36.63 ± 30.19	60.50 ± 38.47

- 3.3.2. To facilitate the comparison with the AFCD long-term monitoring results, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. The encounter rates of sightings (STG) and dolphins (ANI) in WL were 11.8 sightings and 40.6 dolphins per 100 km of survey effort respectively during the present quarter.
- 3.3.3. In WL survey area, the average dolphin encounter rates (ER(STG) and ER(ANI)) in the present three-month study period were much lower (reductions of 35.67% and 39.5% respectively) than the ones recorded in the three-month baseline period (Table 3), indicating a noticeable decline in dolphin usage of this survey area during the present construction period (Table 3). In fact, the present quarter recorded the lowest ER(STG) and ER(ANI) since the commencement of HKLR09 works in WL waters, which could become a concern. The temporal trend in encounter rate should be continuously monitored to assess whether a downward trend in dolphin usage occurs in West Lantau waters, especially in light of the dramatic decline in dolphin usage occurring in North Lantau waters in the past two years.
- 3.3.4. A one-way ANOVA was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and impact monitoring periods. For the comparison between the baseline period and the present quarter (seventh quarter of the impact phase), the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.294 and 0.259 respectively. Therefore, no significant difference in dolphin encounter rate was detected between the baseline period and the present quarter.
- 3.3.5. Another comparison was made between the baseline period and the cumulative quarters in the impact phase (i.e. first seven quarters of the impact phase), and the p-value for the differences in average dolphin encounter rates of STG and ANI were 0.896 and 0.915 respectively. As a result, no significant difference was found in the dolphin encounter rates between the baseline period and the cumulative quarters in the impact phase.
- 3.4. *Group size*
- 3.4.1. Group size of Chinese White Dolphins ranged from 1-13 individuals per group in WL survey area between September and November 2014. The average dolphin group size for the three-month period was compared with the one deduced from the baseline period in September to November 2011, as shown in Table 4.

Table 4. Comparison of average dolphin group sizes from impact monitoring period (September to November 2014) and baseline monitoring period (September-November 2011)

	Average Dolphin Group Size	
	September – November 2014	September – November 2011
West Lantau	3.88 ± 2.69 (n = 24)	3.63 ± 2.97 (n = 46)

- 3.4.2. The average dolphin group size in the WL region during September to November 2014 was slightly higher than the one recorded in the three-month baseline period (Table 4). Half of the dolphin groups were composed of 1-3 dolphins, but there were also eight groups with more than 5 animals per group, and one group with over 10 animals.
- 3.4.3. Distribution of dolphins with the larger groups during September to November 2014 is shown in Figure 3. These groups were scattered to the southwest of Tai O Peninsula, near the territorial border and near Fan Lau. This was quite different from the baseline period, when the larger dolphin groups mostly occurred to the northwest of Tai O Peninsula (near the bridge alignment) as well as near Kai Kung Shan and Peaked Hill (Figure 3).
- 3.5. *Habitat use*
- 3.5.1. From September to November 2014, the most heavily utilized habitats by the dolphins were mainly found along the western territorial border off Tai O Peninsula, Peaked Hill and Fan Lau (Figures 4a & 4b). Conversely, their densities were much lower in the inshore waters. However, it should be noted that the amount of survey effort collected in each grid during the three-month period was fairly low (6 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern will be presented when more survey effort for each grid will be collected throughout the impact phase monitoring programme.
- 3.5.2. When compared with the habitat use pattern recorded during the baseline period, it appears that dolphin densities were more evenly spread during the baseline period than in the present impact phase monitoring period (Figure 5). Moreover, dolphin densities appeared to be much lower around Tai O Peninsula, near Kai Kung Shan and Peaked Hill during the present quarter than in the baseline period.
- 3.6. *Mother-calf pairs*
- 3.6.1. During the three-month impact phase monitoring period, only one unspotted

juvenile (UJ) was sighted in WL survey area. The young calf comprised 1.3% of all animals sighted, which was only a small fraction of the percentage recorded during the baseline monitoring period (6.6%).

3.6.2. The rare occurrence of the single mother-calf pair were located at the western territorial border off Kai Kung Shan, which was in stark contrast to the baseline period when calf occurrence was more frequent and concentrated near Tai O Peninsula (Figure 6).

3.7. *Activities and associations with fishing boats*

3.7.1. During the three-month impact monitoring period, only two dolphin sightings were associated with feeding activities off Kai Kung Shan and near Peaked Hill (Figure 7), comprising 8.3% of the total number of dolphin sightings. This percentage was lower than the percentage recorded during the baseline period (13.0%). Only one of the 24 sightings was associated with socializing activity off Kai Kung Shan, while another group of two dolphins were engaged in traveling activity further north of the HKLR09 alignment during the present quarter (Figure 7).

3.7.2. Apparently, the distribution of these activities during the present impact phase monitoring period was very different from the one during the baseline period, with the main concentration of these activities occurred between Tai O and Peaked Hill during the baseline period (Figure 7).

3.7.3. During the three-month monitoring period, one of the dolphin groups was associated with an operating purse-seiner.

3.8. *Summary of photo-identification works*

3.8.1. From September to November 2014, over 2,500 digital photographs of Chinese White Dolphins were taken during the impact phase monitoring surveys for the photo-identification work.

3.8.2. In total, 37 individuals sighted 40 times altogether were identified (see the summary table in Appendix III and photographs of identified individuals in Appendix IV). The majority of identified individuals were sighted only once during the three-month period, but two individuals (NL259 and NL306) were sighted twice and thrice respectively.

3.8.3. Notably, five of these 37 individuals were also sighted in North Lantau waters during the HKLR03 monitoring surveys in the same three-month period, showing their extensive movement across the HKLR09 bridge alignment.

Moreover, some individuals that were consistently sighted in North Lantau waters in the past were identified in West Lantau waters (e.g. EL01, NL103, NL260, WL04). It is possible that some of these identified dolphins have shifted their range use into West Lantau due to the increased disturbance of HZMB-related construction works in North Lantau region, as documented in Hung (2014).

- 3.8.4. During the three-month period, two recognizable females, WL72 and WL221, were accompanied with their calves during their re-sightings.

3.9. *Individual range use*

- 3.9.1. Ranging patterns of the 37 individuals identified during the three-month study period were determined by fixed kernel method, and are shown in Appendix V.

- 3.9.2. Among these 37 individuals, 12 of them (EL01, NL49, NL103, NL150, NL259, NL260, NL279, NL300, NL302, WL04, WL05 and WL172) occurred primarily in North Lantau but ventured into West Lantau during the three-month period, while a few other individuals (e.g. NL230, NL269, SL42, WL199) split their time between North and West Lantau waters. The other individuals centered their range use primarily in West Lantau waters (Appendix V).

- 3.9.3. For those that regularly occurred in North Lantau waters, they have extended their range use from there to West Lantau waters, which may have been a result of a range shift from North Lantau waters. Such range shifts should be continuously monitored in the upcoming quarters to determine whether these range shifts are consistent for North Lantau individuals and possibly related to the negative impacts of the HZMB-related construction activities.

- 3.9.4. On the other hand, for those that primarily used West Lantau waters as their home ranges, most of them utilized the southern part of their ranges but seldom in the northern part of West Lantau, especially near the HKLR09 alignment where they frequently occurred in the past. It is possible that their range use in West Lantau waters have been somewhat affected by the HKLR09 construction activities. It will be crucial to examine whether such shifts are temporary or permanent in nature, which may have been as a result of disturbance from the HKLR09-related works.

4. Conclusion

- 4.1. During this quarter of dolphin monitoring, no adverse impact from the activities of the HKLR09 construction project on Chinese White Dolphins was noticeable from general observations. However, there is some apparent fine-scale change in dolphin occurrence as well as diminished dolphin usage in West Lantau survey area. Moreover, many individual dolphins were mostly utilizing the southern part of their ranges but not in the northern portion where HKLR09 construction activities occur.
- 4.2. Therefore, the dolphin usage in WL region should be continuously monitored, to further examine whether it has been significantly affected by the on-going construction activities in relation to the HZMB works.

5. References

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Hung, S. K. 2013. Monitoring of marine mammals in Hong Kong waters – data collection: final report (2012-13). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department of Hong Kong SAR Government, 168 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.

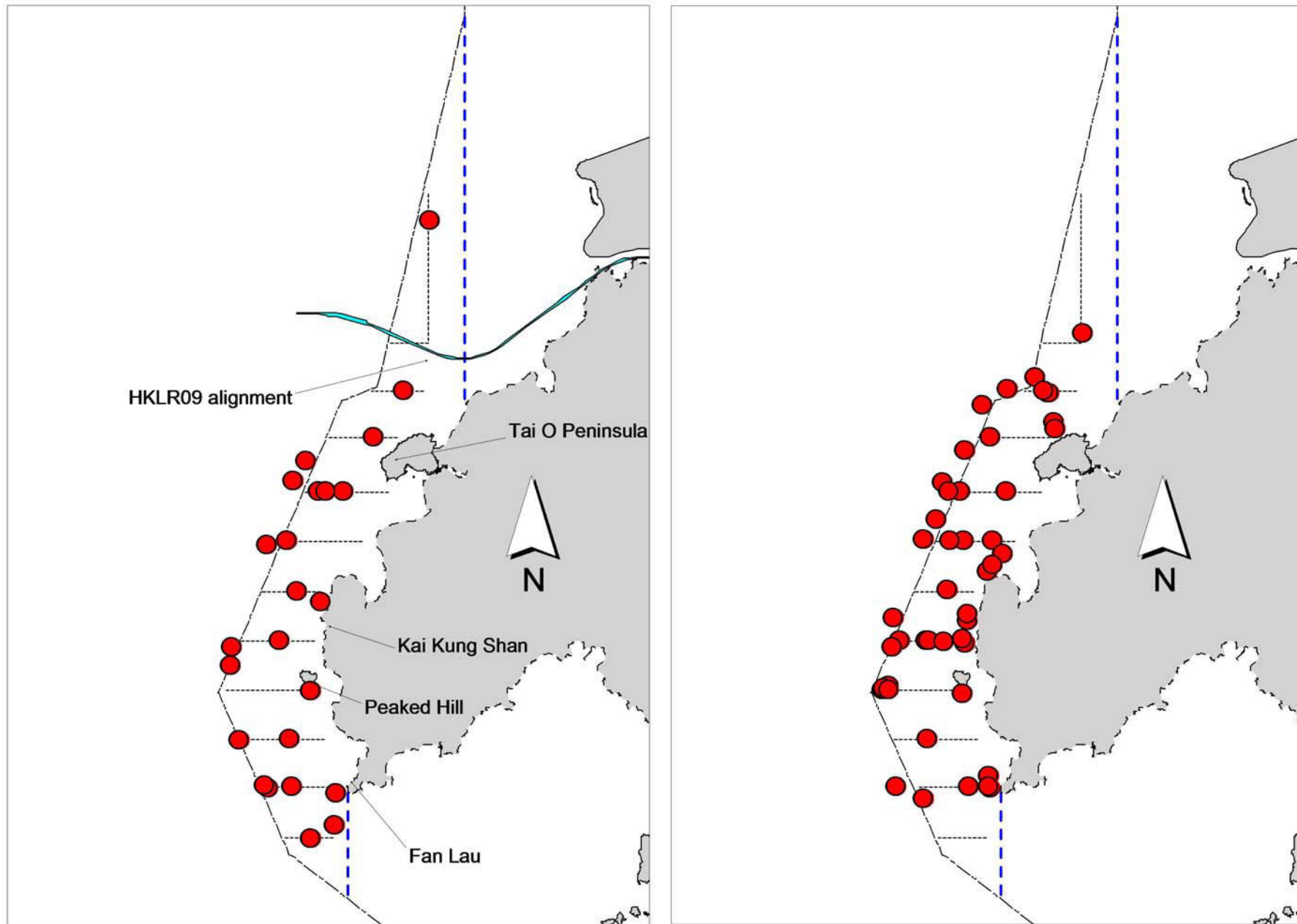


Figure 1. Distribution of Chinese white dolphin sightings in West Lantau during HKLR09 impact phase (left: September – November 2014) and baseline monitoring surveys (right: September – November 2011)

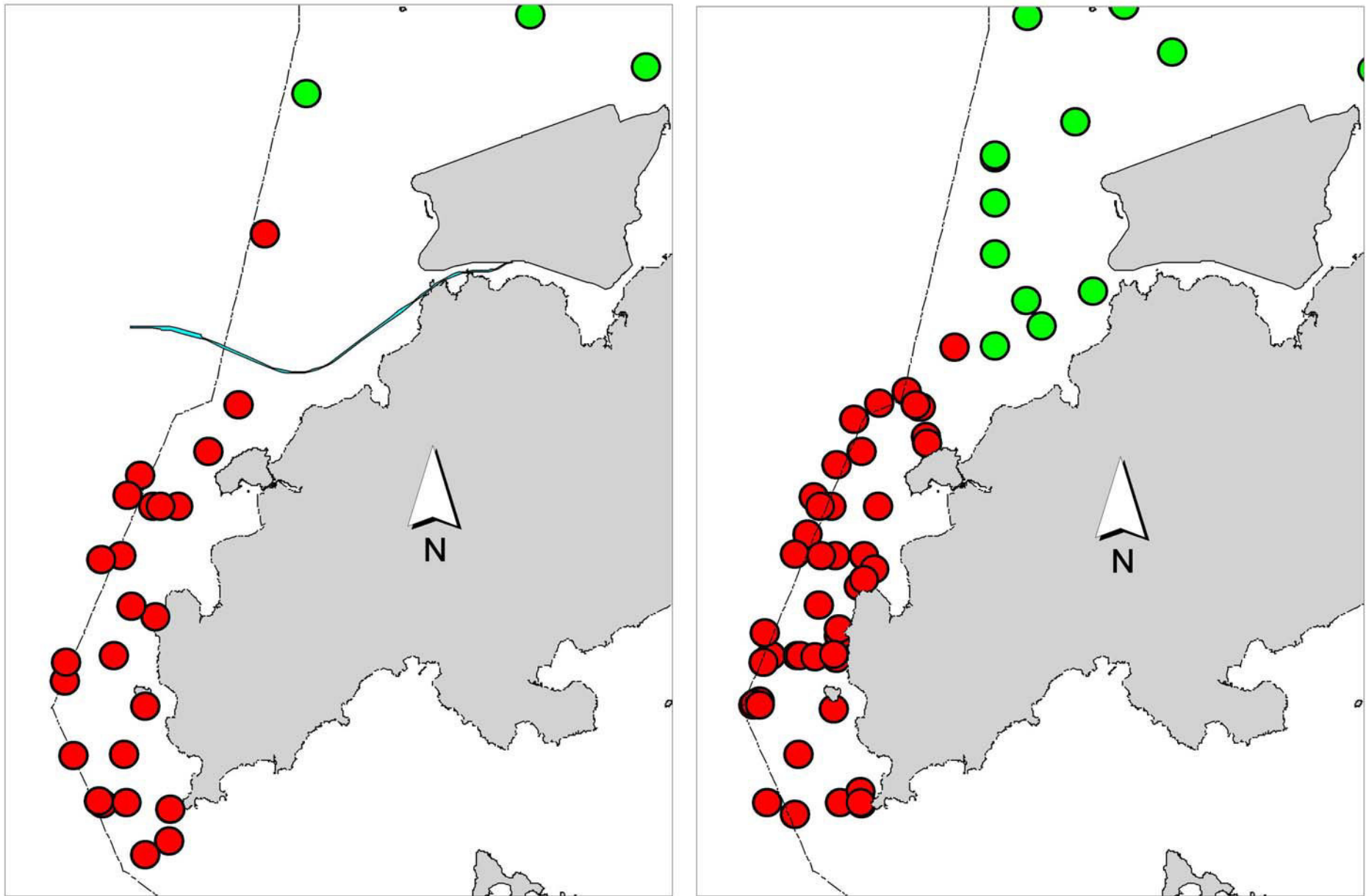


Figure 2. Distribution of Chinese white dolphin sightings from HKLR03 (in green) and HKLR09 surveys (in red) near the HKLR09 alignment during impact phase (left: September – November 2014) and baseline monitoring surveys (right: September – November 2011)

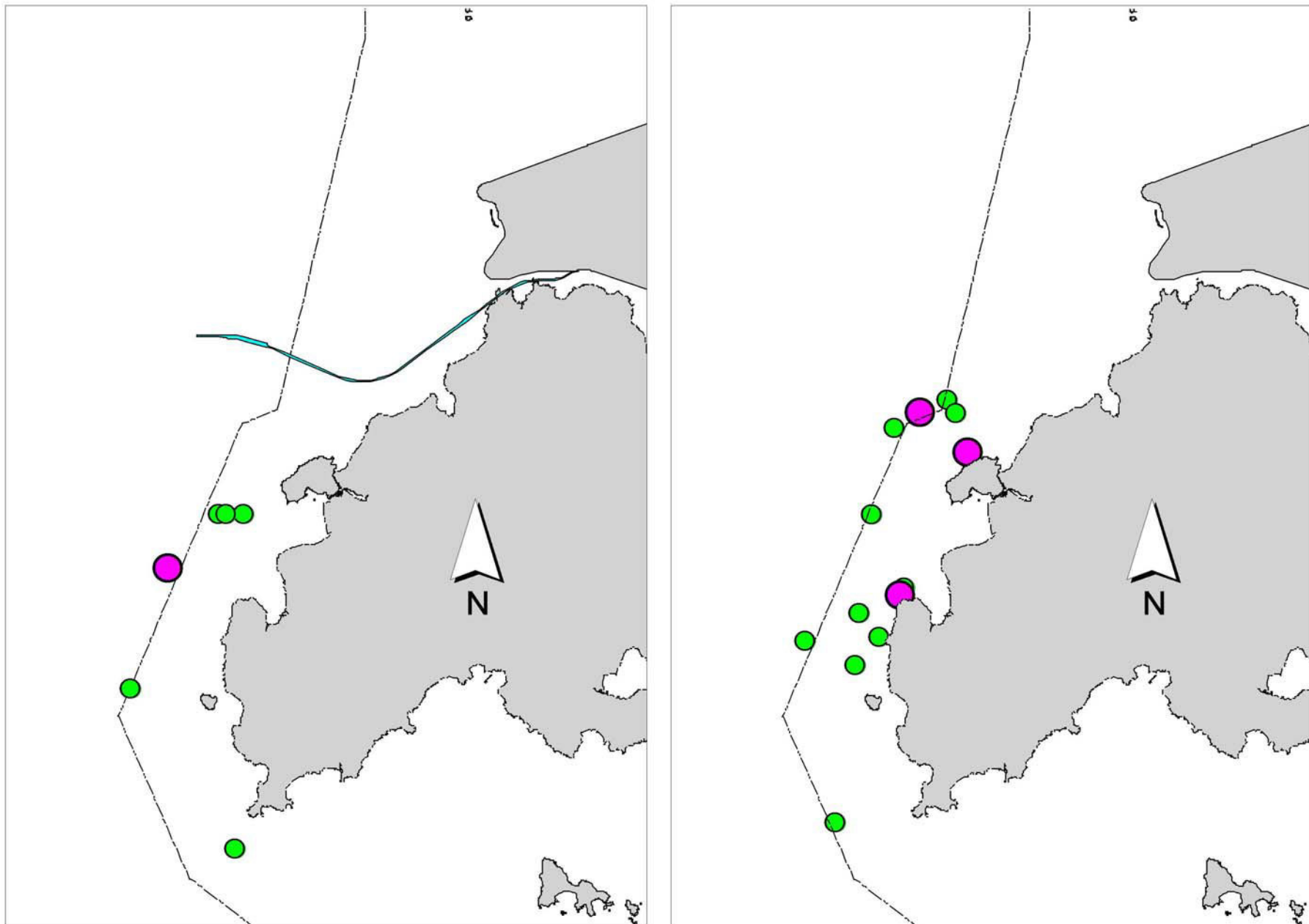


Figure 3. Distribution of Chinese white dolphins with larger group sizes during HKLR09 impact phase (left: September – November 2014) and baseline monitoring surveys (right: September – November 2011) (green dots: group sizes of 5 or more; purple dots: group sizes of 10 or more)

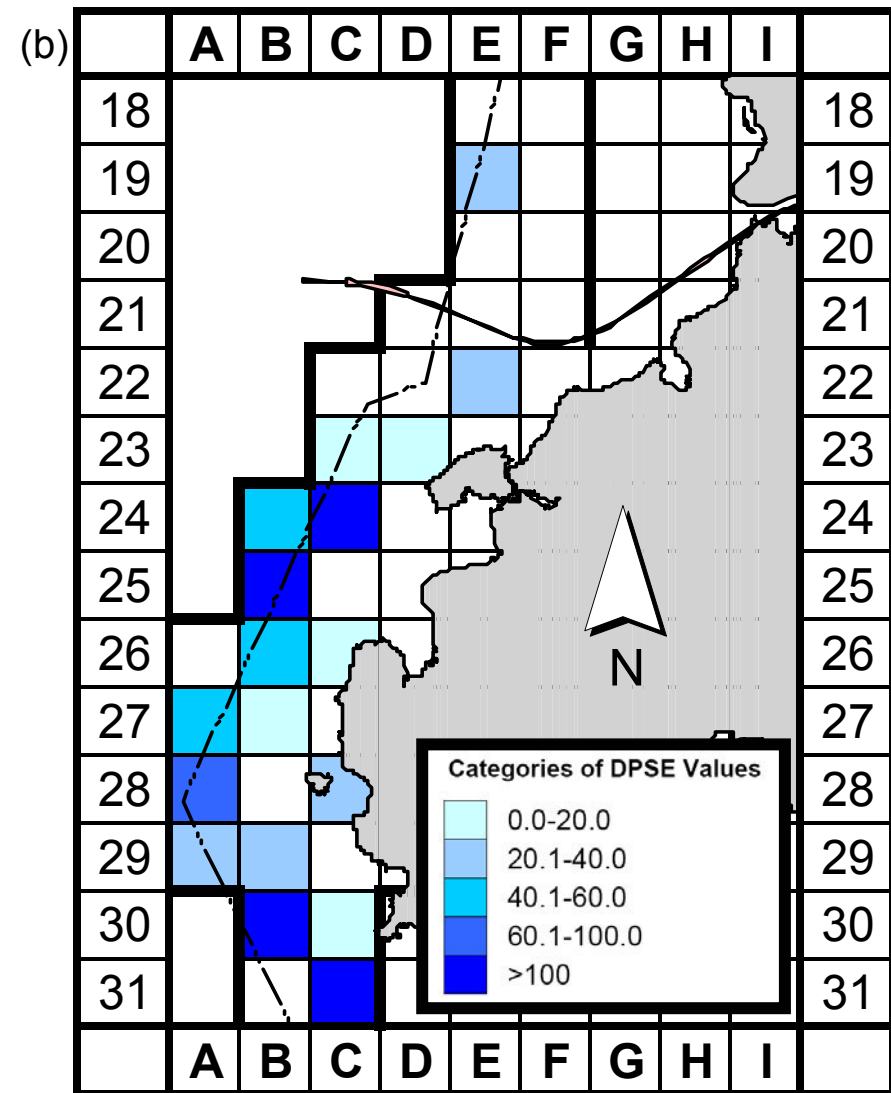
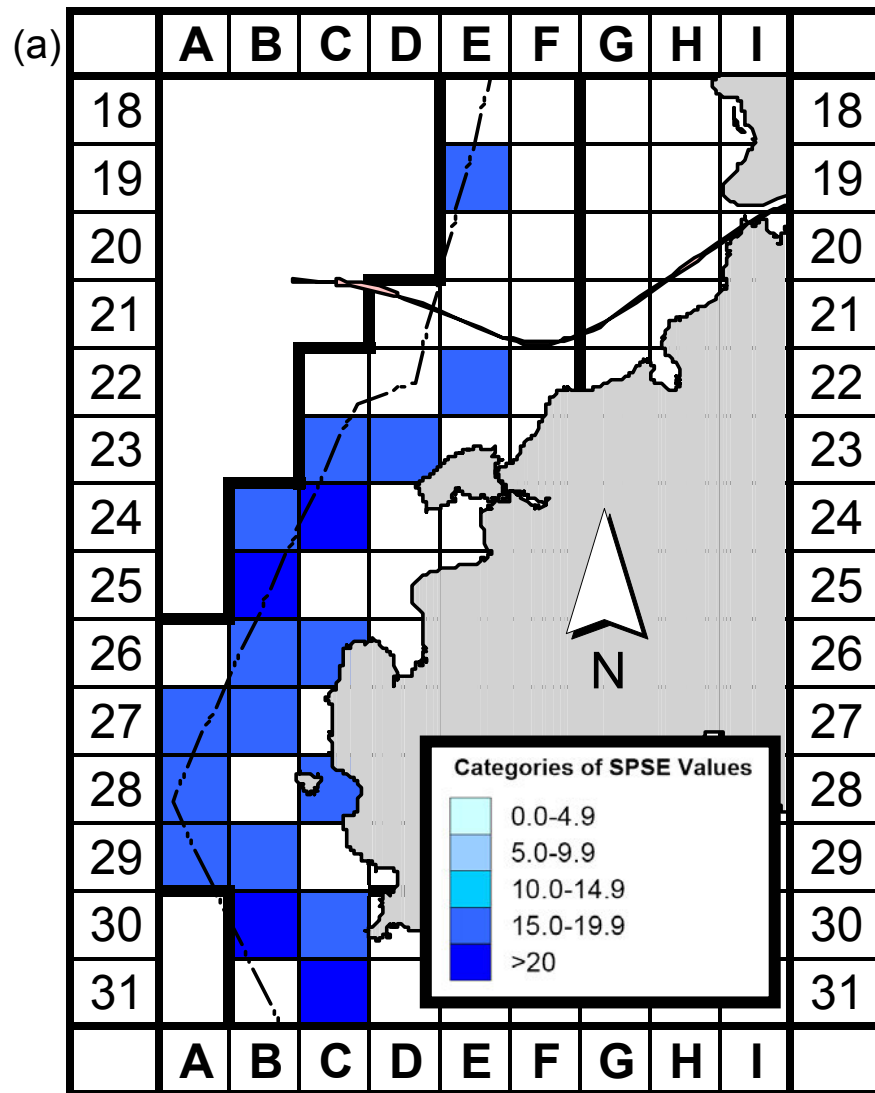


Figure 4a. Sighting density of Chinese white dolphins with corrected survey effort per km² in West Lantau survey area, using data collected during HKLR09 impact monitoring period (Sep-Nov 14) (SPSE = no. of on-effort sightings per 100 units of survey effort)

Figure 4b. Density of Chinese white dolphins with corrected survey effort per km² in West Lantau survey area, using data collected during HKLR09 impact monitoring period (Sep-Nov 14) (DPSE = no. of dolphins per 100 units of survey effort)

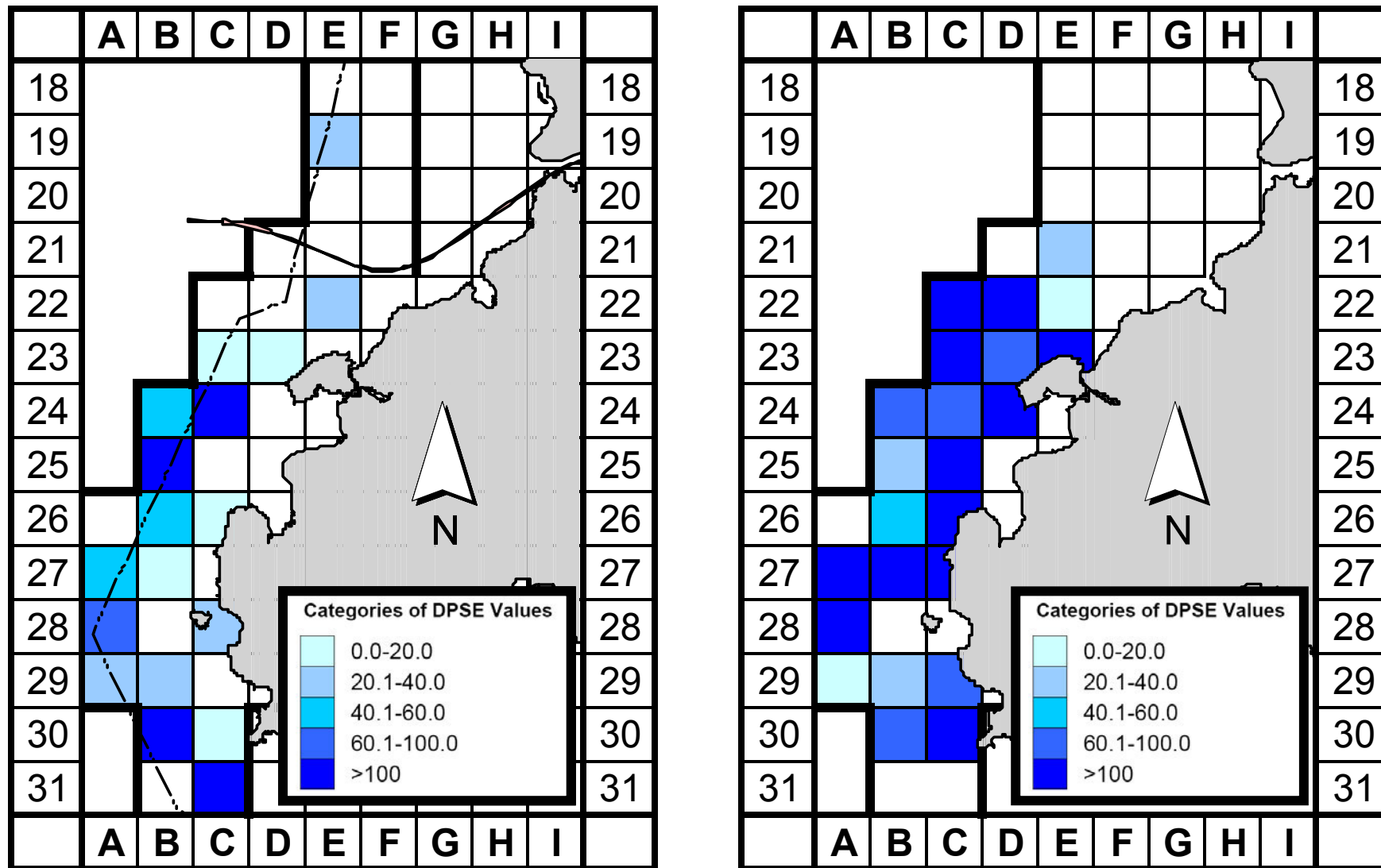


Figure 5. Comparison of density of Chinese white dolphins with corrected survey effort per km² in West Lantau survey area between the impact monitoring period (September-November 2014; left) and baseline monitoring period (September-November 2011; right) (DPSE = no. of dolphins per 100 units of survey effort)

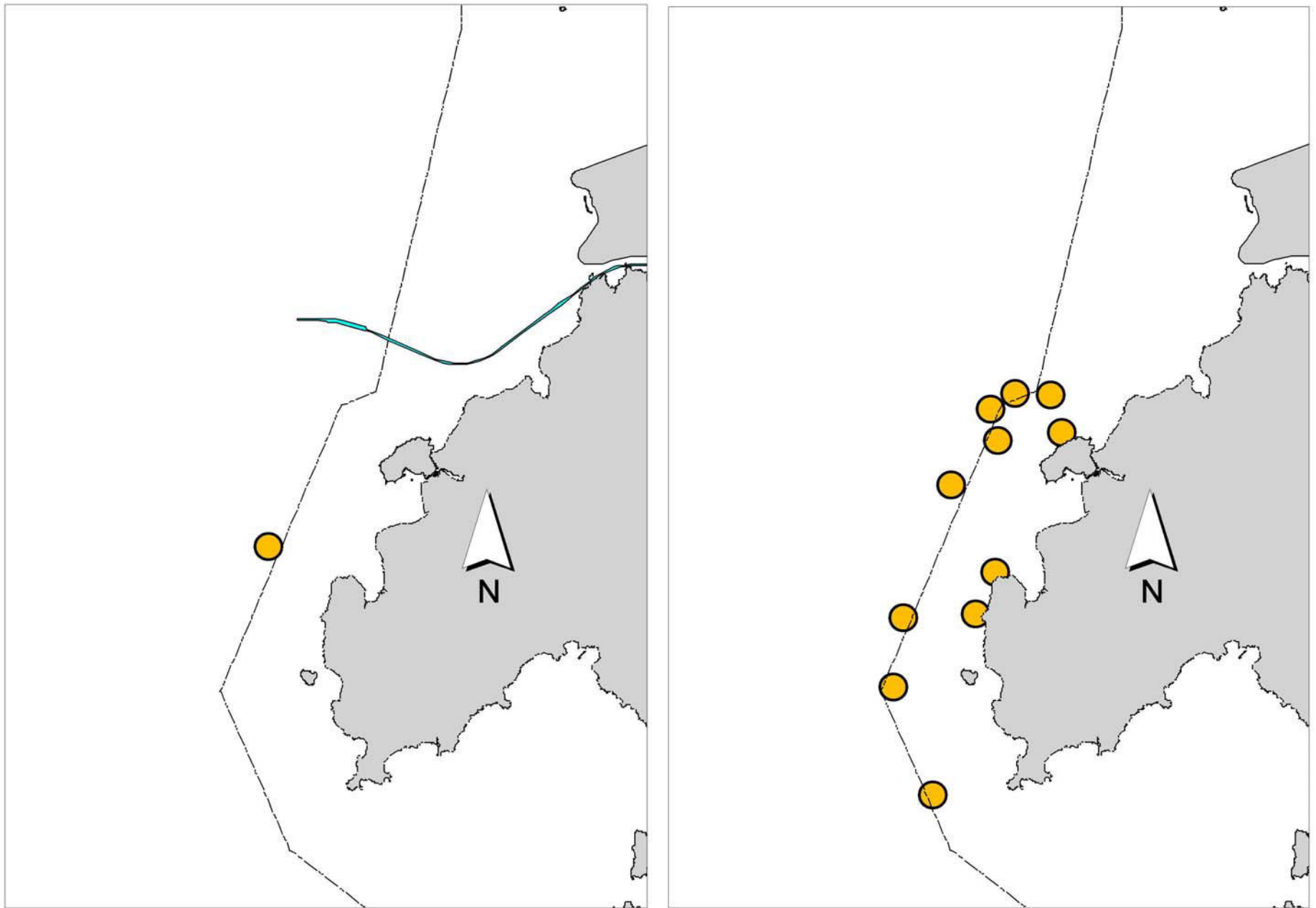


Figure 6. Distribution of young calves of Chinese white dolphins during HKLR09 impact phase (left: September – November 2014) and baseline monitoring surveys (right: September – November 2011)

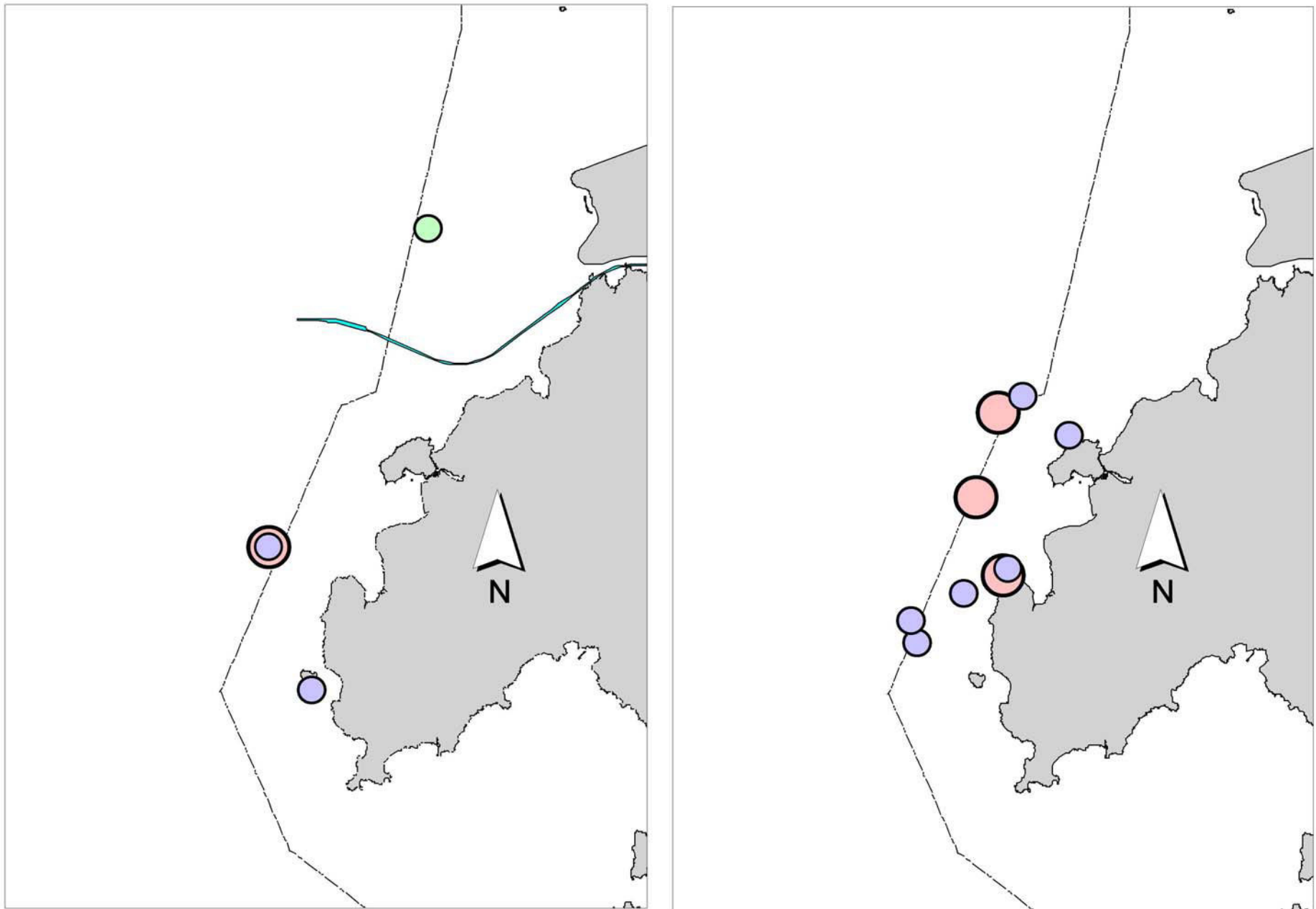


Figure 7. Distribution of dolphins engaged in feeding (in blue), socializing (in pink) and traveling (in green) activities during HKLR09 impact phase (left: September – November 2014) and baseline monitoring surveys (right: September – November 2011)

Appendix I. HKLR09 Survey Effort Database (September-November 2014)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
10-Sep-14	W LANTAU	1	9.49	AUTUMN	STANDARD31516	HKLR	P
10-Sep-14	W LANTAU	2	10.73	AUTUMN	STANDARD31516	HKLR	P
10-Sep-14	W LANTAU	3	0.95	AUTUMN	STANDARD31516	HKLR	P
10-Sep-14	W LANTAU	1	5.81	AUTUMN	STANDARD31516	HKLR	S
10-Sep-14	W LANTAU	2	2.18	AUTUMN	STANDARD31516	HKLR	S
10-Sep-14	W LANTAU	3	2.14	AUTUMN	STANDARD31516	HKLR	S
23-Sep-14	W LANTAU	2	21.23	AUTUMN	STANDARD31516	HKLR	P
23-Sep-14	W LANTAU	3	1.08	AUTUMN	STANDARD31516	HKLR	P
23-Sep-14	W LANTAU	2	9.69	AUTUMN	STANDARD31516	HKLR	S
23-Sep-14	W LANTAU	3	2.43	AUTUMN	STANDARD31516	HKLR	S
8-Oct-14	W LANTAU	2	2.49	AUTUMN	STANDARD31516	HKLR	P
8-Oct-14	W LANTAU	3	19.15	AUTUMN	STANDARD31516	HKLR	P
8-Oct-14	W LANTAU	2	3.38	AUTUMN	STANDARD31516	HKLR	S
8-Oct-14	W LANTAU	3	7.74	AUTUMN	STANDARD31516	HKLR	S
22-Oct-14	W LANTAU	3	13.32	AUTUMN	STANDARD31516	HKLR	P
22-Oct-14	W LANTAU	4	7.85	AUTUMN	STANDARD31516	HKLR	P
22-Oct-14	W LANTAU	2	0.72	AUTUMN	STANDARD31516	HKLR	S
22-Oct-14	W LANTAU	3	9.45	AUTUMN	STANDARD31516	HKLR	S
22-Oct-14	W LANTAU	4	1.32	AUTUMN	STANDARD31516	HKLR	S
5-Nov-14	W LANTAU	2	9.26	AUTUMN	STANDARD31516	HKLR	P
5-Nov-14	W LANTAU	3	7.57	AUTUMN	STANDARD31516	HKLR	P
5-Nov-14	W LANTAU	4	4.47	AUTUMN	STANDARD31516	HKLR	P
5-Nov-14	W LANTAU	2	4.82	AUTUMN	STANDARD31516	HKLR	S
5-Nov-14	W LANTAU	3	4.62	AUTUMN	STANDARD31516	HKLR	S
5-Nov-14	W LANTAU	4	1.90	AUTUMN	STANDARD31516	HKLR	S
17-Nov-14	W LANTAU	3	12.91	AUTUMN	STANDARD31516	HKLR	P
17-Nov-14	W LANTAU	4	8.41	AUTUMN	STANDARD31516	HKLR	P
17-Nov-14	W LANTAU	2	0.61	AUTUMN	STANDARD31516	HKLR	S
17-Nov-14	W LANTAU	3	8.27	AUTUMN	STANDARD31516	HKLR	S
17-Nov-14	W LANTAU	4	0.90	AUTUMN	STANDARD31516	HKLR	S
17-Nov-14	W LANTAU	5	1.10	AUTUMN	STANDARD31516	HKLR	S

Appendix II. HKLR09 Chinese White Dolphin Sighting Database (September-November 2014)

(Abbreviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; 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
10-Sep-14	1	1107	1	W LANTAU	1	43	ON	HKLR	813085	801111	AUTUMN	NONE	S
10-Sep-14	2	1117	3	W LANTAU	1	642	ON	HKLR	812676	800852	AUTUMN	NONE	S
10-Sep-14	3	1124	5	W LANTAU	1	760	ON	HKLR	812453	801387	AUTUMN	NONE	P
10-Sep-14	4	1149	7	W LANTAU	2	172	ON	HKLR	812452	801934	AUTUMN	NONE	P
10-Sep-14	5	1257	1	W LANTAU	3	84	ON	HKLR	810227	801444	AUTUMN	NONE	S
10-Sep-14	6	1316	5	W LANTAU	2	36	ON	HKLR	808925	799513	AUTUMN	NONE	S
23-Sep-14	1	1153	1	W LANTAU	2	568	ON	HKLR	805444	801217	AUTUMN	PURSE SEINE	P
23-Sep-14	2	1159	8	W LANTAU	2	332	ON	HKLR	805698	801733	AUTUMN	NONE	S
23-Sep-14	3	1240	2	W LANTAU	2	171	ON	HKLR	806465	800312	AUTUMN	NONE	P
23-Sep-14	4	1304	2	W LANTAU	2	184	ON	HKLR	808423	801224	AUTUMN	NONE	S
23-Sep-14	5	1329	3	W LANTAU	2	261	ON	HKLR	809313	799524	AUTUMN	NONE	S
23-Sep-14	6	1341	1	W LANTAU	2	37	ON	HKLR	809443	800545	AUTUMN	NONE	P
23-Sep-14	7	1410	1	W LANTAU	2	99	ON	HKLR	811469	800705	AUTUMN	NONE	P
23-Sep-14	8	1438	7	W LANTAU	2	515	ON	HKLR	812464	801542	AUTUMN	NONE	P
23-Sep-14	9	1559	2	W LANTAU	2	73	ON	HKLR	817952	803791	AUTUMN	NONE	P
8-Oct-14	1	1126	12	W LANTAU	3	804	ON	HKLR	811382	800292	AUTUMN	NONE	P
8-Oct-14	2	1232	2	W LANTAU	2	313	ON	HKLR	807449	800778	AUTUMN	NONE	P
22-Oct-14	1	1254	2	W LANTAU	4	298	ON	HKLR	807430	799695	AUTUMN	NONE	P
5-Nov-14	1	1140	1	W LANTAU	4	33	ON	HKLR	806340	801755	AUTUMN	NONE	S
5-Nov-14	2	1148	4	W LANTAU	4	120	ON	HKLR	806475	800827	AUTUMN	NONE	P
5-Nov-14	3	1201	1	W LANTAU	4	30	ON	HKLR	806509	800229	AUTUMN	NONE	P
5-Nov-14	4	1254	3	W LANTAU	2	274	ON	HKLR	810450	800929	AUTUMN	NONE	P
5-Nov-14	5	1400	1	W LANTAU	2	174	ON	HKLR	813569	802565	AUTUMN	NONE	P
5-Nov-14	6	1415	2	W LANTAU	3	23	ON	HKLR	814509	803216	AUTUMN	NONE	P

Appendix III. Individual dolphins identified during HKLR09 monitoring surveys in September-November 2014

ID#	DATE	STG#	AREA
CH108	23/09/14	2	W LANTAU
CH181	23/09/14	4	W LANTAU
CH208	08/10/14	1	W LANTAU
EL01	10/09/14	6	W LANTAU
NL49	23/09/14	8	W LANTAU
NL103	08/10/14	2	W LANTAU
NL150	23/09/14	9	W LANTAU
NL230	08/10/14	1	W LANTAU
NL259	23/09/14	8	W LANTAU
	05/11/14	6	W LANTAU
NL260	23/09/14	8	W LANTAU
NL269	08/10/14	1	W LANTAU
NL279	10/09/14	4	W LANTAU
NL293	23/09/14	6	W LANTAU
NL300	10/09/14	3	W LANTAU
NL302	23/09/14	8	W LANTAU
NL306	10/09/14	1	W LANTAU
	10/09/14	3	W LANTAU
	23/09/14	2	W LANTAU
SL42	08/10/14	1	W LANTAU
WL04	23/09/14	8	W LANTAU
WL05	23/09/14	8	W LANTAU
WL21	10/09/14	3	W LANTAU
WL28	08/10/14	1	W LANTAU
WL50	23/09/14	2	W LANTAU
WL68	05/11/14	2	W LANTAU
WL72	23/09/14	2	W LANTAU
WL79	10/09/14	4	W LANTAU
WL114	05/11/14	2	W LANTAU
WL124	23/09/14	8	W LANTAU
WL130	08/10/14	1	W LANTAU
WL145	08/10/14	1	W LANTAU
WL153	08/10/14	1	W LANTAU
WL166	05/11/14	4	W LANTAU
WL172	10/09/14	3	W LANTAU
WL193	08/10/14	1	W LANTAU
WL199	05/11/14	4	W LANTAU
WL205	08/10/14	2	W LANTAU
WL208	05/11/14	4	W LANTAU
WL221	10/09/14	3	W LANTAU

Appendix IV. Thirty-seven individual dolphins that were identified during September to November 2014 under HKLR09 impact phase monitoring surveys

CH108



CH181



CH208



EL01



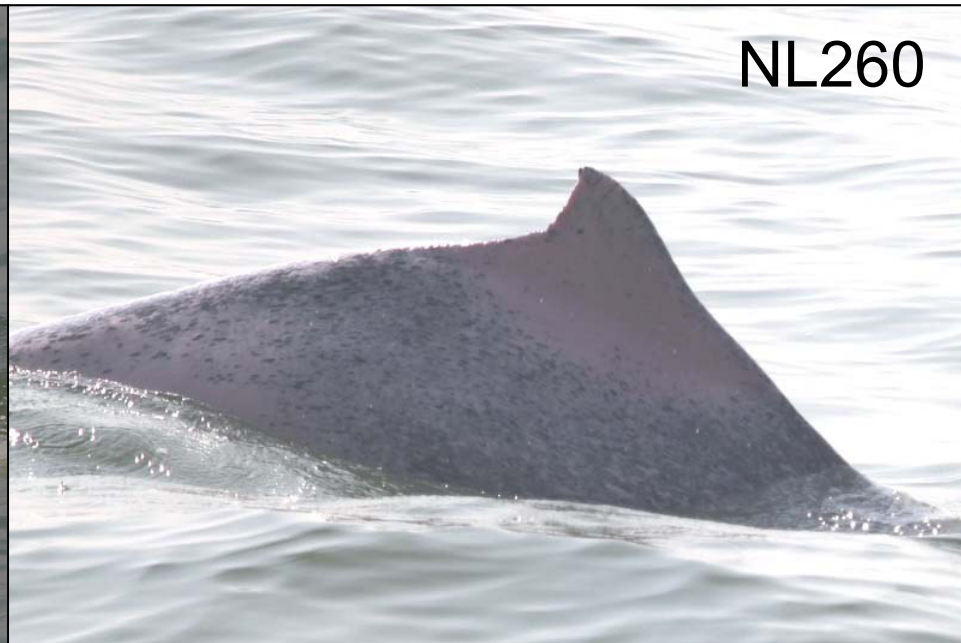
Appendix IV. (cont'd)



Appendix IV. (cont'd)



NL259



NL260



NL269



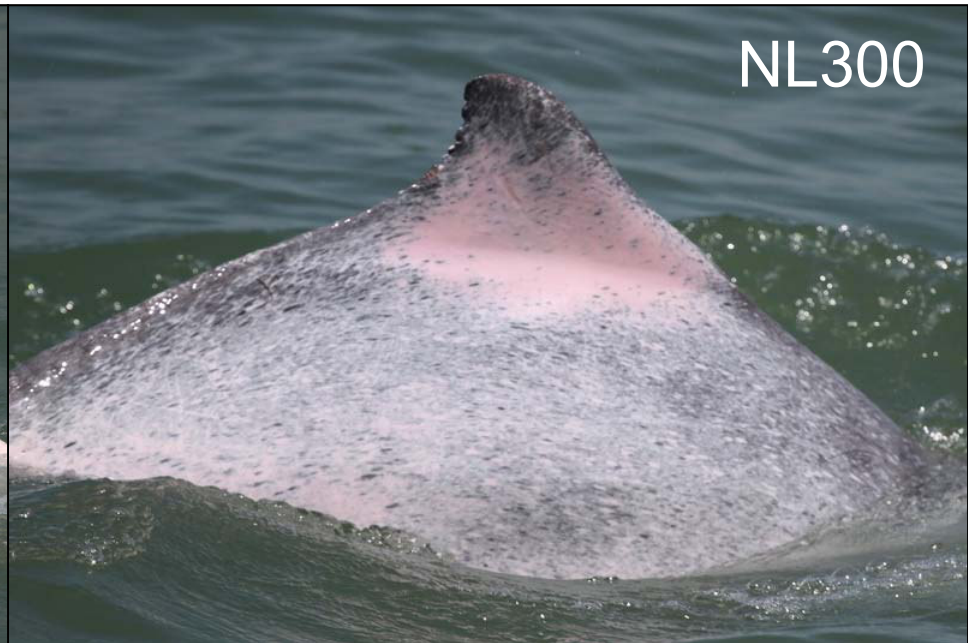
NL279

Appendix IV. (cont'd)

NL293



NL300



NL302



NL306



Appendix IV. (cont'd)

SL42



WL04



WL05



WL21



Appendix IV. (cont'd)

WL28



WL50



WL68



WL72



Appendix IV. (cont'd)

WL79



WL114



WL124



WL130



Appendix IV. (cont'd)



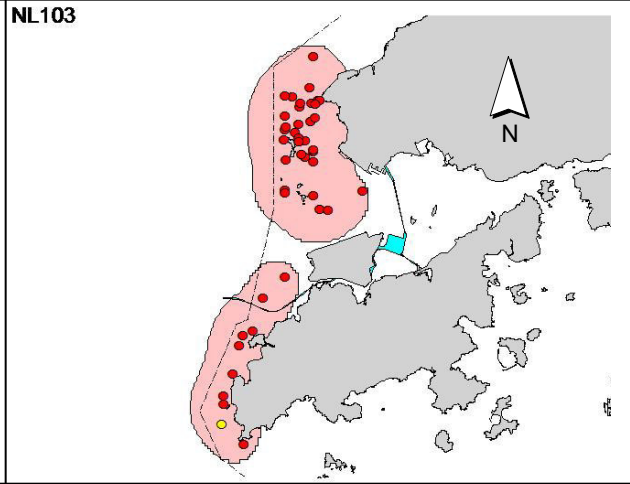
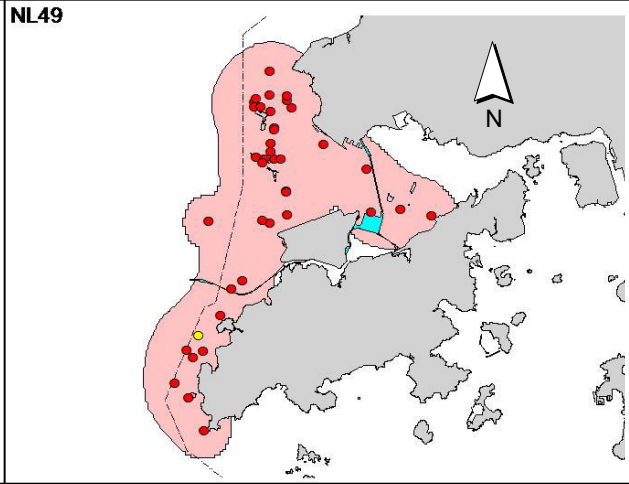
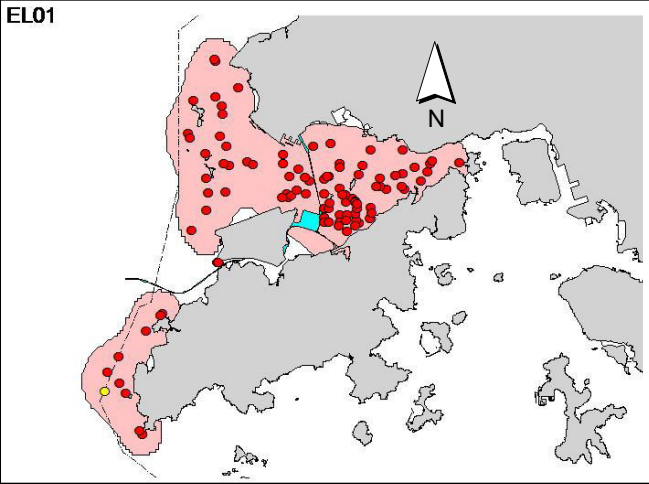
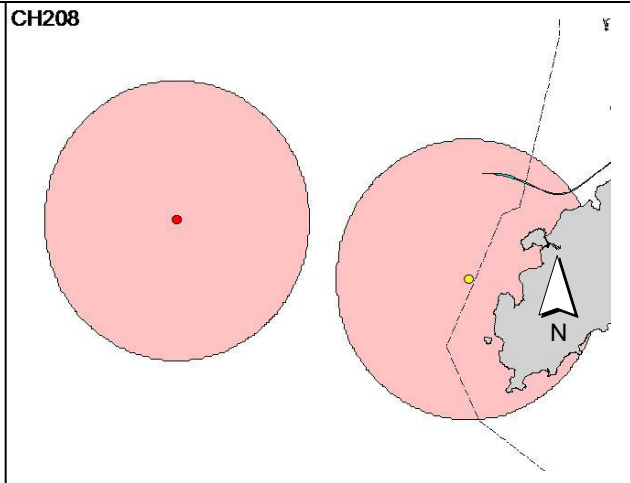
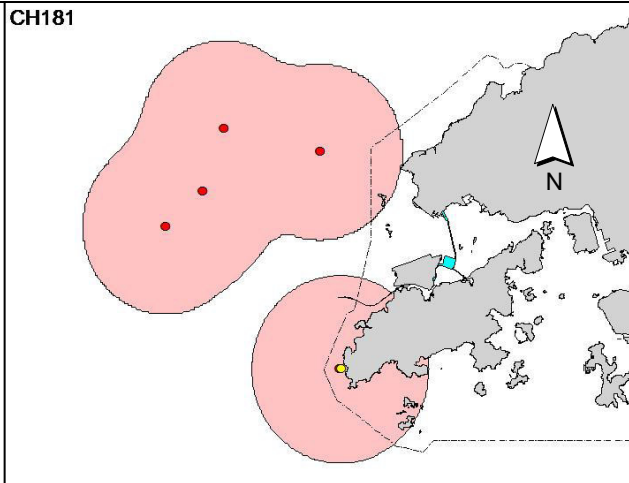
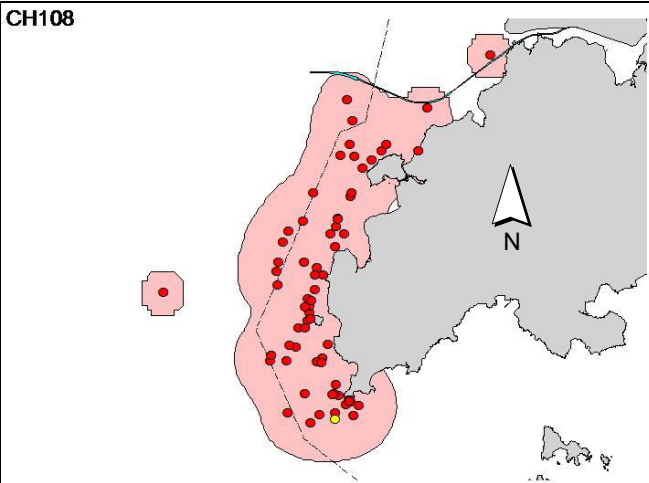
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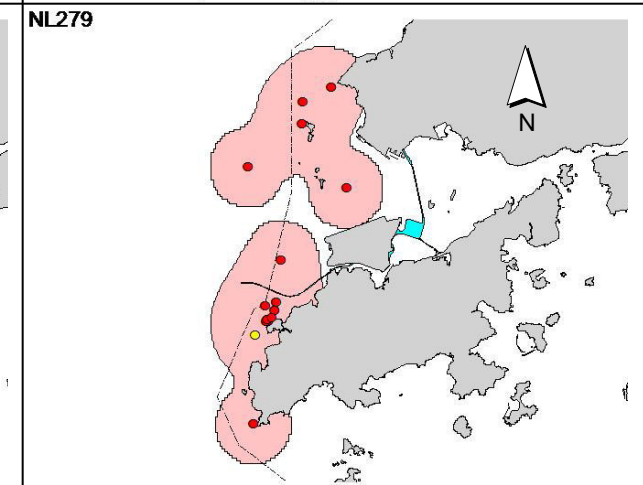
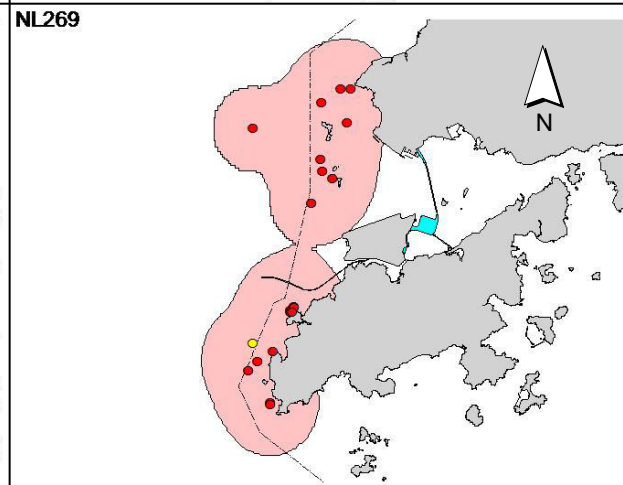
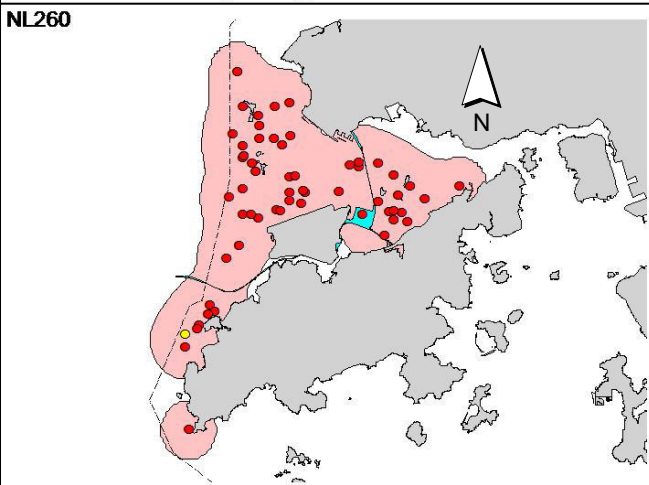
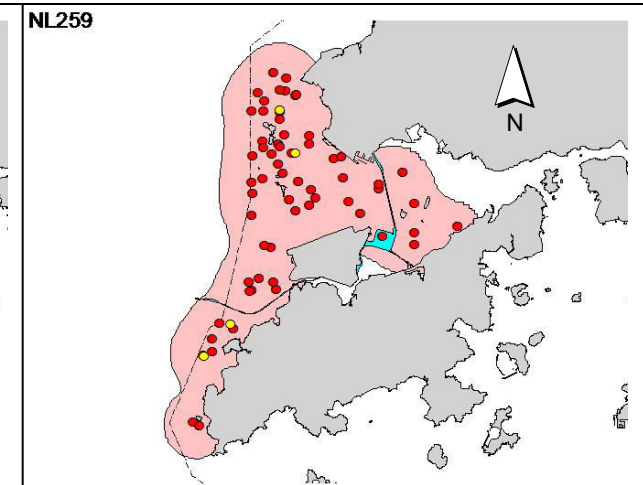
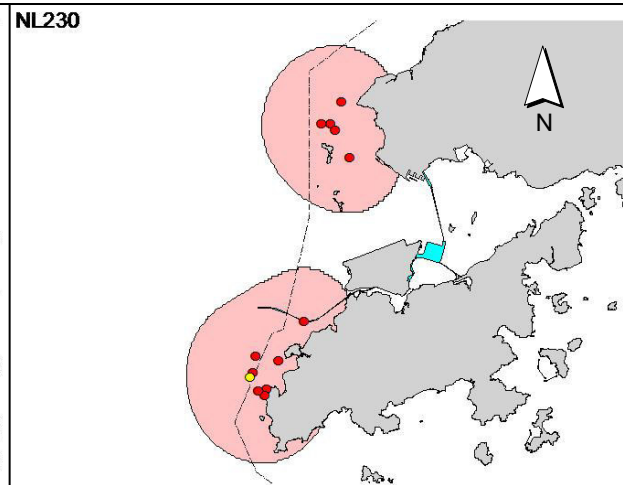
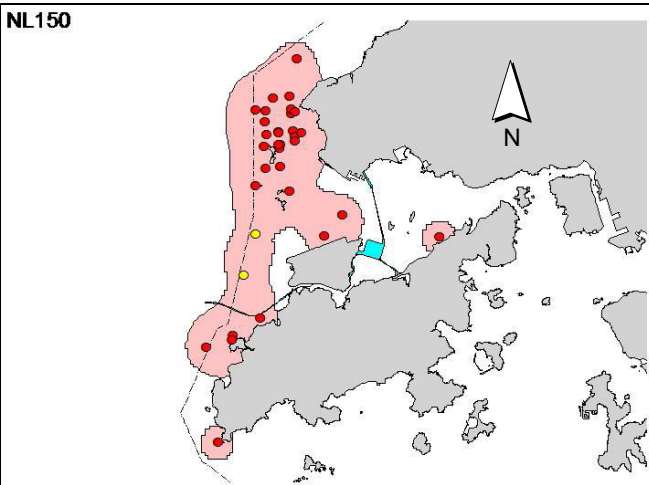
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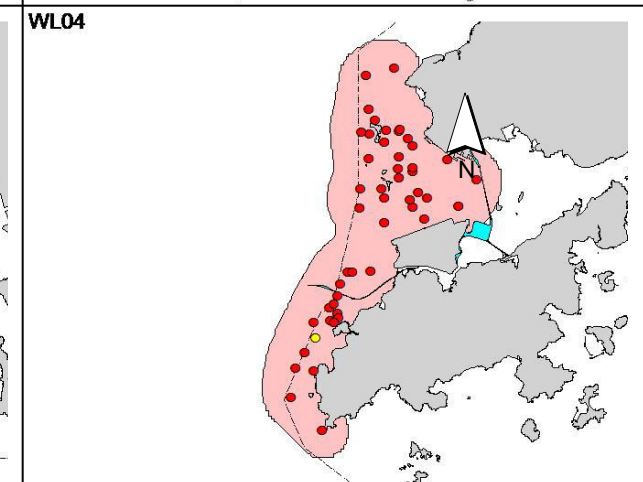
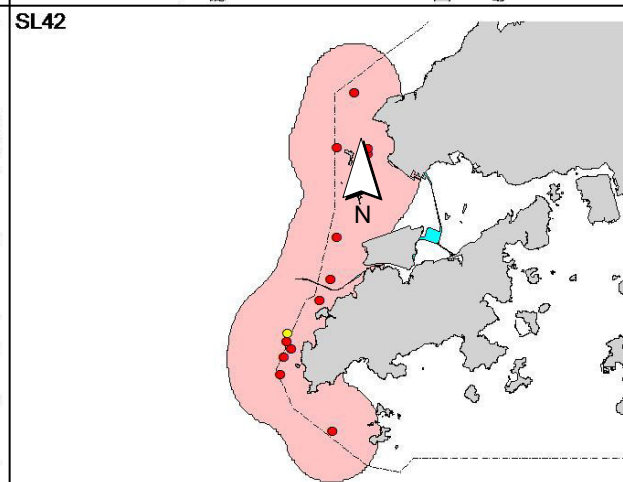
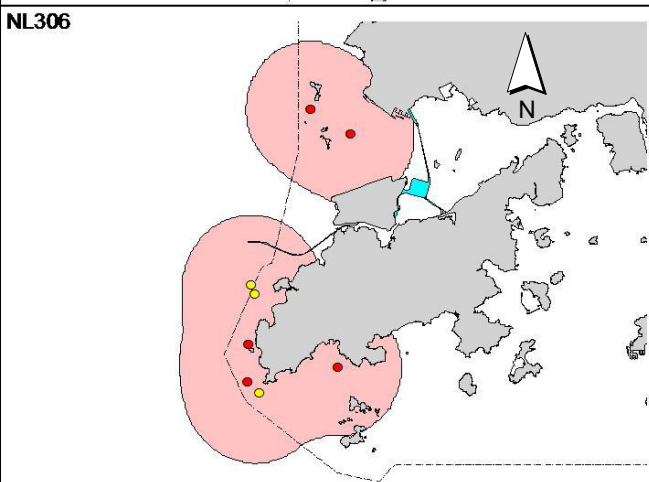
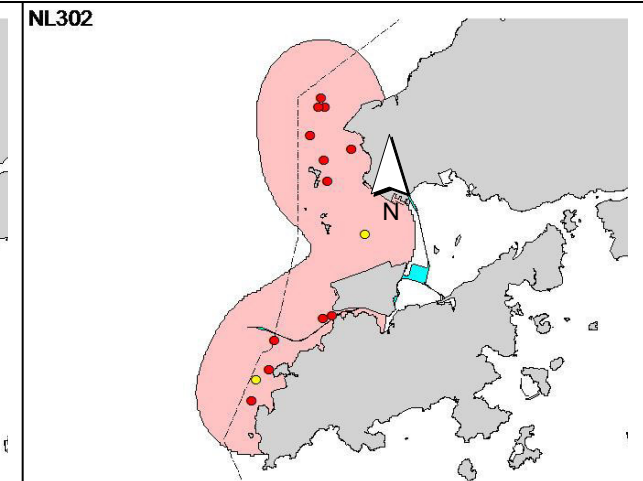
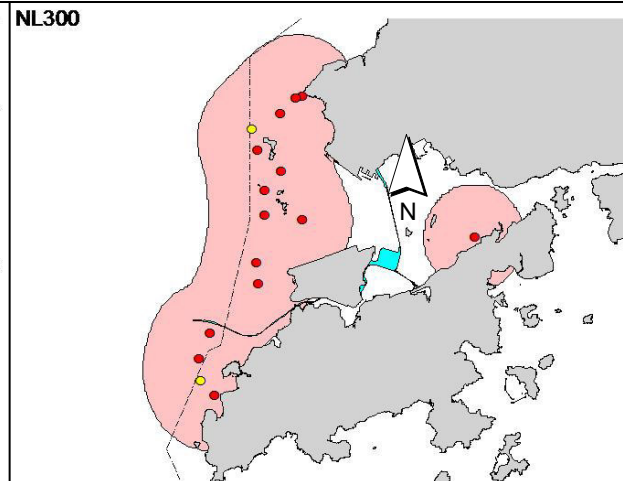
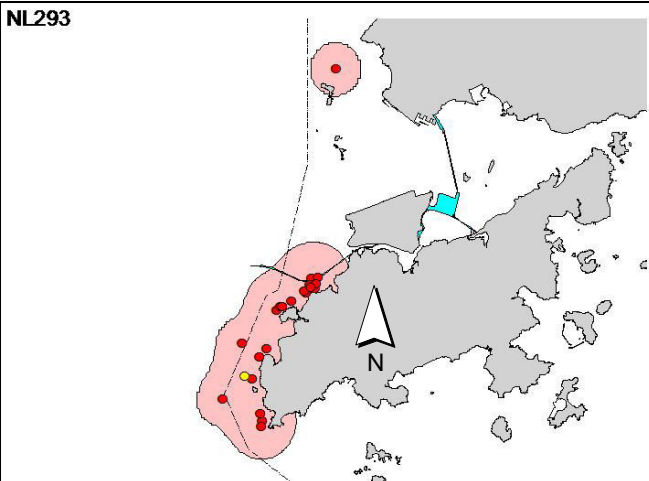
Appendix V. Ranging patterns (95% kernel ranges) of 37 individual dolphins that were sighted during HKLR09 impact phase monitoring period (note: yellow dots indicates sightings made in September-November 2014)



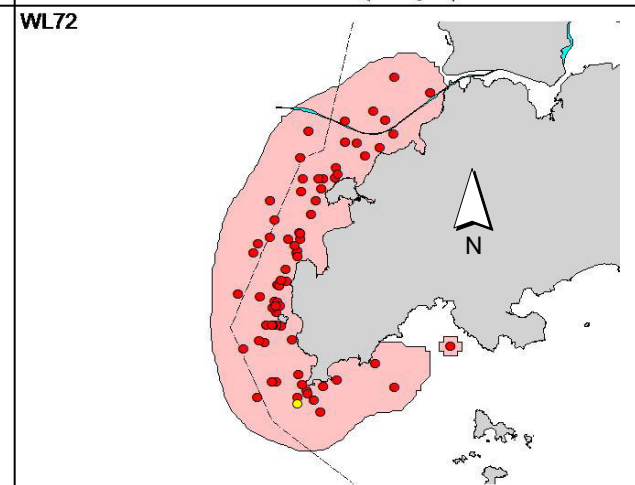
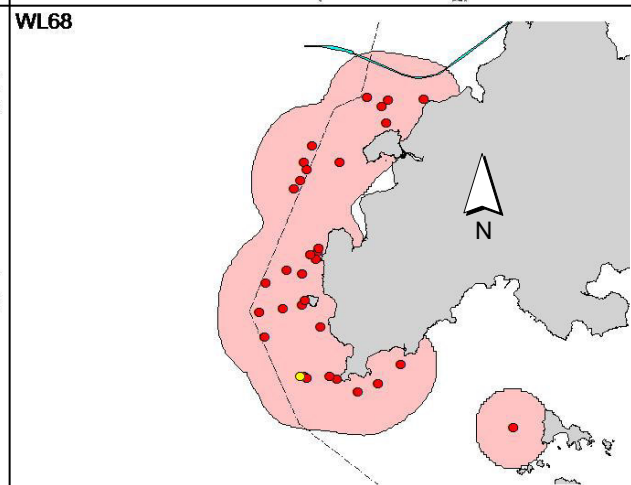
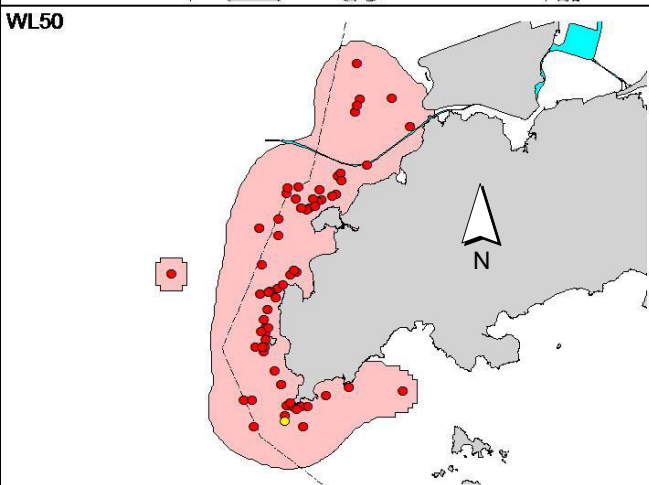
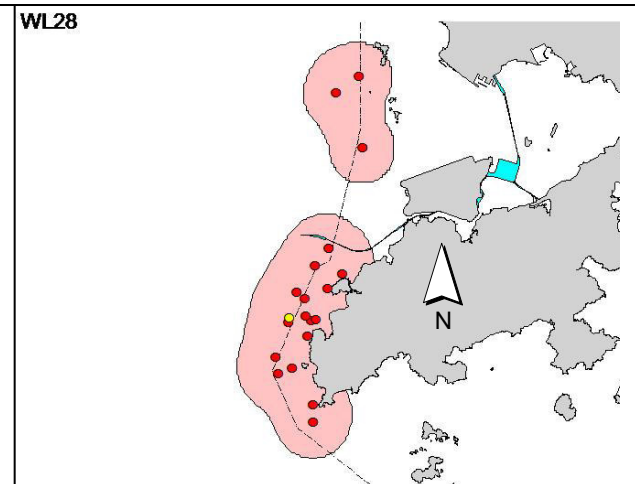
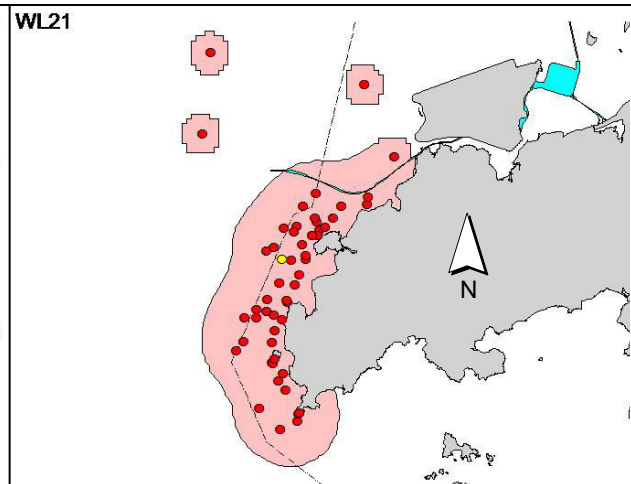
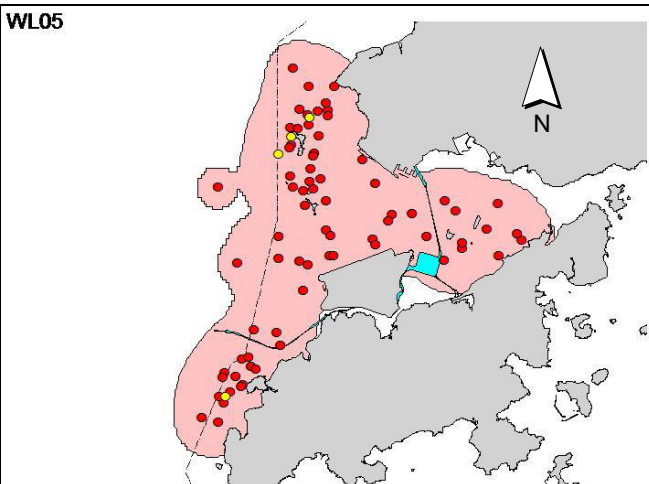
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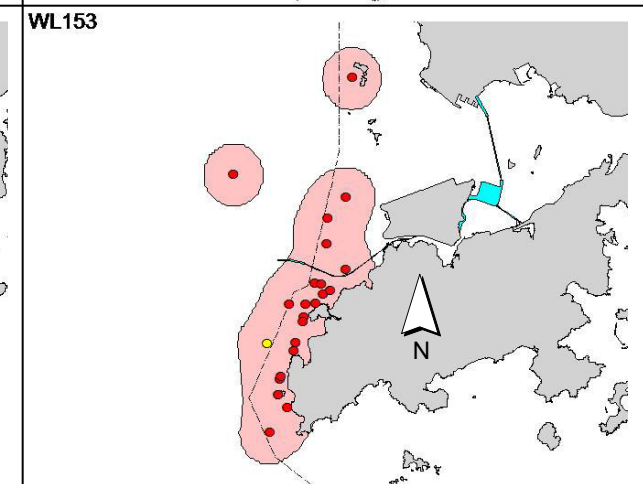
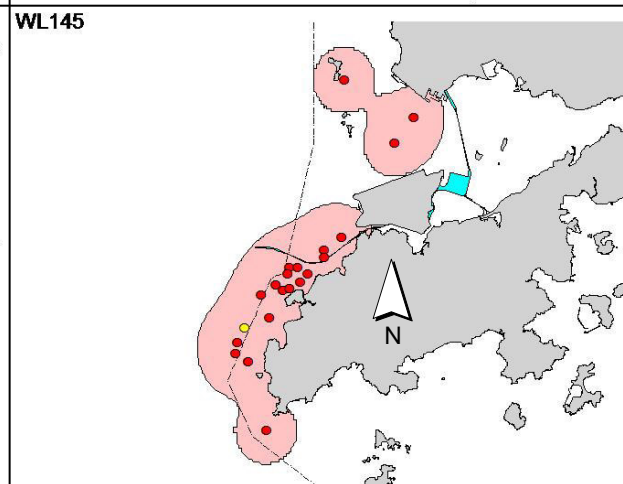
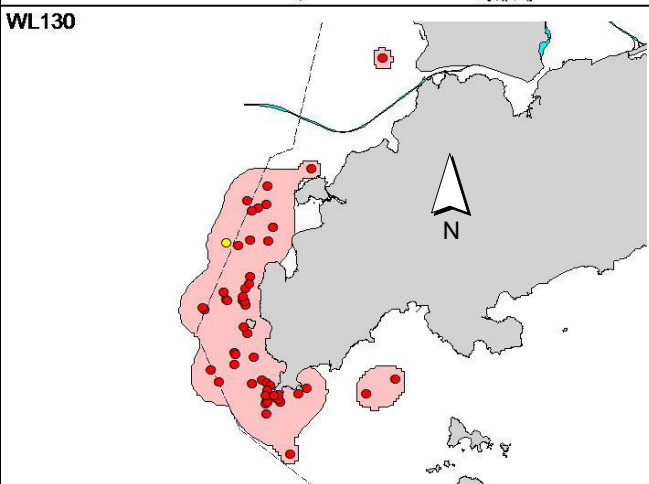
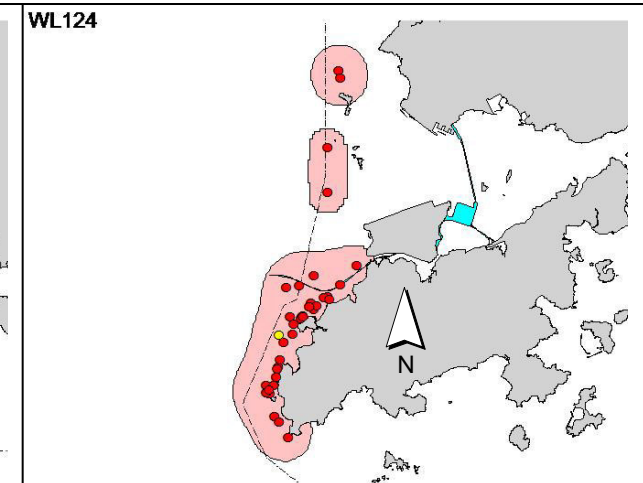
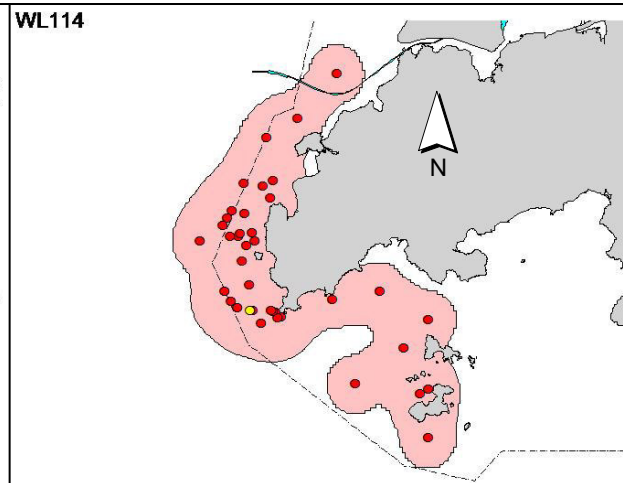
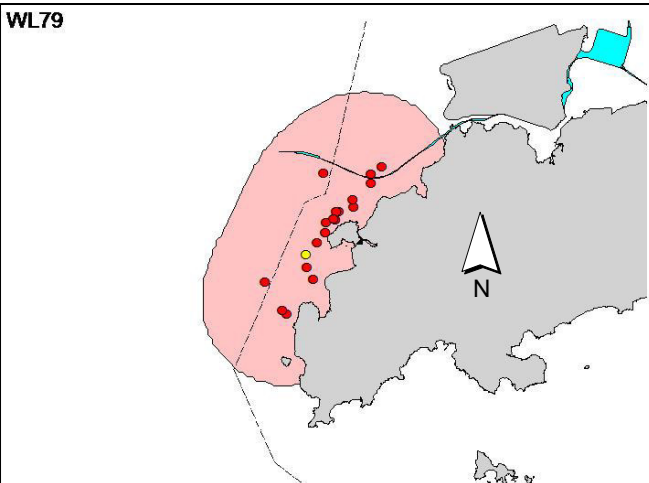
Appendix V. (cont'd)



Appendix V. (cont'd)

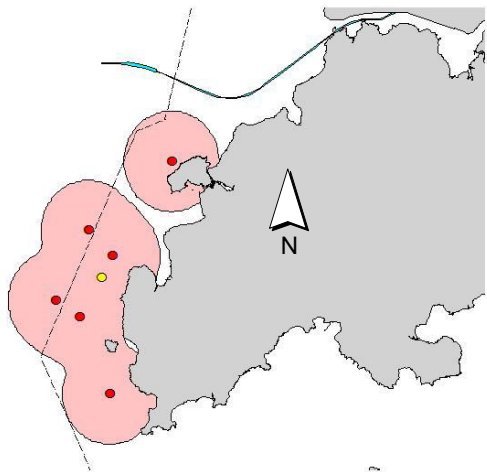


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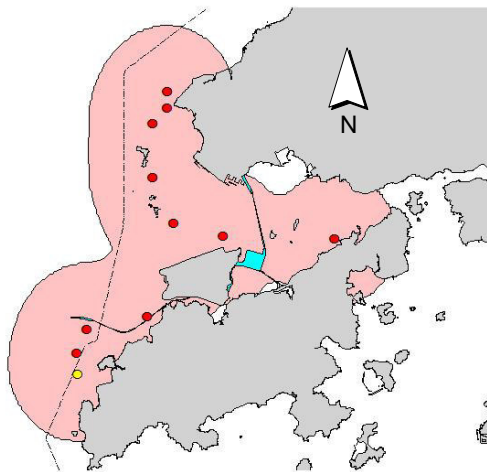


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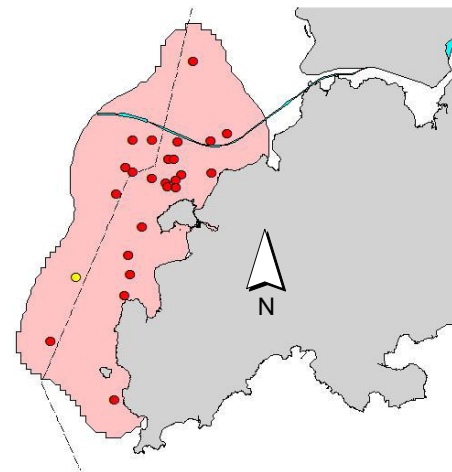
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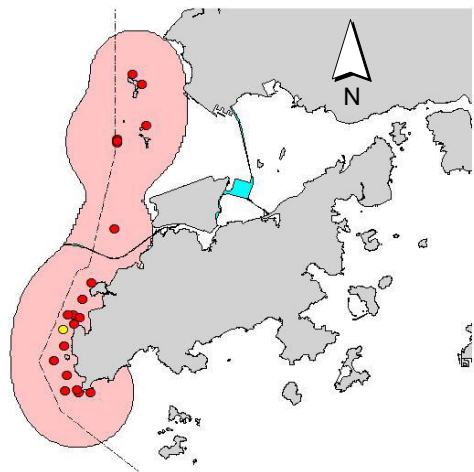
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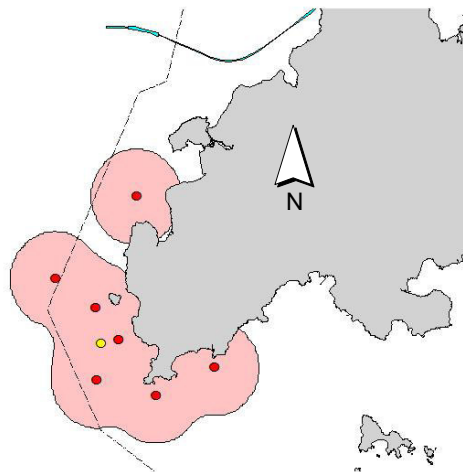
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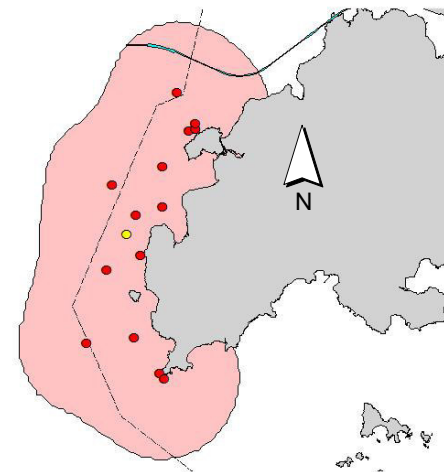
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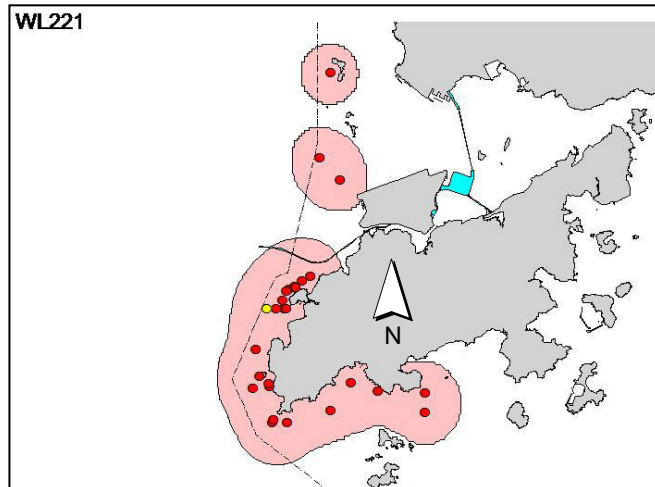
WL205



WL208



Appendix V. (cont'd)



APPENDIX G
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				
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 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.
2.Exceedance for two or more consecutive samples	<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 	<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 	<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

	<p>the remedial actions to 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>remedial 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>is 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; 	<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 	<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;

EVENT	ACTION			
	ET	IEC	SO	CONTRACTOR
	<p>6. Inform IEC, SO and EPD 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>noise 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>4. Resubmit proposals if problem still not under control;</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,</p>

Event	ET Leader	IEC	SO	Contractor
				IEC and SO.
Limit 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>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>

Event Action Plan for Dolphin Monitoring

Event	ET Leader	IEC	ER / SOR	Contractor
Action Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings. 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences. 3. Identify source(s) of impact. 4. Inform the IEC, ER/SOR and Contractor, 5. Check monitoring data. 6. Review to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor. 2. Discuss monitoring results and findings with the ET and the Contractor. 	<ol style="list-style-type: none"> 1. Discuss monitoring data with the IEC and any other measures proposed by the ET. 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing. 2. Discuss with the ET and the IEC to propose measures to the IEC and the ER/SOR. 3. Implement the agreed measures.

Event	ET Leader	IEC	ER / SOR	Contractor
Limit Level	<ol style="list-style-type: none"> 1. Repeat statistical data analysis to confirm findings. 2. Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences. 3. Identify source(s) of impact. 4. Inform the IEC, ER/SOR and Contractor of findings, 5. Check monitoring data. 6. Repeat reviewing to ensure all the dolphin protective measure are fully and properly implemented and advise on additional measures if necessary. 7. If the ET proves that the source of impact is caused by any of the construction activity by the works contract, the ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor for necessity of additional dolphin monitoring, and/or any other potential mitigation measures (eg, consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activities...etc), and submit to the IEC a proposal of additional dolphin monitoring and/or 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET and Contractor; 2. Discuss monitoring results and findings with the ET and the Contractor; 3. Attend the meeting to discuss with ET, ER/SOR and Contractor the necessity of additional dolphin monitoring and other potential mitigation measures. 4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor, and advise ER/SOR of the results and findings accordingly. 5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures, and advise ER/SOR of the results and findings accordingly. 	<ol style="list-style-type: none"> 1. Attend the meeting to discuss with ET, IEC and Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures. 2. If ER/SOR is satisfied with proposals for additional dolphin monitoring and/or any other mitigation measures submitted by the ET and Contractor and verified by the IEC, ER/SOR to signify the agreement in writing on such proposals and any other mitigation measures. 3. Supervise the implementation of additional monitoring and/or any other mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the ER/SOR and confirm notification of the non-compliance in writing; 2. Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures. 3. Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary. 4. Implement the agreed additional dolphin monitoring and/or any other mitigation measures.

	mitigation measures where necessary.			
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**APPENDIX H
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
S5.5.6.2	A2	<ul style="list-style-type: none"> Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies. 	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	N/A N/A
S5.5.6.3	A3	3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.	Control construction dust	Contractor	All construction sites	Construction stage	*
S5.5.6.4	A5	5) Implement regular dust monitoring under EM&A programme during the construction stage.	Monitor the 24 hr and 1hr TSP levels at the representative dust monitoring stations to ensure compliance with relevant criteria throughout the construction period.	Contractor	Selected representative dust monitoring station	Construction stage	^
S5.5.7.1	A6	The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant: <ul style="list-style-type: none"> Loading, unloading, handling, transfer or storage of any dusty 	Monitor the 24 hr and 1hr TSP levels at the representative dust	Contractor	Selected representative dust	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>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> <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	<u>Construction and Demolition Material</u> The following mitigation measures should be implemented in handling the waste: <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>^</p> <p>^</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>^</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>^</p> <p>^</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>*</p> <p>N/A</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
		<p>specifically at the onset of and after each rainstorm;</p> <ul style="list-style-type: none"> • temporary access roads should be surfaced with crushed stone or gravel; • rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities; • measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system; • open stockpiles of construction materials (e.g. aggregates and sand) on site should be covered with tarpaulin or similar fabric during rainstorms; • manholes (including any newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers; • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system; • all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit; • wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain; • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel; 					<p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">*</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">^</p> <p style="text-align: center;">*</p> <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 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> <p style="text-align: center;">^</p> <p style="text-align: center;">^</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 I
SITE AUDIT SUMMARY**

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


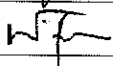
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	140902
Date	2 September 2014 (Tuesday)
Time	9:00-11:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
140902-R03	<ul style="list-style-type: none">To clear the dusty materials at the ro-ro barge at P63.	B20
	B. Ecology	
	<ul style="list-style-type: none">No environmental deficiency was identified during site inspection.	
	C. Air Quality	
140902-R04	<ul style="list-style-type: none">Properly check the exhaust of concrete pump to avoid dark smoke emission.	D19
	D. Noise	
140902-R01	<ul style="list-style-type: none">Provide acoustic decoupling measure for the air compressor at barge at P64.	E7
	E. Waste / Chemical Management	
140902-R02	<ul style="list-style-type: none">To plug the drip tray for chemical containers at P47.	F9
	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. 140829), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

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

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	140910
Date	10 September 2014 (Wednesday)
Time	9:30-11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
140910-R04	• Properly deploy the silt curtain at P98.	B25
140910-R05	• Provide sedimentation facilities for the muddy water from wheel washing at the exit near P92.	B3i
	B. Ecology	
140910-R02	• To remove the construction waste/materials at near the tress at P102, P100 and 92.	C30
	C. Air Quality	
140910-R01	• Provide water spray for the surface of ro-ro barge to avoid dust generation at southeast Quay.	D14
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
140910-R03	• Clear the oil leakage as chemical waste and repair the equipment properly at P100.	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 140902), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		10 September 2014
Checked by	Dr. Priscilla Choy		10 September 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


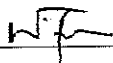
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	140917
Date	17 September 2014 (Wednesday)
Time	9:00-11:00

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	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
140917-R01	• To properly seal the holes of the drip tray for generator at pier 43 and 47.	F8 & F9
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 140910), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		17 September 2014
Checked by	Dr. Priscilla Choy		17 September 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


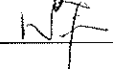
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	140926
Date	26 September 2014 (Wednesday)
Time	13:30-16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
140926-R01	<ul style="list-style-type: none">To repair the silt curtain which has sunk into the water at P71	B25
	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. 140917), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		26 September 2014
Checked by	Dr. Priscilla Choy		26 September 2014


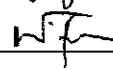
Hong Kong-Zhuhai-Macao Bridge

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	140930
Date	30 September 2014 (Tuesday)
Time	9:30-11:45


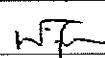
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
140930-R01	• Provide oil absorbing sheets at underneath of the wire on the barge at P43 to avoid oil spillage.	F8
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 140926), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	141007
Date	7 October 2014 (Tuesday)
Time	9:30-11:45

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	
141007-R06	• Clear the construction materials at near the trees at near Exit S4 and P100.	C6
	C. Air Quality	
141007-R04	• Provide proper watering for the dry exposed area at Portion C.	D5, 6, 8, 14
	D. Noise	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
141007-R01	• Clear the accumulated waste at the material skip regularly at Portion C.	F1i. & iii.
141007-R02	• Clear the wastes at the sedimentation tank to ensure it function properly at Portion C.	F1iii.
141007-R05	• Clear the oil leakage and painting materials at Portion C.	F8
	F. Permits/Licences	
141007-R03	• To display the Environmental Permit at the exit of Portion C.	G3
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 140930), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		7 October 2014
Checked by	Dr. Priscilla Choy		7 October 2014

Contract HY/2011/09


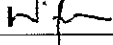
Hong Kong-Zhuhai-Macao Bridge

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

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	141014
Date	14 October 2014 (Tuesday)
Time	9:00-11:55

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141014-R01	• Clear the floating rubbish inside the cofferdam at P73.	B21
141014-R02	• Properly maintain the silt curtain at P75 to avoid the gap.	B25
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	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	
	• No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141007), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		14 October 2014
Checked by	Dr. Priscilla Choy		14 October 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


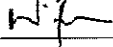
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141021
Date	21 October 2014 (Tuesday)
Time	9:45-11:00

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	
141021-R02	• Clear the accumulated wastes at near the trees at near P93.	C30
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
141021-R03	• Provide noise emission label for the air compressor at P109.	E8
	E. Waste / Chemical Management	
141021-R01	• Clear the general refuse and construction wastes at P98.	F1iii. & F4ii.
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141014), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		21 October 2014
Checked by	Dr. Priscilla Choy		21 October 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


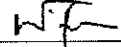
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141031
Date	31 October 2014 (Friday)
Time	13:30-15:15


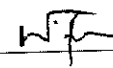
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141031-R01	<ul style="list-style-type: none">• Clear the broken sand bags at the barge at P27.	B20
	B. Ecology	
	<ul style="list-style-type: none">• No environmental deficiency 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. 141021), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		31 October 2014
Checked by	Dr. Priscilla Choy		31 October 2014

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	141104
Date	4 November 2014 (Tuesday)
Time	9:00-11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141104-001	• Muddy water was observed directly discharges into the sea at P84. The Contractor was reminded to provide sedimentation tank to treat the muddy water before discharging out.	B3
141104-002	• Muddy water was also observed directly discharges into the public gullies at P81 – P82. The Contractor was reminded to provide proper mitigation measures to rectify deficiency as soon as possible.	B3
141104-003	• Concrete wastewater was observed pumping out from the cofferdam into the sea at P73. The Contractor was reminded to ensure all discharge from site comply with WPCO.	B22
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	D. Noise	
141104-R04	• Provide noise emission label for the hand held breaker at P73.	E8
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141031), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		4 November 2014
Checked by	Dr. Priscilla Choy		4 November 2014

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	141111
Date	11 November 2014 (Tuesday)
Time	9:45-11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141111-O01	<ul style="list-style-type: none">Muddy water was pumped to the excavation pit before discharging to the sea at P84. The Contractor was reminded to check this discharging procedure whether comply with WPCO.	B3
	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	
141111-R02	<ul style="list-style-type: none">Properly clear construction materials / wastes at near the trees at P89, P94 and P102.	C30
	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. 1411104), follow up action is required for the items 1411104-O01 which is renamed as 141111-O01.	

	Name	Signature	Date
Recorded by	Ivy Tam		11 November 2014
Checked by	Dr. Priscilla Choy		11 November 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


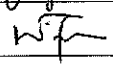
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141118
Date	18 November 2014 (Tuesday)
Time	9:30-11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
A. Water Quality		
141118-O01	• Concrete debris was observed at the deck of ro-ro barges. The Contractor was reminded to clear it as soon as possible.	B20
141118-R02	• Clear the accumulated concrete waste at the waste skip properly (Kam Shun 338).	B20
B. Ecology		
	• No environmental deficiency was identified during site inspection.	
C. Air Quality		
141118-R03	• Regular check the sprinkler system for dust suppression at floating concrete plant to ensure it can function properly.	D14
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		
	• No environmental deficiency was identified during site inspection.	
G. Others		
	• Follow-up on previous site audit session (Ref. No. 141111), follow up action is required for the item 141111-O01.	

	Name	Signature	Date
Recorded by	Ivy Tam		18 November 2014
Checked by	Dr. Priscilla Choy		18 November 2014

Contract HY/2011/09

Hong Kong-Zhuhai-Macao Bridge


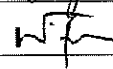
Hong Kong Link Road-Section between HKSAR Boundary and Scenic Hill

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	141128
Date	28 November 2014 (Friday)
Time	13:30-15:45

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
141128-R01	• To avoid the gap at the silt curtain at P71.	B25
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	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	
141128-R02	• Properly clear the general refuse at the edge of barge at P71.	F1iii.
141128-R03	• To plug the outlet of drip tray at P71.	F9
	F. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	G. Others	
	• Follow-up on previous site audit session (Ref. No. 141118), all environmental deficiencies were improved/rectified by contractor during the site inspection.	

	Name	Signature	Date
Recorded by	Ivy Tam		28 November 2014
Checked by	Dr. Priscilla Choy		28 November 2014

**APPENDIX J
WASTE GENERATION IN THE
REPORTING PERIOD**



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	0.272	0.000	0.000	0.169	
Feb	3.843	0.000	0.000	2.373	1.470	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	0.260	
Apr	7.401	0.000	0.052	2.210	2.129	3.010	0.030	1.150	0.000	0.189	
May	18.789	0.000	0.169	6.938	2.110	9.572	0.025	1.056	0.000	0.221	
Jun	21.904	0.000	0.000	10.666	0.962	10.276	0.033	0.948	0.000	0.195	
Sub-Total	56.905	0.000	0.345	22.636	11.067	22.858	0.277	4.946	0.000	1.151	
Jul	14.458	0.000	0.046	12.857	1.555	0.000	0.014	1.020	0.000	0.234	
Aug	8.652	0.000	0.000	7.140	1.511	0.000	0.068	1.090	0.000	0.273	
Sep	4.861	0.000	0.098	3.429	1.334	0.000	0.066	1.515	0.000	0.267	
Oct	6.588	0.000	0.000	1.191	5.398	0.000	0.196	1.062	0.000	0.273	
Nov	6.785	0.000	0.150	1.089	5.546	0.000	0.096	0.988	0.000	0.267	
Dec											
Total	98.249	0.000	0.637	48.342	26.412	22.858	0.719	10.621	0.000	2.464	



Forecast of Total Quantities of C&D Materials to be Generated from the Contract¹⁰

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 K
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)	25	23	0	0

**(D) Exceedance Report for Line-transect Vessel Surveys
(NIL in the reporting period)**

**APPENDIX L
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

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Com-2013-05-002	WA6	18 May 2013	<p>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).</p>	<p>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:-</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. 	Closed
Com-2013-05-003	Near Tung Chung New Development Pier	18 May 2013	<p>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).</p>	<p>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</p>	Closed

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			<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

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				<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

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				<p>suppression measures has been properly implemented by the Contractor on site to prevent dust nuisance from the construction activities.</p>	
Com-2014-01-001	<p>Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (Contract No. HY/2011/09</p>	<p>3 January 2014</p>	<p>The complaint was received by EPD on 3rd 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>	<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 	<p>Closed</p>

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				<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"> 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

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				<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

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				<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

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				<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 PME's 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

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				<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

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	Lo Wan		<p>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>	<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	<p>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>	<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>	<p>Complaint Investigation Report is under finalization</p>

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				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

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				<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

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	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.	Under Investigation	

**APPENDIX M
SUMMARY OF SUCCESSFUL
PROSECUTION**

Appendix M - 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.